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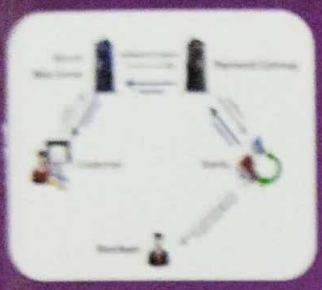

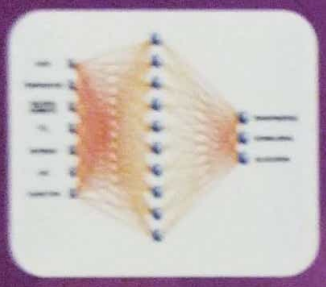


Special Issue

Proceeding of the National Conference on
" Emerging Trends in Computer and Information Technology"
held on 17th October,2015.

Editor in Chief

Mr. B. H. Barhate

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Tapti Education Society's

Dept. of Computer Science and Information Technology

Bhusawal Arts Science & P.O.Nahata Commerce College,
Bhusawal - 425 201 Maharashtra

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About College

Bhusawal, as recalled and noted down in records has a prominent place on the map of the nation; proudly housing two ordnance factories, a thermal power station in the region, and itself being one of the major railway junctions of Central Railway from where, residents proudly say, you may visit any corner of India. A mixture of farmers, tribal people from adjoining areas with the servants from all over India, Bhusawal serves as a slice of the nation; and honourably has unity in diversity. It is 25 kms away from the district, Jalgaon, famous as a city of gold; and few kms away from Yawal and Raver tehsils, famous all over nation for bananas. It is the only 'A' graded Municipal Corporation in the district. Another identification as well as benefit of the city is that it is situated at the banks of the Tapi river, the only river that flows from east to west. The city of Bhusawal has been a home place for the British authorities, and it is famous for railways since British rule. It is historically remarkable for the grave of Major Robert Gill, who invented world famous Ajanta caves; and for the tomb of Sant Gadgebaba, a famous and truly a leading social reformer in Maharashtra. It is believed that the parental home of Rani Laxmibai (famous as Queen of Jhansi) is situated at Parola, 50 kms away from the city. Bhusawal is also famous for many mythological stories like that of Shravana, coming from Ramayana who is said to be killed at Hartala, which is near to the city. Besides, the city was once famous in Bollywood for film distribution companies. The world famous Ajanta caves are just 60 kms away from the city.

Summing up the physiognomies of the city, Bhusawal stands as a glorious city in the eyes of everyone. However, it was the time- besides all assets of the city- when Bhusawal was a degenerated city in terms of higher education even after a long time from independence. There were few schools imparting high school level education but none of the colleges. It was only in 1958, under the motivation of Late Hon'ble Madhukarrao Chaudhari, ex-speaker of Maharashtra Legislative Assembly, a group of social well-wishers came together and established the Tapti Education Society in 1958. Simply having the wish in mind to provide potential students higher education facilities near their home, they started the Bhusawal College of Arts and Commerce in 1963. Their philanthropic view may be seen in the motto: *Vidya danam mahat punyam.* Yet difficulties were innumerable. The college with two faculties was started in the place of rent of a high school in the city.

It is wisely said that *vidya danam* is *mahat punyam*. The dedicated faculty, the sublime view of the management soon started to produce good academicians. Inspired by the results the trust purchased a barren land of 7 acres out of the city which is soon to be developed as a centre of imparting quality higher education in the area. The barren land with sustaining hard work, and devotion was then transferred into a naturally beautiful campus. The college is then shifted to a new place in 1972 with the introduction of Science stream. The philanthropist Late Mr. Poonamchand Nahata donated to the college, hence the college is renamed- and which today itself is a brand- as Bhusawal Arts, Science and Poonamchand Omkardas Nahata Commerce College, Bhusawal.

The college is then marching forward with a goal to **creatively contribute the society through the pursuit of learning at higher level of excellence**. The institute has contributed in many ways for economic, social and cultural uplift of the society by offering quality education. Since the inception it has been known for academic excellence, inventive pursuits and athletic dynamism. The college is a multi-stream institute catering to the needs of the young minds primarily from the rural areas. Our society runs not only the college but also the Institute of Management and Career Development and much-sought Tapti Public School (affiliated to CBSE Board, New Delhi) within a minimum space of 7.3 acres. The institute is developing vertically in all of the fields.

The Tapti Education Society's Bhusawal Arts, Science and P. O. Nahata Commerce College was accredited as **four stars** in 2001, reaccredited as **'A' Grade** with CGPA3.28 in 2008 **and recently reaccredited 3rd cycle as 'A' Grade with CGPA 3.30 in 2015** as the **first College** in North Maharashtra University jurisdiction. It is also the first college to volunteer for the third cycle of accreditation in the

jurisdiction of the university. It is also recognised by UGC as **College with Potential for Excellence**. Recently, the society is certified as ISO 9001:2008 institute. Our institute is one of the renowned institutes in the adjoining area. We welcomed the upcoming students from rural areas who made remarkable progress and set theirs and college's image in society. Many of the students of this institute secure top position in various fields. This make us feel great.

Initially the college was affiliated to the Pune University, and got permanent affiliation in 1990. Since the inception of North Maharashtra University in 1991, the college is permanently affiliated to the same. The university spreads all over three districts: Jalgaon; Dhule; and Nandurbar, being on the boundaries of Gujrat and Maharashtra, and one being the district of tribal people. The university is trying hard to uplift the downtrodden, while keeping in touch with the rapidly changing world.

Last but not least, the college has the advantages of developing youth coming from rural area, and forming them into sensible youth as they are mixed in the cosmopolitan society. The college is aware that every coin has two sides: hence students coming from rural areas have inferiority complex, their vernacular background being most disadvantage for them. The college has faced challenges to improve their communication skills, to boost their confidence to bring them into modern current while making them aware of great Indian culture. As recently, the college has celebrated its golden jubilee, it will be a golden, in fact a platinum moment for us when the students coming from different backgrounds will be essentially Indian serving for the welfare of humanity. With this view the college is making progress towards quality excellence so that it will be a lead college that will stand as a lighthouse for the confused.

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KEY-NOTE SPEECH

PATTERN RECOGNITION APPROACH TO OPTICAL CHARACTER RECOGNITION

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1. Introduction:

The main difference between human and machine intelligence comes from the fact that humans perceive everything as a *pattern*, whereas for a machine everything is *data* [1]. Even in routine data consisting of integer numbers (like telephone numbers, bank account numbers, car numbers), humans tend to perceive a pattern. Recalling the data is also normally from a stored pattern. If there is no pattern, then it is very difficult for human being to remember and reproduce the data later. Thus storage and recall operations in human beings and machines are performed by different mechanisms. The pattern nature in storage and recall automatically gives robustness and fault tolerance for the human system. Moreover, typically far fewer patterns than the estimated capacity of human memory system are stored. Functionally also human beings and machines differ in the sense that human beings *understand* pattern, whereas machine can be said to *recognise* patterns in data. In other words, human being can get the whole object in the data even though there is no clear identification of sub-patterns in the data. For example, consider the name of the person written in a handwritten cursive script. Even though the individual patterns for each letter may not be evident, the name is understood due to the visual hints provided in the written script. Another major characteristic of human being is the ability to continuously *learn* from examples, which is not understood well enough to implement it in an algorithmic fashion in a machine. Human beings are capable of making mental patterns from an input data given in the form of numbers, text, picture, sounds etc., using their sensory mechanism of vision, sound, touch, smell and taste. The patterns are also formed from a temporal sequence of data as in the case of speech and pictures. Human beings have the ability to recall the stored patterns even when the input information is noisy or partial (incomplete) or mixed with information pertaining to other patterns.

2. **Pattern Recognition:** *"The analysis, description, identification, and classification of objects or other meaningful regularities by automatic or semiautomatic means".*

[IEEE Standard Computer Dictionary of the Pattern recognition]

Consciously or unconsciously man recognizes innumerable faces, understands the patterns of voices, reads the handwritings and guesses the writers, recognizes the vehicles, buildings, roads, numbers, addresses, mobiles, and many more things and can easily distinguish one from other. Pattern recognition is a basic attribute of human being and other living things. The researchers are attempting to teach the similar thing to machine and make machine capable to mimic the human functions. Thus, Pattern Recognition is one of the significant milestones of this journey.

Pattern Recognition is a process of categorizing any sample of measured or observed data as a member of one of the several classes or categories. Every object has specific features and description which make it different from other objects. The Pattern can be defined as a quantitative or structural description of any object or some other entity of interest (i.e. not just a visible object, but also a system of data). It follows that a pattern class can be defined as a set of patterns that share some properties in common. Since patterns in the same class share some properties in common, we can then easily differentiate building of different models. Similarly, we would not have any difficulty to identify alphanumeric characters even when they are of different fonts and with different orientation and size. We can also differentiate men from women; differentiate people who came from different places; differentiate trucks from cars even with different models. This is because the former ones and the latter ones are defined as different pattern classes for the specific problems".

Applications of the Pattern Recognition include Optical Character Recognition of handwritten or machine printed text, speech recognition. It is also used for pattern classification like E-mail spam filters, search engine finding similar documents based on frequent co-occurrence of words. Besides, Patter Recognition is used in image analysis, which ranges from bar-code reading to

identification of human faces, fingerprints or iris patterns. Patter Recognition is also helpful in defence services to detect the enemy or target. It is much efficient in the process of mail-sorting, where it replaces human operator with automated system. It results into that it increases the efficiency and effectiveness of the mail sorting process. It is also used in the industries for the automation of various industrial processes. The Pattern Recognition is used as a supportive method in the examination of various medical images. The Pattern Recognition is also used in Satellite photo interpretation on the ground. It is helpful in analysis of cloud pattern, weather forecasting and also in crop forecasting.

3. Optical Character Recognition (OCR)

Optical Character Recognition (OCR) is the process of converting scanned images of machine printed or handwritten text (numerals, letters, symbols, etc.) into computer editable format (such as ASCII). The OCR helps to avoid manual entry of text thus improving productivity and reducing human error. The name OCR has been used in various context in the literature ranging from isolated character recognition to document reading system. The Study investigates the direction of OCR research, analyzing the limitations of methodologies for the systems, which can be classified based on two major criteria: 1) The Text Type (Machine Printed or Handwritten) and 2) The Data Acquisition Process (On-Line or Off-Line). The printed text is a bit easy for recognition due to its constraint font, whereas recognition of handwritten character is complicated task due to the unconstrained shape variations, different writing style and different kinds of noise that breaks the strokes, primitives in the character or changes their topologies. In general, there are five major stages in OCR processing:

1. Preprocessing
2. Segmentation
3. Representation
4. Training and Recognition
5. Post Processing

There are several problems encountered in processing a document. A document may be multicolumn, consisting of images etc. The text zone of the document needs to be extracted before the recognition. There are additional problems faced for recognition of the handwritten documents. The variation in the size and shape of characters, orientation, fusions and fragmentations are more prominent in case of handwritten characters. Since 1940, many approaches have been tried for constrained / unconstrained / hand-printed/ written text recognition with limited success [2]. Although commercial systems are available for Roman [3], Chinese [4,5] for east and many middle east languages, such systems for Indian scripts, as well as many low-density languages are still in the research and development stage. In some cases, this is due to technical challenges but more often due to lack of commercial market. Nevertheless, there is a real need for OCR in Indian languages.

4. METHODOLOGIES

The process for most of the OCR systems starts from the pixel level and ends with a meaningful text. This approach varies a great deal, depending upon the type of OCR system and the methodology used. The literature review in this field indicates that these hierarchical tasks are grouped in the stages of the OCR for Pre-processing, Segmentation, Feature Extraction, Classification and Recognition, and Post-processing.

4.1 Pre-processing

Pre-processing aims to produce data which is easy to operate accurately. Data acquisition process may causes for noise, which further causes for disconnect line segments, gaps in lines, filled loops, etc. The distortion, including local variations, rounding of corners is also a problem. To eliminate these imperfections, many techniques are available, like *filtering*, which aims to remove noise and diminish spurious points. *Morphological operations* which can be designed to connect the broken strokes, decompose the connected strokes, smooth the contours, thinning and extract the boundaries.

Normalization methods aim to remove the variations of writing and obtain standardized data. Due to inaccuracies in the scanning process and writing style, the writing may be slightly tilted or curved within the image. This may hurt the effectiveness of later algorithms. Therefore there is a need of *skew detection and correction*.

In order to reduce storage requirements and to increase processing speed, it is often desirable to present gray-scale or colour image as binary image by picking a *threshold* value [6,7]. *Thinning* extracts the shape information of the characters with reduction in data size. Thinning is very sensitive to noise and may deform the shape of the character. Some thinning algorithms identify the singular points, such as end points, cross points and loops [6,7,8]. These points are the sources of problems.

The pre-processing techniques are well explored and applied in many areas of image processing besides character recognition. But the techniques affect the data and may introduce unexpected distortions to the document image. As a result, these techniques may cause for the loss of important information about writing.

4.2 Segmentation

Segmentation is the operation that seeks to decompose an image into a sequence of sub-image containing isolated characters. Segmentation is an important stage because the extent one can reach in separation of words, lines, or characters directly affect the recognition rate of the script. It is most critical part of the document analysis, which is a necessary step prior to the character recognition. Although document analysis is relatively different research area with its methodologies and techniques, segmenting the document image into text and non-text regions is an integral part of OCR. Page layout is accomplished in two stages: The first stage is the structural analysis, which is concerned with the segmentation of the image into blocks of document components (paragraph, lines, word, etc) and the second one is the functional content of the document components (title, abstract). The literature survey in [9] describes three strategies for segmentation as follows.

1. ***The classical approach***, in which segments are identified based on "character like" properties. This

process of cutting up the image into meaningful components is given a special name, "dissection".

2. ***Recognition based segmentation***, in which the system searches the image for components that match classes in its alphabet.

3. ***Holistic Methods***, in which the system seeks to recognize words as a whole, thus, avoiding the need to segment into characters.

4.3 Feature Extraction

Feature Extraction plays vital role in recognition system. In the simplest case, gray-level or binary images are fed to a recognizer. However, in most of the recognition system, in order to avoid extra complexity and to increase the accuracy of the algorithm, a more compact and characteristic representation is required. For this purpose, a set of features is extracted for each class that helps distinguish it from other classes. A good survey on feature extraction methods for character recognition can be found in [10]. Following are document image representation methods categorized into three groups.

4.3.1 Global Transformation

A continuous signal generally contains more information than needs to be represented for the purpose of classification. This may be true for discrete approximations of continuous signals as well. The coefficient of the linear combination provides a compact encoding know as transformation. Deformation like translation, scale rotations are invariant under global transformation [11]. Common transform methods are including as follows.

A. ***Fourier Transforms***: The general procedure is to choose magnitude spectrum of the measurement vector as the feature. One of the most attractive properties of the Fourier transform is the ability to recognize the position-shifted characters, when it observes the magnitude spectrum and ignores the phase. Fourier transform have been applied to character recognition in many ways [12, 13].

B. ***Wavelet Transforms***: Wavelet transformation is a series expansion technique that allows us to represent the signal at different levels of resolution. The segments of document image, which may correspond to letters or words, are represented by wavelet coefficients, corresponding to various levels of resolution. These coefficients are then fed to a classifier for recognition [14, 15].

C. ***Moments***: Moments, Such as central moments [16], Legendre moments and Zernike moments [17, 18] form a compact representation of the original document image that make the process of recognizing an object scale, translation, and rotation [19]. Moments are considered as series expansion representation since the original image can be completely reconstructed from the moment coefficients. A comparative study has been made for moment-based shape descriptor [20], and comparison between invariants moment and Fourier descriptor [21]. This proves that the moment's technique is effective for character recognition.

4.3.2 Statistical Representation

Representation of document image by statistical distribution of points takes care of style variations to some extent. Although this type of representation does not allow the reconstruction of the original image, it is used for reducing the dimension of the feature set providing high speed and low complexity. The following are major statistical features used for character representation.

A. Zoning: The frame containing the character is divided into several zones. Figure 1 shows the partition of an image.

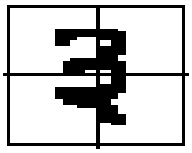


Figure 1. Partition of Devanagari numeral 3

The densities of the points or some features in different regions are analysed and form the representation. For example, directional features measure the direction of the contour of the character [22]. Word zoning [23] can also be used as a feature for recognition. Another example is the bending point features, which represent high curvature points, terminal points, and fork points.

B. ***Crossing and Distance***: A papular statistical feature is the number of crossing of a contour by a line segment in specified direction. In [24], the character frame is partitioned into set of regions in various directions and then the black runs in each region are coded by the power of two. These features imply that a horizontal threshold is established above, below, and through the centre of normalize script [25]. The number of times the script crosses a threshold becomes the value of features. The obvious intent is to catch the ascending and descending portion of the script.

C. ***Projection***: Characters can be represented by projecting the pixel gray values onto lines in various directions. The aim of the projection method is to simplify drastically a system of character recognition by reducing two-dimensional information to one-dimension [25, 26].

4.3.3 Structural Representation

Various global and local properties of characters can be represented by geometrical and topological features with high tolerance to distortions and style variations. Numerous of structural techniques can be grouped into the following categories.

A. ***Extracting and Counting Topological Structure***: In this group of representation, a predefined structure is searched in a character or word. The number of relative position of these structures within the character forms a descriptive representation. Common Primitives can be as simple as line (l), Holes (o), arcs (c), which are the main strokes [27]. Concave arcs are only extracted from the ordered list of vertices corresponding to the external boundaries, and are obtained by calculating the interior angle between two successive segments.

B. ***Measuring and Approximating the Geometric Properties***: The characters are represented by the measurement of the geometrical quantities such as the ratio between width and height of the bounding box of a character, the relative distance between first and last point and the last Y-min, the relative horizontal and vertical distances between first and last points, distance between two points, comparative lengths between two stroked, width of a stroke, upper and lower masses of words, and word length.

C. ***Chain Code***: One of the most popular coding schemas is Freeman's Chain Code [6]. Chain codes are used to represent a boundary by a direction sequence of straight-line segments of specified length and direction. Typically, this representation is based on 4- or 8-connecting of the segments.

4.3.4 Fuzzy Features

Fuzzy Logic has proved to be powerful tool to represent imprecise and irregular patterns. Thus the representation of handwriting parameters is accomplished with fuzzy linguistic modelling. The fuzzy features can be combined in a set of linguistic rules which in turn from the fuzzy rule-base for handwriting information. Ashutosh Malviya et.al. [28, 29, 30] introduced a new fuzzy language – FOHDEL, (**F**uzzy **O**n-line **H**andwriting **DE**scription **L**anguage) for the syntactic description of on-line handwritten symbols and developed a multi-layered rule based handwriting recognition system. To handle different handwriting style, fuzzy features are used in [31] and obtained membership function to each style. A predictive algorithm is developed based on fuzzy multifactorial analysis for effective selecting cut-points to segment touching characters in Devanagari and Bangla scripts [32].

The feature extraction process is performed mostly on binary images. However, binarization of a gray level image may remove important topological information from characters. In conclusion, the major goal of representation is to extract and select a set of features, which maximizes the recognition rate with least amount of elements. In [33], feature extraction and selection is defined as extracting the most representative information from raw data, which minimizes the within class pattern variability while enhancing the between class pattern variability. Selection of features requires expensive computational power and most of the time yields a suboptimal solution. Therefore, the feature selection is, mostly, done by heuristics or by intuition for a specific type of the character recognition application.

4.4 Classification and Recognition Techniques

The Strategy used for OCR can be broadly classified into four categories:

1. Template Matching
2. Statistical Approach
3. Structural Approach
4. Neural Network (NN)

In all of the above approaches, OCR techniques use either holistic or analytic strategies for the training and recognition stages: holistic strategy employs top-down approaches for recognizing the full word, eliminating the segmentation problem. The price for this computational saving is to constrain the problem of OCR to limited vocabulary. Also due to the complexity introduced by the representation of the whole cursive word (compared to the complexity of the single character or stroke), the recognition accuracy is increased. On the other hand, the analytic strategies employ bottom-up approaches starting from stroke or character level and going towards producing a meaningful text.

A. ***Template Matching***: The simplest way of OCR is based on matching the stored prototypes against the character or word to be recognized. Matching operation determines the degree of similarity between two vectors (group of pixels, shapes, curvature etc.) in feature space. Direct Matching, Deformable Template and Elastic Matching, and Relaxation Matching are some techniques based on template matching. The template matching process can be roughly divided into two sub-processes, i.e. superimposing an input shape on a template and measuring the degree of coincidence between the input shape and the template. The template, which matches most closely with the unknown, provides recognition. A very sophisticated non-commercial OCR was built based on this approach in 1962 by RCA group. The two-dimensional template matching is very sensitive to noise and difficult to adapt to a different font and handwriting style. A variation of template matching approach is to test only selected pixels and employ a decision tree for further analysis. The matching techniques are sometimes used combined in many ways as a part of OCR.

B. Statistical Approach: Statistical theory is concerned with statistical decision function and set of optimality criteria, which maximizes the probability of the observed pattern given the model of a certain class [6]. Statistical techniques mostly based on distribution of the feature set, which is Gaussian or in the worst-case uniform. Unlike template matching where an input character is directly compared with a standard set of stored prototypes, many samples of a pattern are use for collecting statistics. This phase is known as *training phase*. The objective is to expose the system to natural variant of a character. Recognition process uses this statistics for identifying an unknown character.

C. Structural Approach: The recursive description of complex pattern in terms of simpler patterns based on the shape of the object was the initial idea behind the creation of structural pattern recognition. These patterns are used to describe and classify the characters. The characters are represented as the union of the structural primitives. It is assumed that the character primitives extracted from writing are quantifiable, and one can find the relations among them.

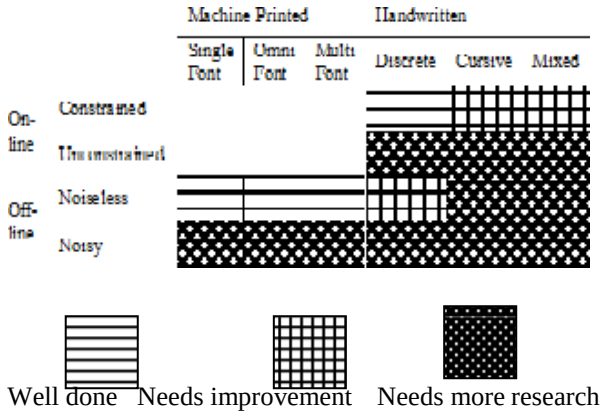
Another method is graphical method in which writing units are represented by trees, graphs, or attributed graphs. The character primitives (e.g. strokes) are selected by structural approach, irrespective of how the final decision making is made in the recognition [34]. For each class, a graph or tree is formed in the training stage to represent strokes, letters, or words. Recognition stage assigns the unknown graph to one of the classes by using a graph similarity measure.

D. Neural Networks: Artificial Neural Networks is defined as a computing architecture that consists of a massively parallel interconnection of adaptive "neural" processes. Because of its parallel nature, it can perform computations at higher rate compared to the classical techniques. Because of its adaptive nature, it can adapt to changes in the data and learn the characteristics of input signal. An ANN contains many nodes. The output from one node is fed to another one in the network and the final decision depends on the complex interaction of all nodes. The neural networks are employed for integrating the result of the classifiers by adjusting weights to obtain desired output. The main weakness of the systems based on neural networks is their poor capability for generality. There is always chance of under-training or over-training the system.

4.5 Post-processing

It is well known that humans read by context up to 60%for careless handwriting. While pre-processing tries to clean the document in a certain sense, it may remove important information, since the context information is not available at this stage. The lack of context information during the segmentation stage may cause even more severe and irreversible errors since it yields meaningless segmentation boundaries. It is clear that if the semantic information were available to a certain extent, it would contribute a lot to the accuracy of the OCR stages. Recent review indicates minor improvements when only shape recognition of the character is considered. Therefore, the incorporation of context and shape information in all the stages of systems is necessary for meaningful improvements in recognition rates. This is done in the post processing stage with a feedback to the early stages of character Recognition [2].

Table 1 Current Status in OCR Studies



However, it is very difficult to make a judgement about the success of the results of recognition methods, especially in terms of recognition rates, because of different databases, constraints, and sample spaces. In spite of all the intensive research effort, numerous journal articles, conference proceedings, and patents, none of the proposed methods solve the OCR problem out of the laboratory environment without putting constraints. The answer to this question, "Where are we standing now?" is summarized in table 1. Handwritten texts and free style handwriting are under poor conditions, there is still an intensive need in almost all the stages of OCR research. A number of weaknesses, which exist in the proposed systems, the studies on the stages of OCR have come to a point where the improvements are marginal with the current research directions. The stages are mostly based on the shape extracting and recognition techniques and ignore the semantic information. In most cases, it is too late to correct all the errors, which propagates through the stages of OCR, in the later stage. This situation implies the need of a global change in the approaches for freestyle handwriting.

5. SUMMERY

Based on the information gathered from the literature survey, an attempt is made to bring out the present status of OCR research. Although each of the method summarized above have their own superiorities and drawbacks, the presented recognition results of different methods and scripts seems very successful. Most of the recognition accuracy rates are over 85%.

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COPY RIGHT LAW AND INTELLECTUAL PROPERTY RIGHTS ISSUES IN INDIA

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Abstract:

In today's technological era vast amount of information is freely available on the web and the laws governing the physical reproduction and distribution of information is not properly made available. In the present era where large scale of information are available digitally, the issues of reproduction and distribution become much more complex. The purpose of copyright law is to provide a balance between the rights of developers and the creators of content and the rights of the public to use that content. Librarians plays an role to maintain the balance between the users' right as well as creators' right with regard to copyright and copyright enforcement. IPR awareness is the key to technological innovations and in the emerging knowledge-based economy; the importance of IPR is the most important issue because in the digital environment it is becoming difficult to prove rights violation whenever they occur. This paper gives an overview of intellectual property rights (IPR) issues with special reference to copyright in India. Finally, the paper suggests some solutions that will reduce the copyright infringement.

Keywords:

Copyright, Intellectual Property Rights (IPR), Library, Digital Library & I.T.

Introduction:

In a modern democratic society the common man is the king. In case of creative persons, since they were no longer sponsored by anybody, the rights in the produce of their intellectual exercise now vest in them rather than with the State. So the need for all creative persons to fend for themselves arose. This protection rigth becomes more crucial after the invention of the printing press which made mass reproduction of the original content easily possible. Intellectual property includes Patents, Designs, Trade Marks, Copyright, Confidential Information, Trade Secrets and know-how. It plays crucial role in the development of industry, commerce and trade and in the growth of creative effort in almost every field of human endeavour. The scope of intellectual property is expanding very fast and attempts are being made by persons who create new creative ideas to seek protection under the umbrella of intellectual property rights. In case of Copyright, in ancient times authors, painters, musicians, scientists, etc. (creators of intellectual property) i.e. people involved in intellectual exercises were state sponsored; i.e. they worked and prospered under the patronage of the King (Matthews, 2003). Their honour, valour and property depended upon the king. All the products of their intellectual cultivation were the property of the state.

Intellectual Property:

The word intellect originates from the latin word "intellectus" which means the power of knowing. Human beings has the capacity to acquire knowledge and increase his knowledge bank by gathering more and utilizing it as and when required throughout his life time. An intellectual makes his living by selling the product intellect, which is nothing but the brain child of his original idea, creative thought, which forms a special kind of property known as intellectual property. The intellectual property is ownership of something intangible. A right as we know is legally protected interest and object of the right is the thing in which the owner has his interest. The object in intellectual property right is immaterial property.

Intellectual Property Right (IPR):

IPR implies the right to literary, artistic and scientific work; performances of performing artists; phonographs and broad-cast; inventions in all fields of human endeavour; scientific discoveries; industrial designs; trademarks; service marks and commercial names and designations, and all other products resulting from intellectual activity in the industrial, scientific, literary and artistic fields. It is a generic term covering patents; registered design; trademark; copyright; layout of integrated circuits, trade secrets; geographical indicators and anti-competitive practices in contractual licenses.

Need for Intellectual Property Rights:

1. To provide incentive to the individual for new creation.
2. Providing the recognition to creators and inventors.
3. Ensuring material reward for intellectual property.

4. Ensuring the availability of genuine and original products.

IPR in digital context:

The advent of digital technology has greatly accelerated the dissemination and distribution of information with great speed and accuracy never seen before. It is much easier to disseminate literary, artistic and scientific work to a very large community of Internet users and users of electronic media. The libraries as a service centre have allowed their users to read a document, to browse through the whole collection; to search through the library catalogue; to supply Xerox copy for specific individual research and education purpose; to procure photocopies of articles from other libraries or clearing centers; to widely distribute the re-produced copies of documents requiring public awareness and to provide inter library loan service. Whether all these activities will continue in the digital age? If digitization is considered as reproduction, it is clear that in digitization the initial work is merely changed into the digital form and the process of changing is accomplished by a machine, without any creativity. At the same time if it is considered as a translation from one language to another, the digitization is also a change from natural language of humans in to binary language of machine. In digitization however, there is no creativity involved and it could be considered as an activity similar to reprography. The copyright protects creative works. Simply transformation in to the digital form of an original document cannot be considered as creative. The transmission of information on Internet can be considered similar to broad casting and copyright law cannot be applied. Internet transmission is global in nature. A tangible object carrying a traditional work distributed lawfully comes under the principle of exhaustion of distribution right. It is not appropriate to apply this right to a work transmitted on Internet. The transmission on Internet is different from any tangible object fixing of the work.

Copyright:

Copyright protects the labour, skill and judgment of someone author, artist or some other creator, expender in the creation of original piece of work. It may be given for creators of literacy; dramatic; musical and other artistic work and producers of cinematographs and sound recordings. In fact, it is a bundle of rights, including interalia, rights of reproduction, communication to the public adaptation and translation of work. A copyright is a set of exclusive legal rights, authors have over their works for a limited period of time. In the United States, U.S. Copyright Office works "To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries".

Copyright law & Technology:

The advent of digital technologies has raised wide amount of challenges in regulationg the copyright regime. Althought digital and information technologies have helped the copyright owners with a widening market, but at the same time these technologies have proved to be a threat to the copyright owners with a loss of control over their own property. As newer digital products enter the market, efficient management and controlled of such products is become a major concern. The copyright owners are under a constant threat of losing control over their copyrighted work. To protect their works against the misuse of digital goods in the information superhighway, they are using technology to retain control.

Copyright law & Open Access:

Open Access Initiative the literature which is the free availability of information on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited. Open Access movement has changed the role of the librarian in saving, archiving, and distributing knowledge, art, and culture to the general public. Librarian's plays an important role to overcome barriers involved in the open access of knowledge, art, and culture saved, archived, and distributed through libraries.

The Copyright Piracy in India:

Piracy means unauthorized reproduction, importing or distribution either of the whole or of a substantial part of works protected by copyright. The author of a copyrighted work, being the owner, enjoys certain exclusive rights with respect to his or her works. These include right to reproduce, to publish, to adopt, to translate and to perform in public. The owner can also sell, assign, license or bequeath the copyright to another party if he wishes so. If any person other than the copyright owner or his authorized party undertakes any of the above mentioned activities with respect to a copyrighted product, it amounts to infringement of the copyright. Copyright piracy is thus like any other theft which leads to loss to the owners of the property and these include books, movies, soundtracks, computer programmes, internet, cable television and illegal copying. Besides economic loss, piracy also adversely affects the creative potential of a society as it denies creative people such as authors and artists their legitimate dues.

The Indian Copyright Act, 1957:

The copyright in India was introduced during the British rule. The Copyright Act, 1957, as amended in 1999 governs the copyright law in India. It came into force on January 15, 2000. It has established a copyright office, under the immediate control of the Registrar of Copyrights, to facilitate registration of copyright. It has also established a Copyright Board with Registrar of copyrights as its Secretary under the Act. The Act defines various categories of works in which copyright subsists,

and has internal provisions for determination of first ownership of copyright, the scope of rights conferred; assignment and licensing of copyright; compulsory licensing and the circumstances in which it could be granted; performing rights of societies broadcasting rights; authors special rights; international copyrights. The Act sets out in detail what constitutes infringement and what does not; civil and criminal remedies against infringement and remedies against threat of legal proceedings without any ground. The Indian copyright law is in conformity with the provisions of the TRIPS Agreement of the WTO. It is also in line with the provisions of the Berne Convention for the Protection of Literary and Artistic Works (Brussel Text, 1948). The act has been amended five times in the years 1983, 1984, 1992, 1993, and 1999 to meet the national and international requirement (Thomas, 2012). The Copyright (Amendment) Act, 2012 made to strengthen the rights of the authors, streamline the process of assignment and grant of licence, facilitate better access to works, and extend the fair use provisions, in general and particular to the Internet.

Role of Librarians in Copyright Protection:

In any educational institute librarian plays a key role in copyright issues. The main role of librarian is to make library resources available of to students and faculty in support of teaching, learning, research and scholarship. Libraries are creatures of the historical and statutory balance in copyright law. Libraries share materials and preserve works under specific provisions for libraries in the Act. The role of the libraries in the copyright issues is mentioned below:

i. To enable users to access copyrighted and public domain works and to ensure creators right is protected.

ii. To work for library as social organizations address the balance in the law and are shaped by it. The institutional roles of libraries, librarians and their associations necessitate paying close attention to that balance and promote users' rights as well as creators' rights. Libraries are a small but significant market for published works. The vast majority of copyrighted works in library collections were purchased or acquired through license agreements. Often libraries pay more for copyrighted works than works of an individual. e.g In case of subscriptions to periodicals, to ongoing research works, and to electronic information. Hence, there is the need for library staff and users to know about copyright, their limitations and benefits, when making use of any of the materials on the library shelves, either in open or closed access in order to safeguard anti-piracy legislation. Libraries have an important role to play in caring for and providing access to other people's copyrighted work.

iii. To recognize about copyrighted materials to the library users who are not aware of their dependence on balanced law and policy for access to information and for gaining knowledge.

iv. To play a role as advocates for individual users of copyrighted materials. Librarians need to ensure that the rights and privileges of their customers are safeguarded i.e. they must assure the library users of uninhibited access to available collection in aid of research. Any user that is unsure if the material to be copied is protected by copyright needs to seek advice from the library staff.

v. To give the knowledge to the library users regarding "fair use legislation". This means that they can copy a very small amount of a work for educational purposes and not for commercial purposes. It may be possible to get permission to copy or use copyright material by contacting the copyright owner. Any copying now carried out for a commercial purpose requires prior permission from the copyright owner or payment of a copyright fee.

vi. To give the orientation about rule of copyright infringement is the concept known as fair use. Under this principle, the law permits the use of portions of copyrighted works for such purposes as criticism, comment, teaching, and research, even without permission of the copyright owner. In deciding whether a use is a fair use, courts consider such factors as the purpose of the use, the nature of the work, the amount of the work taken, and the effect it will have on the value of the original work. Some examples of fair use include quoting excerpts from a book in a review, scholarly article, or term paper; copying and distributing newspaper article to illustrate an educational lesson.

vii. There is a need for all the librarians in India to have copyright education in order to familiarize with the basic principles and concept of copyright laws in India. This will enable them to render their services without violating copyright laws. With adequate education in copyright, librarians will be able to know the risk involved in copying from copyright-protected material and operate within the laws.

Above all, they will be able to make use of the 'fair use' principle which means that one can copy a very small amount of a work thereby catering for the interests of the owner of the work and that of the user. Copyright warnings should be displayed by librarians in conspicuous locations in the libraries so as to pass the message across to the users. There is no doubt that libraries and Librarians in India have a lot of functions, very vital ones indeed, to play in the protection of author's rights. Firstly, they must provide the right guidance to their library users on how to make use of the library stock without infringing on the copyright of the authors of such works.

The librarians can provide the following assistance to library users in order to properly enforce the copyright laws in the library or to reduce the copyright infringement.

1) Research projects in the library should be made available to researchers for consultation only.

2) Photocopying the entire work should not be allowed, and if there is the need to photocopy, the principle of fair use should be strictly adhered to.

3) Librarians should ensure that precise citation is done by any researcher for any piece of information collected from a given source in the Library.

4) Librarians through their body, Indian Library Association (ILA) need to draw the attention of the Government through the Ministry of Education to the

present noninclusion of the Indian Libraries on the Board of the India Copyright Commission.

Conclusion:

The socio-economic development of a country depends to a large extent on the creativity of her people and creative works cannot be encouraged without effective administration of copyright laws. Librarians as the custodians of information plays an important role in implementation of copyright laws. Violation of copyright laws can easily be carried out in the library. In order to have books, author and creators of literary and artistic works, there should be adequate reward commensurate with the work. Hence, to encourage creativity the enactment of copyright law is essential. Librarians as the custodian of information and knowledge plays an important role in avoiding violation of the copyrighted works.

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GIS BASED DECISION SUPPORT SYSTEM FOR CROP SELECTION

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Abstract.

For Indian farmers the decision of crop selection is a crucial task as number of factors need to be taken into consideration. To drive out from this scenario, a solution is proposed which apply Analytic Hierarchy Process (AHP) and GIS in terms of a Crop Selection Decision Support System in Indian scenario. The system was designed, developed and implemented across a selected farm. This paper narrates the success of use of system for Winter (Rabbi) Crops across selected plot Area in Maharashtra.

Keywords:

GIS, AHP, DSS.

1 Introduction

Geographical Information System (GIS) is a computer-based technology which manipulates explains stores and analyses information spatially and helps for planning and decision making by producing maps and data tables as output. Geographic Information Systems (GIS) has existed for over four decades, the concept of which dates back to the 1960's when computers were used for spatial analysis and quantitative thematic mapping. GIS's present state and its potential trend of future development in the context of mainstream of IT must also be understood by examining the use of geospatial information in various sectors like Industrial sector, Business sector, Agriculture sector etc. Today's great challenge in the field of agriculture in India is Precision Farming. In developed countries, farmers rely heavily on geographic information systems. But, in developing countries, the farmers still use predecessor's method for selecting crop for cultivation; they rarely consider the scientific facts which results in higher crop productivity. So in order to make the crop selection process scientific by integrating GIS and this will result in better crop productivity. GIS in the sector of Agriculture can be useful for making decision in the process of crop selection, yet very less study has been done for crop selection process using GIS and there is a lot of scope in this field to develop a decision support system by integrating GIS which would be beneficial for farmers in order to do precision farming. GIS technology integrates common database operation such as query and statistical analysis with the unique visualization and geographic analysis benefits offered by map. In GIS the geographical data are more important and geospatial data are corresponding to the location, near earth surface and the geographical data are represented in the form of vector and raster. Vector data depict the geographical data in discreet point. The Lines and polygon whereas the raster data depict the geographical data in grid cell. The major challenges that we are facing in the world is overpopulation, pollution, deforestation, natural disaster which have geographic dimension. Local problem also have geographic component that can be visualized using GIS technology [1]. Ensuring food security within a changing global climate together with the growing concern in reducing the environmental footprint of farming while increasing the economic viability of agricultural practices has resulted, in the last few decades, in the development of precision agriculture. Research and practice in precision agriculture aim at sustainably optimizing the management of agricultural fields by addressing the spatial variability in plant and environment [2].

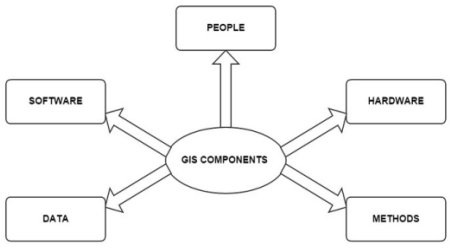

Fig 1: GIS components

Frequently, we come across a time to take decision which requires knowledge about the scenario. Sometimes our problem or scenario is so large and complex, hence we makes decision with incomplete data or information. Yet GIS gives us a simple way to present the complex scenario in a simple manner to understand and take decision [3]. The things seen by eyes that is visually depicted information or data is very simple and easy to understand than the raw data. Subsequently GIS makes the interaction between various factors easy to

understand. In accordance to the present theme to develop a decision support system for crop selection we need to know Soil texture, Soil biological details, Climate, Irrigation, etc. The gathered data on its own will not make any sense to take decision. The locations which are spatially referenced are nothing without diagram to understand. With the help of map one can easily imagine the scenario. The outbreak of cholera in London in the year 1850 is one of the examples depicted by John Snow by using GIS, which helped to take the decision [4].

2. Agriculture Scenario in India

Agriculture is the main occupation of the people in Maharashtra. Both food crops and cash crops are grown in the state. The food crops sown in Maharashtra are Wheat, Rice, Jowar, Bajra and Pulses. Cash crops include cotton, groundnut, turmeric and tobacco. According to the time of sowing and harvesting there are two seasons in a year as Kharif and Rabi.

2.1 Seasons:

In Kharif the crops are seeded at the outset of the south-west monsoon and harvested at the final stage of the south-west monsoon.

1. Sowing season: From the month of May to the month of July.
2. Harvesting season: From the month of September to the month of October.
3. Important crops: Jowar, Bajra, Rice, Maize, Cotton, Groundnut, Jute, Tobacco, etc.

In Rabi season crops grow with the cold climate and it requires warm climate in developing phase of seed.

1. Sowing season: From the month of October to the month of December.
2. Harvesting season: From the month of February to the month of April.
3. Important crops: Wheat, Barely, Gram, Linseed, Mustard, Masoor and Peas.

2.2 Major crops:

Indian Crops can categorize into two categories food grains and non-food grains.

1. Wheat the oldest and second most important crop in India. It is a Rabi or winter harvest. The adequate rainfall required for wheat crop is 50 to 75 cm and it is needed in winter when the temperature is less than 20C. The suitable soil for wheat cultivation is Loamy soil and black soil found in Northern plain and Deccan respectively. Wheat is seeded in the month of October-November besides picked in the month of March-April. In Wheat production India rank fourth in world.

2. Pluses: India is of the biggest market for pulses as well as India stands in top production list of pulses. Pulses are rich in proteins and have a prior position in vegetarian population meals. Pulses require moderate rainfall and temperature. Most important pulses of India comprises Pigeon Pea or Red Gram, black gram, green gram, lentil, horse gram, peas etc. But among these above mentioned varieties only Pigeon Pea or Red Gram are more important pulses.

3. Millets: Millets are the food of the large population in India. Millet is the Kharif crops and requires less rainfall and therefore is grown in low rainfall areas in the following order Ragi in damp areas, Jowar in the humid regions and Bajra in the arid areas. They call for high temperature and less rain.

4. Maize: Maize is an American crop and it has been cultivated more in last few decades be-cause of its ability to adopt in different soil types and climate. Maize also has a good yield rate and requires moderate rainfall. It is rich in protein.

5. Rice: Rice is a Kharif crop. India is a leading producer of rice and covers one third of total cropped area of India. Rice is the daily food of most of the Indian population. Most of the states in India produces rice. Rice requires temperature above 25C and rainfall between100 to 200 cm. It requires clayey soil and standing water during growth.

6. Cotton: India stands fourth among the world in cotton output. Cotton is a Kharif crop. It is a temperate area crop as it requires warm and high temperature climate. Cotton requires modest rainfall. Suitable land for cotton is the Black soils of Deccan and Malwa plateau. Also grows best in alluvial soils of the Satluj-Ganga plain and red and laterite soils of the peninsular area. Cotton is a fibre crop and cottonseed are used as a vegetable oil and a part of fodder for milch cattle for better milk yield. Maharashtra is one among the top cotton producing countries in India.

7. Jute: Jute is one of the important fibre produced the sub-continent of India. India is the second biggest manufacturer of Jute in the world. Jute requires a rainfall 200cm and above, it also commands a high temperature. It is a fibre plant and develops easily in well-drained rich soils or in the flood plains.

8. Oilseeds: In oilseeds production in the world India stands in top. They are the primary source of edible oils. More or less of the oilseeds are used in production of paints, varnishes, perfumes, medicines, soap and so on.

9. Peanut is one of the important among oilseeds. It is a Kharif crop. Groundnut requires tropical climate and 50-75 cm rainfall is good. Soil suited for cultivation is well drained light sandy loams, red, chicken and dark shoes. Other oilseeds are seasamum, Linseed, Castor-seed and Cotton Seed.

10. Sugarcane: India is the second biggest producer of sugar cane. It is cultivated before Kharif season and picked in winter. It requires roughly 100 cm of rainfall. It requires hot and humid climate with an ordinary temperature of 21C to 27C. Soil suited for the growth of Sugarcane is deep, rich loamy soil, but sugarcane can sustain in a variety of soils and can abide any soil which can retain moisture, the soil should be rich in nitrogen, calcium and phosphorus but it should be neither too acidic nor alkaline.

3. System Outline:

It is hypothesized that selection of proper crop by using decision support system can bring improvement in productivity and it could be achieved by using various factors like Soil texture, meteorology, irrigation, market location in GIS Multi-criteria based decision support system. The study consists of the following objectives:

1. To develop the Thematic Cartography of Soil, Meteorology, Irrigation, Well Inventory, Road Network.
2. To develop the model (Framework) for Decision Support System for Precision Farming.
3. Validate the approach through an applied case study.

4. Experimentations and Discussions

The following table gives a comparison matrix where four criteria soil pH, irrigation, Rabi and Kharif are compared against each other.

Table 3: Pair-wise comparison matrix which holds the preference values

	Soil pH	Irrigation	Rabbi	Kharif
Soil pH	1	2.667	0.545	0.429
Irrigation	0.375	1	0.375	0.375
Rabbi	1.833	2.667	1	0.375
Kharif	2.333	2.667	2.667	1

After the calculation of criteria weight, the step that follows is prioritization of decision alternatives now we have to take into consideration the four alternatives Soybean, Cotton, Wheat and Jowar and four identified criteria Soil pH, Irrigation, Rabbi and Kharif whose preference relationships have been established in Table. The criteria weights measured from the eigenvector of the largest Eigen value of this criteria preference matrix are given in the next table 4. In the next step, the four options have been compared with regard to the relevant standards. The calculated weights are again counted on from the eigenvectors of the comparison matrices.

Table 4: Pair-wise comparison matrix which holds the preference values.

Criteria	Soil pH	Irrigation	Rabbi	Kharif
Weight	0.1935	0.1059	0.2543	0.4462

Table 5: Pair-wise comparison matrix matrix on the basis of Soil pH

	Soybean	Cotton	Jowar	Wheat
Soybean	1	0.667	0.5	0.333
Cotton	1.5	1	0.545	0.353
Jowar	2	1.833	1	0.667
Wheat	3	2.833	1.5	1

Table 6: Pair-wise comparison on the basis of Irrigation

	Soybean	Cotton	Jowar	Wheat
Soybean	1	0.667	0.667	1.5
Cotton	1.5	1	1.833	1.167
Jowar	1.5	0.545	1	2. 167
Wheat	0.667	0.857	0.462	1

Table 7: Pair-wise comparison matrix of Rabbi

	Soybean	Cotton	Jowar	Wheat
Soybean	1	1.833	0.667	0.75
Cotton	0.545	1	0.2	0.545
Jowar	1.5	5	1	0.857
Wheat	1.333	1.833	1.167	1

Table 8: Result of selected on the basis multiple-criteria Soil pH, Irrigation, Rabbi.

Alternatives	Rank	Weight
Soybean	4	0.202
Cotton	3	0.203
Jowar	2	0.286
Wheat	1	0.308

After calculating the weights of four criteria and then alternatives and then again the calculated weight is calculated by eigenvectors of the comparison matrices. And then finally we can use these above information for making the decision for crop selection.

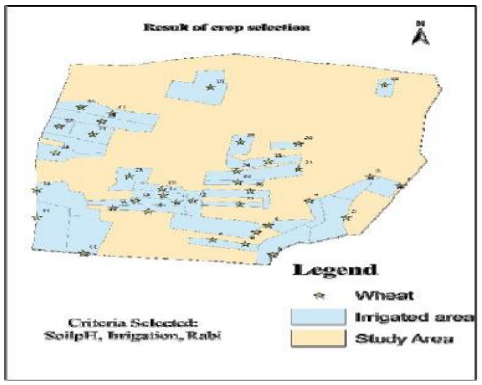

Figure 3: Result of selected multiple-criteria Soil pH, Irrigation, Rabbi

Result: As the Wheat gets a higher rank, it should be considered over other options.

Conclusion:

This paper summarizes how to design and develop GIS based DSS for Crop section in Indian Scenario using GIS and AHP. The proposed system is multi-criteria Spatial Decision Support System for selecting the crop. It was our experimental finding that the GIS technology has offered broad and easy to use tools for analysis whereas AHP has been considered as a best practice to be used for decision making process. The area of this study was Khadkut, a village in Nanded District in Maharashtra State. This study is also important and relevant to fill the knowledge vacuum of farmers in decision making process for crop selection by considering the various important parameters for the respective crop. It was understood that the Wheat is the best crop to be selected in Winter (Rabbi) season.

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A PROTOTYPE NOTE FOR LOCATION BASED SERVICES IN AGRICULTURE USING GIS

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Abstract:
In the era of e-business, traditional trading can be accomplished without limitation on time and space. This study outlines one such attempt by proposing new system architecture for Location Based Services using GIS. Here the E-Commerce system serves as a platform for the improvement of rural agriculture sector.

Keywords:
GIS, E-commerce, LBS

1 Introduction

E-commerce system has potential to offers a possible solution of directly sell or buy products between two parties like suppliers and buyers with no restriction on time and space [1]. On the other hand, we come across a citation that the online transaction should not to have business related information flow as its core but also distribution of goods effectively [7]. We feel that the transportations of agriculture products among different parties must involve all kinds of business activities. Both local and regional demographic characteristics' are very important to consider in the successful implementation of e-commerce [1]. In this case, location information, or spatial information plays an essential responsibility in all kind of business activities, including an e-commerce. Geographical Information System is potentially applicable in location based e-commerce system to manage spatial information [1], and also provide an ideal solution to manage costs of transportation and market analysis in the overall e-commerce activities and to allow designers, developers, and researchers to strategize and create location based e-commerce applications using GIS. This paper outlines the proposed system architecture for On-line trading of agricultural products using LBSs and GIS.

2 Problem Formulation

In present days, small farmers sell their products using traditionally trading methods to the buyers or agents. In traditional trading method they have to face challenges, such as transportation of products from land to city market because farmers are living in small villages and they unaware about city road they had less knowledge about city market, buyers and agents. Farmers faced much difficulty in selling of their products in city markets; either they sell their product directly to the agents or on road market by wasting his time for whole day. When they sell their product to the agents, than they not get efficient price or profit; these agents buy products in low price as compare to daily market price from farmers and then sell these product to the customer with high price. On the other hand customer takes much time in traditional trading process. But they had no choice to sell their product to further agents or any other markets place in another city; because of transportation of products and lack of information about price at remotely located city. Conceptually, trading process itself is not limited by the geographical locations of both buyer and supplier. The system should open for any buyer and supplier in the agriculture industry all over the world. To provide win- win condition to both customer and buyer by saving time and transportation cost, this research consider both are as beneficiary target group. An LBS using GIS system architecture for mobile e-commerce application does not exist for the farmers. System architecture provides an easy way for both farmers and customers to get e-commerce service to their current location. A system architecture model has been proposed to provide a solution to these problems faced by farmers as well customers. A system architecture model has been proposed to provide a solution to these problems faced.

3 Technologies

Conceptually we used many technologies to design system architecture for agriculture trading but rest of them there is two most emerging technologies are LBSs and GIS.

3.1 Conceptual Background GIS used in Trading System.

Geographical information systems (GIS) generally refer to an information system which facilitates input, query, analyze, output, and visualization [3] of geo-referred spatial information. GIS access spatial information or attribute information and analyze it, & produce outputs with mapping & visual display.

3.2 LBSs.

Location based services (LBSs) has offer huge potential in doing advertising or marketing of businesses by provided that better promotion strategies and competitive advantage. Location based services "are information services which access with mobile device through the mobile network and utilize the ability to use of the current location of the device" [4]. LBS make use of the current location as well as time to provide specific information about location. Location based services are an intersection of three technologies as shown Figure 1, is called New Information and Communication technologies (NICTS), Internet and GIS [6]. As shown fig.1 internet is interconnection of computer network and the web technologies that run on it while the NICTS are current and modern information technologies that include mobile technology, social media and web 2.0 technologies [6]. GIS technology is a geo-spatial data used to provide accurate geographical information using geo location detection tools such as GPS. After Mobile GIS and web GIS make use the WWW and mobile technology to provide geographical information while mobile internet makes use of mobile phones to access the WWW through mobile web browsers or native mobile application.

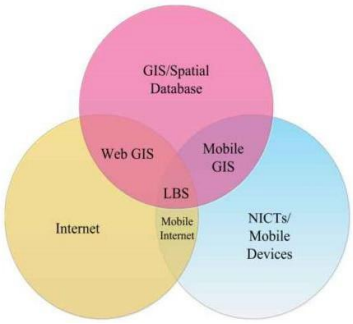

Fig. 1. LBS are intersections of technologies. [6]

4 Linking LBSs with GIS for Agricultures Trading System.

It is observed that the word wide rank of India in farm productivity or output is second. India's GDP is steadily raising but the agriculture component of it is declining though number of reforms in agricultural aspects has been made. India lives in villages and the agriculture is the most common economic sector. It's a main socio economic pillar of India [11]. In traditionally trading process small farmers sell their agricultures products in very cheaply or low price in markets, they not get efficient money as well. And they had no chosen to sell their product in other markets; because of transport expenditure are increased. LBS-based GIS can have many E-commerce applications. Few are cited as below,

4.1 Geographical Presentation of Data on GIS and LBSs: The most fundamental use of LBS-Based GIS in supporting the e-commerce system is to provide geographical information related to both buyer (customer) and supplier (Farmers). LBS are determining the current location of mobile phone by using GPS. However idea of the e-commerce is to provide a platform from where buyer (Customer) can find their current location via GPS. This will help to locate nearby service provide. Since the both buyer (customer) and suppliers (farmers) are necessary to contact to each other in on-line ordering system, after buyer (customer) ordering product than supplier (farmers) can find the turn-by-turn navigation to transport products. Geographic representation is usually the more expressive way to present a large volume of information, than charts or tables. Here GIS delivers geographical data of both supplier and buyer to all users of the system.

4.2 Spatial Query and Analysis: With the comprehensive geo-database of buyers, suppliers and products, in such system any users can perform spatial query and analysis in LBS-based GIS without specific training. The users can find, for example, the supplier (farmers) who provide the most competitive price of agriculture's products with five miles. Suppliers (farmers) are able to analyze the purchasing behavior of buyers. Here is all analysis results can be presented in the form of maps [1].

4.3 Transportation and Logistics: Direct or indirect transportation of goods from suppliers to buyers is necessary. Although the in online business is to provide platform to which business activities can be performed without limitation on space and time [1], costs of physical transferring of goods must be considered.

5 Outline of Proposed System Architecture.

Conceptually, the electronic trading process is not limited by the geographical locations of both buyers (customer) and suppliers (farmers). The electronic trading should open for any buyers (customer) and supplier (farmers) in the agriculture industry all over the world. Mostly, in this platform of electronic market, buyer has relatively less knowledge about suppliers than in the conventional trading. In this designed conceptual model, descriptive information of both buyer as well as supplier provided by proposed system, geographical location of buyers give some implicit information about where to transport products. Form the supplier (farmers) point of view, they can sell their product anywhere at more prices, there is exits a B2C business model. There are no needs of any intermediates such as agents. The model is represented in the Fig 2.

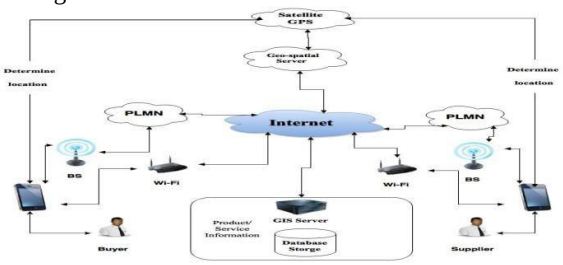

Fig 2 Conceptual system architecture proposed LBS-Based-GIS for Agriculture Trading Products.

Suppliers (farmers) determine their current location using satellite (GPS) by using mobile phone and log into the system using mobile application. Suppliers register the name & location of their shop/business/land/ etc. & upload details about the product they sell or the services they offer. All these details are stored in GIS server or product/service information server in the form of location based. The data in the server's storage entity contains product or service information (Product name, service type, pricing details, product/service details, geo-location information, current location, and feedback information from the both buyer and suppliers). After getting feedback from buyers, and if he wants to buy the product, then supplier can see the current location of buyer, it also shows all details about buyer like their name, residence address, and history. Now here supplier gets the order for particular product from particular buyer than here system assist supplier to transport product to rich buyer. For example, after getting order to product system can determine the shortest path between buyer and supplier, and system assist supplier to rich buyer by turn-by-turn navigation. On the other hand buyer point of view using system will be very simple as compare to supplier. The buyer determines current location using mobile application. After location upload buyer can see product information on their preferences. They also can compare price and details of the product if it's found in several nearby places. Proposed system also has potential to shows the current location of supplier, if the buyer wants to go to shop/business place of supplier and parches any product, than system assist to show turn-by-turn navigation to rich there. The mobile devices used by both buyer and supplier can connect to the internet either through the mobile operators network or a Wi-Fi network. Determining of current positioning can be performed by GPS, cellular network base station and Wi-Fi networks.

5.1 System Architecture Components.

5.1.1 LBS: Mobile phones have inherent features are their high portability and personal nature. They are used to store and access information at any time wherever the users go. The continuous availability of mobile phones and emerging capability of the network infrastructure to position of mobile phones on the earth allows new types of Spatio-temporal real time services that called Location Based Services (LBSs)[2].

5.1.2 GIS: GIS is an information system that is designed to work with data referenced by spatial or geographic coordinates both database system with capabilities for spatial [3], we can also say that in other words a GIS is both combinations of both database systems with capabilities for spatially reference data.

5.1.3 Mobile: Any mobile capable to determine current location and support to location based services application.

5.1.4 Satellite GPS: Global Positioning System (GPS) is a space navigation system that provides location and time information about current position of object in earth [10, 11].

6. Conclusion and Future Direction.

This study investigates the roles of GIS in E-commence systems. It is identified that there is a great potential to use GIS in E-commerce system to provide better services in location-based queries, business area analysis, and transportation analysis. Accordingly, system architecture is proposed in business for Agriculture Products.

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THE EFFECT OF E-RECRUITMENTAND SELECTION PROCESS IN EDUCATION SECTOR

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Abstract:

The education sector is one of the fundamental institutions of society. Educated young people are responsible, thoughtful and productive. Education is an essential component to improve the knowledge, expertise, and capabilities. Campus recruitment is the program conducted within educational institutes to provide jobs to students pursuing or in the stage of completing the program. Training and Placement Cells (TPC) are the most important part of the institutions that shape one's personality. Its basic objective is the placement of a person with befitting and adequate skills and qualification at the appropriate and best fitted job. **E-recruitment means online recruitment.** ***Online recruitment and selection process help the organization to attract and manage the competent workforce. The principle goal of this article is to comprehend the importance and procedure of online enrollment and determination process. In this article unique spotlight on the impact of online enlistment and choice procedure gave by training part.***

Keywords: Education, Training and placement Cell (TPC), Recruitment, selection and E-recruitment.

INTRODUCTION

E-recruitment, also known as online recruitment, is the practice of using technology and in particular Web-based resources for the tasks involved with finding, attracting, assessing, interviewing and hiring new personnel. Following factors are the part of online recruitment.

Education: India is an important educational center in the global education industry. Education performs many functions in the life of a man and in the society. The Education enables a citizen to become efficient to achieve the legitimate goals of his life. The good the placements, the better the college hold, true in the present competitive scenario.

Recruitment: The process of finding and hiring the well qualified candidate for a job opening, in a timely and cost effective manner. The recruitment process includes analyzing the requirements of a job, attracting a candidate for that job, screening and selecting applicants, hiring, and integrating the new employee to the organization. It is the step prior to selection.

Selection: Selection is the process of choosing the right person for the right job among those who are recruited. It is the negative process, whereas recruitment is the positive process. In recruitment the main focus is to attract more and more number of candidates towards the organization, whereas in case of the selection process, candidates are rejected at each step. Recruitment and selection together completes the process of hiring of personnel. Recruitment is the first half of the hiring process, whereas selection is the second half of the process.

Training and Placement Cell (TPC): Training and placement Cell is an integral part of the college. The main job of TPC is recruitment, selection, placement, training, and recruitment and selection process, etc. Although each and every activity is very important, but in this article the focus is on the effectiveness of online recruitment and selection process.

E-Recruitment: E-Recruitment is the practice of using social media, technology and in particular Web-based resources tasks to attract, interview and hire new personnel. All the colleges and institutions are the main sources of the recruitment. Some of them use the online campus placement. Many online recruitment agencies are also emerging as a popular and reliable source of recruitment.

Research Methodology:

Aims and Objectives The objective of this paper is to identify the factors related to the online recruitment in educational institutions and the challenges faced. The finding of this study may be helpful for the management of these institutions and the policy makers for developing a more effective and better education system. The paper examines the various arguments, cases and recommendations highlighting the issues and concerns. The scope of this paper is limited to the identification and the study of the major issues concerning online recruitment in education institutions.

Methodology Secondary data is used for the purpose of research. This paper is based on research compiled from numerous articles, working papers and case laws.

Literature Review:

- Dr. Sikarwar Nitin and Dr. Devangan Arvind (Sikarwar2014) have stated about place management

research paper entitled "Importance of Training and Placement Departments in Professional Education Institutes". The researchers reveal that Training & Placement Department has an important role to play in a student's future an indispensable pillar of the Institute. Researchers discuss that place management means employing people, developing their resources, utilizing, maintaining and compensating their services in tune with the job and organizational requirements, etc. Researcher denotes that placement cell is the team work supported by the faculty as well as a student coordinator. Researchers also discussed the activities performed by the placement cell. Training and placement cell plays an important role in a student's future and indispensable pillar of the Institute.

- Saravanan V. (Saravanan 2009) has pointed in his paper entitled "Sustainable Employability Skills for Engineering Professionals" that exploring the skill set required for sustainable employability of engineering graduates in India. The researcher stated that soft skill is very essential in the current global job market. The Researcher discussed all the seven soft skills and sub skilled using different model in higher education. The researcher also reveals the models for implementing soft skills such as 1) Stand alone subject model 2) embedded model. The academic support program and non academic support program can be offered through campus activities.

The Researcher concluded that we have to exploit the activities to get placed our student in the world's most admired and respected companies. We have to change the curriculum and teaching methodology. The technological institutions are expected as well as forced to work as a placement sourcing or a training firm. The syllabus has to be designed to enhance the employability skills of the individual candidates and help them to get placed in Multinational Companies.

Traditional recruitment vs. E Recruitment:

Training and placement Cell aims to attract,select and retain the best candidate to any given vacancy within the college. Training and placement officer to prepare the list of prospective companies and invite these companies to campus for recruitment. Training and placement officer prepare the data of pre-final year students and final year student with relevant information and shortlist the eligible students. The shortlisted data is to be transferred to the company.

Many big and small companies use online recruitment process. Recruiters advertise the job on the World Wide Web. Training and placement officer provide the company link and vacancy information through e- mails.Studentsfill the online application form as per the instruction given by the Company. The second and very important stepis to fill the applicants form as per the instruction given in the advertisement and attached the relevant document and photo. After successful submission of the form Student get the ID and Password. The Employment exam and the personal interview intimation get through email or on mobile. The employment exam and personal interview may be either online or offline. Recruiters select the eligible candidate and cater the students according to the respective job requirement. The interesting candidates for further selection process for respective jobs and inform them through e- mails. There is another wayalso, where the job seekers post their resume online and different companies seeking candidates for their jobs can search prospective candidates from there. Online recruitment and selection process is simply a process which includes in offline recruitment and selection process, but the only difference in both is that in case of online recruitment and selection process, all the steps are completed through the use of electronic resources, in particular the internet. It includes not only the use of computers, but also the use of mobile phones and other electronic devices for delivering the relevant information to the candidates. Information technology is used for the first stage of recruitment, i.e. advertisement for the post in the organization till the last stage of selection process i.e. the issue of appointment.

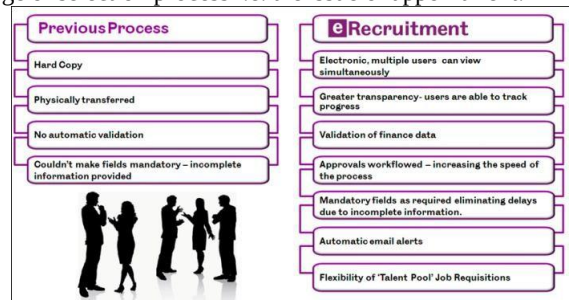

Fig -1 previous process of recruitment and e-recruitment process.

Benefits of online recruitment:

1. **Online recruitment provides Wide Geographical Area**

   Advertising online opens up a much wider candidate pool than advertising in print. This gives a much better chance of finding the right candidate for the job. The advertising is only part of the effective online recruitment.

2. **Online recruitment is cost effective**

   Putting a job vacancy on your own company website costs you nothing, while putting one on a job board usually only costs a couple of hundred pounds or euros. When you consider that a recruitment consultant fee for a candidate could be anything up to 20% of the first year's salary, and that advertising in a national newspaper can cost thousands, you can immediately see the cost savings possible with online recruitment.

3. **Online recruitment is quick**

   A job vacancy can be put on a job site in the morning, the first applications arrive by lunchtime, and a candidate interviewed by the end of the day. Of course, it isn't always like this. It isn't even often like this. But the fact that such things do happen so quickly gives an indication of just how quick recruiting online can be.

4. **Online recruitment gives you a better chance of success**

Traditional print advertising — be it national, local, or trade press — faces limitations: the success of a vacancy advertisement depends on people happening upon the ad on a particular page in a particular issue. Online recruitment is different. A job vacancy advertisement on a job board or website is there 24 hours a day, 7 days a week, for as long as you desire. Candidates can come back to it again and again. And from office administrator to Financial Director: they are all online.

5. **Online recruitment gives you a bigger audience**
   Many people new to online recruitment think it is only effective if you are looking for young net-savvy Facebook-type people. This simply isn't the case. Research consistently shows that the average age of candidates using online recruitment channels is around 35 years old. And the trend is up. Online recruitment, is now a standard part of most people's job hunting no matter what level or age.
6. **Online recruitment is easy**
   Employers can save high profile or particularly attractive CVs from an existing online search to build a priority database of pre-screened star talent for future use.Usually, all you need is your job description, a bit of time and a credit card. And, if you have any problems the job board sales team is there to help you. It's even easter to post a job on Twitter, LinkedIn or Facebook — and they are free.

Drawback of online recruitment

1. **Too many candidates**
   While you may wonder how too many candidates applying for your job could ever count as a disadvantage, it is a fact that dealing with inappropriate, irrelevant and bad candidates is the bugbear of many an HR manager. Candidate spam can waste a lot of time. However, with a bit of thought about what job site you use, how you write your job description and using candidate screening and filtering tools on job boards, it is possible to reduce the number irrelevant applicants.
2. **It won't always work**
   That's right. Online recruitment won't *always* work. Not every job vacancy you post can or will be filled online. There will always be difficult-to-fill jobs that can only be filled by recruitment consultants, headhunters or in other ways. However, most companies tend to hire for pretty standard job roles so this is seldom an issue. And with more and more job seekers choosing the web to look for jobs, and more and more job sites and job boards specializing in ever more diverse areas, those difficult-to-fill jobs are becoming fewer and fewer

Conclusion:

Online recruitment offers clear advantages over traditional recruitment methods. At the same time, however, one must be cognizant of the disadvantages inherent in online recruitment if only to avoid the pitfalls that they may produce.Online recruitment and selection process, simplify the process of recruitment. It not only helps to appoint the rightperson at the right place, but also help to maintain the database of the job seekers. It is a platform where the job seekers andrecruiters communicate and approach each other.In India online recruitment is on peek. Various online recruitment agencies have spread their network all over India

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VANET : IMPACT OF PROBING A LINK & MAINTAINING ROUTES ON PERFORMANCE MEASURES IN CROSS-LINK AND DETECTION PROTOCOLS

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ABSTRACT:

VANET uses position based routing where density of vehicles is low in urban scenarios. Here, Vehicles communicate with each other's via wireless communication devices. Topologies of nodes are rapidly changing. To avoid network partition so it is necessary to detect removable cross-links. Generally, Cross-links are generated when nodes in the network are highly mobile. Cross-link detection protocols uses greedy mode to forward packet. In greedy mode, it communicates with the vehicle which is at one distance hop. When a local maximum occurs, it changes into recovery mode. So, it uses cross-link detection and removal procedure. In existing scheme, it needs to observe cost of probing a link & maintaining paths of route and impact of it on various performance measures.

KEYWORDS: Cross-links, GPCR, Junction, PDR, End-to-end delay.

INTRODUCTION:

In VANET, natural roads present in urban area forms a planar Graph. Parallel & Intersecting roads form a Junction. Here, vehicles running on roads called as nodes. Nodes are constantly moving on the road. Thereby, topologies of nodes are rapidly changes. Vehicles communicate with each other's via wireless communication devices. Vehicles possess low to medium range transmitting communication devices and equipped with GPS devices to know the position of vehicle. Recovery strategy used in perimeter mode by cross-detection protocols, it is based on planar graph traversals. A planar graph traversal needs no cross-links. If no cross-links present then it recover routes. So, recovering routes is hard in practice. This is due to presence of radio obstacles and high mobility of vehicles. It does not ensure that there are no such intersections present between links. Secondly, cross-links are removed to find path in the network. When network density is found low then finding of routes creates high latency and transmission delay. Similarly, when paths of routing are updated to forward packets it also causes some delay.

Probing a link to detect Cross-links:

At junctions, a greedy decision is made to determine which neighbour brings the maximum progress towards the destination. If a local maximum is reached, the recovery mode, that is, the perimeter forwarding is used [1]. Most of the geographical routing protocols work when it receives a packet forwarded in perimeter mode. When it reached in perimeter mode, it firstly checks whether a forwarded packet come back to original position. It will be checked by observing probe field. If there is any loop present then the node further checks for any other cross-link present. Cross links can arise when nodes are highly mobile in the network.[5] If the loop can have adjacent cross-link then, the node decides which cross-link should be removed. It records the removable cross-link so that it will be avoids to route the packet in future.

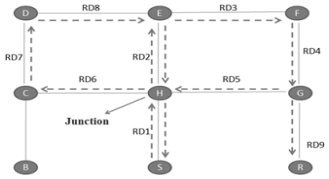

Fig1. Cross-links

In Fig1. Packet is forward via nodes on road RD1. When packets reaches at Junction H , no node found at Junction, so routing loop is form so packet travels from node S to empty Junction H, and to node E. Finally it comes back to source node S via Junction H. While it coming back to Node S, it detects a cross-link [RD5,RD6] which crosses cross-link [RD1,RD2].

POSITION BASED ROUTING PROTOCOLS FOR CROSS-LINK DETECTION:

VCLCR

If there are multiple cross-links present in the loop, the cross-links will be removed one at a time. In VCLCR it is found that The node can choose the next hop more accurately with the information stored in the packet.**[2]** It is interested to see the size of probe maintain by the packet during forwarding. In Geocross protocol, a packet would contain three main fields probe, UR (unroutable roads) & VF (visited faces). Here, probe contain road IDs and Junction IDs & missing junction IDs. If there is more than one vehicle at the same junction, they have the same junction ID [1] UR field contain unroutable road segment to void packet travelling along the segment. VF field confirms that the source node visits all faces. Here, the road IDs is recorded because non-junction nodes can able

to detect a loop-inducing cross-link and take necessary action. Assuming that more than one node present at a junction, so junction Id needs to be recorded. Similarly, missing Junction link is recorded to determine which link is supposed to be cross-link and has to remove. But here a problem is about maintaining packet information during routing. As packet travel number of roads, the list of road Ids grows. For number of road Ids, number of Junction Ids is present. For each of junction, when there is no road present at a junction, there is possibility to create two cross-links. So, it is observed that the cost of maintaining road Ids, Junction Ids, and missing junction Ids is too high.

VCLCR is a position based (geographic) routing protocol. Position based routing consists of class of routing algorithm. Position based routing is beneficial since no global route from source node to destination node need to be created and maintained.[7] It removes the cross links induced by the perimeter traversal of GPCR[8] protocol. It loop back packets as a cross-link detection probe. The goal of VCLCR in perimeter forwarding is to detect and remove cross links created by the lack of junction nodes to improve packet delivery.[10] In perimeter mode of packet forwarding, the packet maintains the route information. Here, this information is useful to check whether the packet is routed back to the source node. If such happens, it means there is a routing loop present and routing loop indicates possibility of cross link. Packet forwarding without cross link and loop back, When the packet is forwarding on a path without cross link, VCLCR performs the same as GPCR.[2] CLDP generates connected sub graph which uses geographic routing.

CLDP

In CLDP [6] each node repeatedly probes its adjacent links. Here probing checks if it is crossed by other links & uses right hand rule. It always records the links that would cross the currently probed link. When probe return back LCR uses a recursive search on the adjacent faces for cross-link. [1] to starting node. The node decides which exact cross-links is to be removed so that no network partition is created. Further, the current probing node give a notification to affected nodes about a link is unbootable. In future, such unbootable link is avoided to pass the packet.

LCR

Lazy Cross-link Removal [3] (LCR) is used to reduce message complexity. It only removes the loop-inducing the cross-links. LCR finds if there is no cross-links present in loop walk then it uses a recursive search procedure on the adjacent faces for cross-link. It is also found that LCR has higher PDR than CLDP. Although the approach improves the packet delivery ratio.

GEOCROSS

A Geocross is a novel event driven protocol, as a packet forms a loop when it come back to any node on previously visited road. The dynamic loops are detected and the path of the packet is stored in probe field.[5] The node finds that there is presence of cross-link in the loop. It further forwards the packet to the same loop so that adjacent cross-link can be detected and removed.

Its dynamic loop detection feature makes GeoCross suit mobile VANETs.[9] In geocross, as number of nodes increases, its latency also increases which would cause delay. Also, geocross do not select multipath to decrease overhead and to increase PDR.

CONCLUSION & DISCUSSION:

In VANET a planar graph is formed by natural roads in urban scenarios. Vehicles communicate with each other's via wireless communication devices. Nodes bear dynamic topologies. In position based routing protocols, a recovery strategy is adopted when forwarding of node is impossible. It dynamically detects presence of any loops by checking packet's probe fields. It uses probing a link to detect presence of cross-links. A junction node determines where to route packet. Absence of junction node creates possibility of cross-links. Here, It requires cross-link detection & removal. it is observed that the cost of probing a link & maintaining paths of route is too high. So, In cross-link detection & removal, it becomes necessary to enhance the probing scheme to reduce cost of probing as well as efficiently maintaining paths of route. Also, it is found that recovering of routes is very hard. It will affects on various performance measures. In a low vehicle density finding of routes creates high latency and transmission delay. Also, updating of routes to forward packet causes increase in end-to-end delay.

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SECURED ACCESS METHOD IN CLOUD COMPUTING

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Abstract:

Cloud Computing and its different services are becoming more popular day by day due to its different advantages like pay-as-you-use etc. The more rapidly the use of cloud computing has also increased severe security concerns. Open system and public interns has always remained a constant issue for its security concerns as like clouds are also suffering. Security issues concerned with cloud computing is like securing data, examining the utilization of cloud by cloud vendors. This paper introduces an innovative model for securing cloud computing using Role Based Access Control & finger print Authentication. This paper mainly proposes the secured access method for cloud computing using this RBACFA model.

Keywords: Security, Cloud Computing, RBAC, Fingerprint, RBACFA.

1. Introduction

1.1 Cloud Computing: Cloud computing provides a centralized pool of configurable computing resources and computing outsourcing mechanisms that enable different computing services to different people in a way similar to utility-based systems such as electricity, water, and sewage. In electricity, for example, people started to connect with central grids, supported by power utilities rather than relying on their own electricity production capabilities. This migration is beneficial in reducing the cost and time of production and in providing better performance and reliability [1].

Cloud computing is the next natural step in the evolution of on-demand information technology services and products. The Cloud is a metaphor for the Internet, based on how it is depicted in computer network diagrams, and is an abstraction for the complex infrastructure it conceals. It is a style of computing in which IT-related capabilities are provided—as a service‖, allowing users to access technology-enabled services from the Internet (i.e., the Cloud) without knowledge of, expertise with, or control over the technology infrastructure that supports them. The technical foundations of Cloud
Computing include Service-Oriented Architecture (SOA) and Virtualizations of hardware and software. The goal of Cloud Computing is to share resources among the cloud service consumers, cloud partners, and cloud vendors in the cloud value chain.

Cloud computing is a kind of computing system in which various hardware, software and applications share their facilities over the internet. In general cloud computing is a technology based on virtual technology. It is a technology in which virtual techniques are used to perform many tasks through the use of Internet only. Cloud computing is the technology which can be used only through internet. It provides a strong mechanism for retrieving the information by the advance computing and the virtual technology with the use of information technology. Cloud computing acts as central remote server to update the information and maintain data records. It gives the rights for storage and process of centralized data. So far, for the effective use of cloud computing, we require internet connection by the cost effective service of computing [2].

1.1.1 Types of clouds: There are different types of clouds that you can subscribe to depending on your needs. As a home user or small business owner, you will most likely use public cloud services.

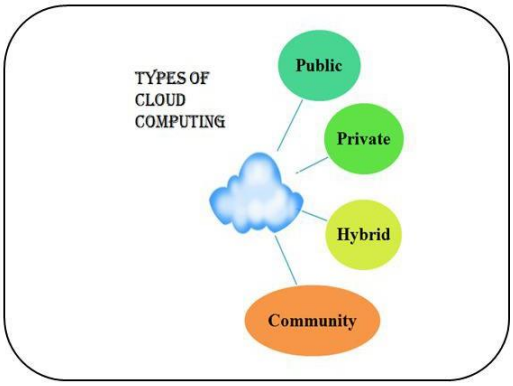

Fig1: Types of Cloud Computing

1. Public Cloud –A Public cloud is open cloud which allows general public to easily access system and services, e.g., e-mail.

2. Private Cloud - A private cloud is a cloud in which an organization is allowed to avail systems and services. It offers more security since its private in nature.

3. Hybrid Cloud - A hybrid cloud is essentially a combination of at least two clouds, where the clouds included are a mixture of public, private, or community. However its important activities are performed using private cloud and other activities using public cloud.

4. Community Cloud - A community cloud is shared among two or more organizations that have similar cloud requirements.

1.1.2 Service Models: Cloud Services made available to users on demand via the Internet from a cloud computing provider's.

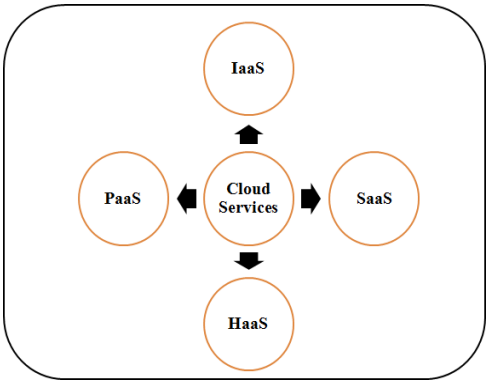

Fig 2: Services provided by cloud Computing

1. Software as a Service: SaaS is a complete operating environment with applications, management, and the user interface. In the SaaS model, the application is provided to the client through a thin client interface (a browser, usually), and the customer's responsibility begins and ends with entering and managing its data and user interaction. Everything from the application down to the infrastructure is the vendor's responsibility.

2. Platform as a Service: PaaS provides virtual machines, operating systems, applications, services, development frameworks, transactions, and control structures. The client can deploy its applications on the cloud infrastructure or use applications that were programmed using languages and tools that are supported by the PaaS service provider. The service provider manages the cloud infrastructure, the operating systems, and the enabling software. The client is responsible for installing and managing the application that it is deploying.

3. Infrastructure as a Service: IaaS provides virtual machines, virtual storage, virtual infrastructure, and other hardware assets as resources that clients can provision. The IaaS service provider manages the entire infrastructure, while the client is responsible for all other aspects of the deployment. This can include the operating system, applications, and user interactions with the system[10].

4. Hardware as a Service (HaaS): In Hardware as a Service (HaaS) user of the service leases the hardware for his own purposes. This option allows you to save on maintenance of the equipment, but in essence little different from "Infrastructure as a Service" except that you have the bare hardware on which you can deploy your own infrastructure using the most appropriate software [2].

1.2 Role Based Access Control (RBAC)

RBAC in which permission are associated with roles and users are assigned to appropriate roles. Mandatory Access Control (MAC), Discretionary Access Control (DAC) proved to be problematic for distributed systems and managing the access to resources and system become hard so new access model is introduced known as Role Based Access Control (RBAC).

Three primary rules are defined for RBAC Role assignment, Role authorization & Permission authorization [3].

The basic structure of role based access control (RBAC) [5] is shown in figure 3. It regulates user access control on the basis of the activities the users execute in the system. Roles define the meanings of the activities and are associated with a set of permissions which are operations on objects. Users are then assigned to certain set of roles and get the permissions associated with the roles. Users can activate any subset of the assigned roles in any sessions. A request made by users with certain roles is authorized if the user has currently activated a role which contains the permission. Advanced features of RBAC include role hierarchy and constraints. Role hierarchy defines partial order between roles. Senior roles inherit all permissions from junior roles. This feature in RBAC provides ease in system administration. Many security assurances can be achieved using RBAC such as least privilege, static and dynamic separation of duties and so on.

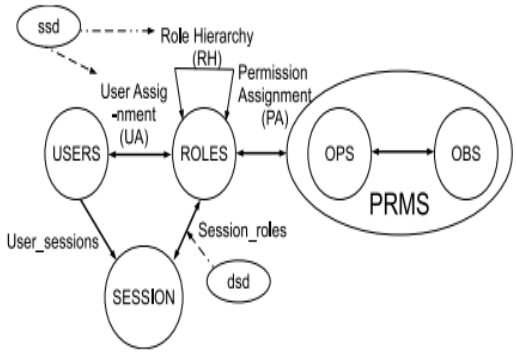

Figure 3 The Structure of NIST-RBAC model [5]

1.3 Biometric & Fingerprint Authentication

Biometric Encryption The word biometric is originated from Greek language and which refers the identification of human by their unique measurable biological characteristics. The common physical characteristic used for security purpose are finger print, eye, voice, hand and face. Here we use physiological measurements. Since they are unique to individuals, they are more reliable in verifying identity than token and knowledge-based methods. Biometric identification consists of two stages: enrollment and verification. During the enrollment stage, a sample of the designated biometric is acquired. Some unique characteristics or features of this sample are then extracted to form a biometric template for subsequent comparison purposes. During the verification stage, an updated biometric sample is acquired. As in enrollment, features of this biometric sample are extracted. These

features are then compared with the previously generated biometric template [6].

Fingerprint recognition is also called as fingerprint authentication (FA). It is a most popular biometric solution, refers to the automated method to confirmation the identity.

- **One to One Matching**:- It is applied where Input fingerprint is matched directly with only one fingerprint, which produce result either matched or not matched. Example: Secure Login using Email ID, Laptop & Desktop Device Protection, etc.
- **One to Many Matching**:- It is applied to specified areas where number of applicant store their fingerprint. The Input fingerprint is matched with number of fingerprint stored to uniquely find person identity. Example: Attendance Management, Secure Login without using Email ID, etc[12]

2. Related Work RBAC & FA

2.1 RBAC

Role based Access Control (RBAC) model is more emphasized recently due to its simple, scalability, fine-grained control ability, and has been proven to be efficient to improve security administration with flexible authorization management [7]. In this context, access is the ability of an individual user to perform a specific task, such as view, create, or modify a file. Roles are defined according to job competency, authority, and responsibility within the organization. Within an organization, Roles are created for various job functions. The permissions to perform certain operations are assigned to specific roles. Members of staff [or other system users are assigned particular roles, and through those roles assignments acquire the computer permissions to perform particular computer system functions. Since users are not assigned permission directly, but only acquire them through their role [or roles], management of individual user rights becomes a matter of simply assigning appropriate roles to the user's account, simplifies the common operations, such as adding a user, or changing a user's department. Three primary rules defined for RBAC.

1) **Role assignment**:- A person can exercise a permission only if the person has selected or been assigned a Role.

2) **Role authorization**:- A person's active role must be authorized for the person. This rule ensures that users can take on only roles for which they are authorized.

3) **Permission authorization**:- A person can exercise a permission only if the permission is authorized for the person's active role. With rule1 and rule2, this rule ensures that users can exercise only permission for which they are authorized

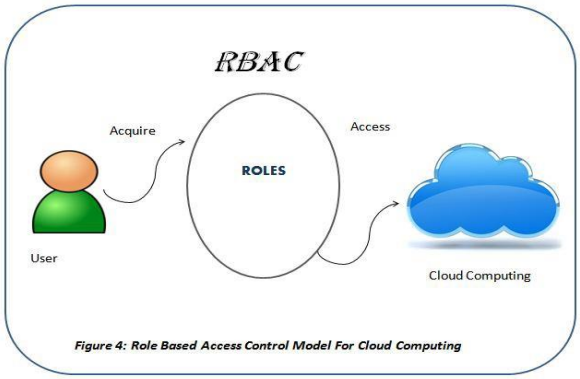

Figure 4: Role Based Access Control Model For Cloud Computing

Advantages of RBAC:

- It provides hierarchy roles of access based on many applications.
- Roles are assigned based on the least privilege for the particular object, so this will minimize the damage of information by intruders.
- Separation of roles will be maintained so there is no chance of misuse of information because each user assigned to individual roles. This separation of roles can be either static or dynamic.
- RBAC provides the classification of user based on their executing environment.
- Role Based Access Control has following administrative policies. Those are Centralized, Hierarchical, Cooperative, Ownership, and Decentralized. In large distributed system centralized access right is not appropriate.

2.2 Fingerprint Authentication (FA)

A fingerprint in its narrow sense is an impression left by the friction ridges of a human finger. In a wider use of the term, fingerprints are the traces of an impression from the friction ridges of any part of a human or other primate hand. A print from the foot can also leave an impression of friction ridges.

Finger ridge configurations do not change throughout the life of an individual except due to accidents such as bruises and cuts on the fingertips. This property makes fingerprints a very attractive biometric identifier. Fingerprints of an individual have been used as one of the vital parts of identification in both civil and criminal cases because of their unique properties of absolute identity. Fingerprint-based personal identification has been used for a very long time. Owning to their distinctiveness and stability, fingerprints are the most widely used biometric features. Fingerprint recognition or fingerprint authentication refers to the automated method of verifying a match between two human fingerprints. Fingerprints are one of many forms of biometrics used to identify individuals and verify their identity [8].

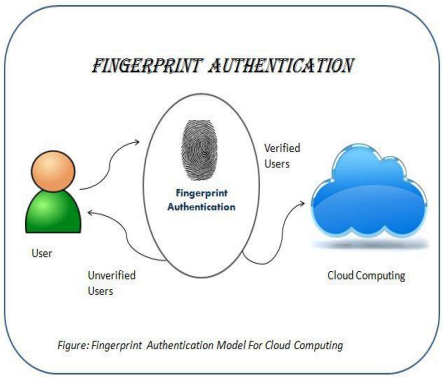

Figure: Fingerprint Authentication Model For Cloud Computing

Advantages of FA

1. Very high accuracy.
2. Is the most economical biometric PC user authentication technique.
3. it is one of the most developed biometrics
4. Easy to use.
5. Small storage space required for the biometric template, reducing the size of the database memory required
6. It is standardized [9].

1. Proposed Model RBACFA

The hybridization of RBAC and Fingerprint Authentication to gather is known as RBACFA (Role based access control with fingerprint Authentication. In Role Based Access Control (RBAC) model the user are having access to cloud based on the roles assigned to them. Roles are defined based on job functions. Permissions are defined based on job authority and responsibilities within a job function. Operations on an object are invocated based on the permissions. The object is concerned with the user's role and not the user. Biometric authentication is a technology that helps to verify the identity of a human based upon a particular trait. Fingerprints are one of the most common ways to identify an individual. When both the RBAC & FA is used together the problems or disadvantages with any of the single secured access model for cloud computing can be overcome to most of the extent.

In the RBACFA model the users will be assigned with roles and based on that role permissions will be defined at the same time the user will get authenticated by the fingerprint in order to check that the particular user is the authorized user who will avail all the services provided to particular role. This RBACFA will help the cloud computing to scale the user access as well as provide security based on the defined model of role based and fingerprint. RBACFA will help the cloud computing to prevent unauthorized access of data even within the role specified to particular user.

RBACFA will help cloud computing user and the third party cloud vendors to keep track of use of cloud as well as provide secure access of the data to the authenticate users based on their role and fingerprint authentication. RBACFA is strong and more robust as compared to one of the single RBAC and Fingerprint Authentication. The RBACFA will also help cloud vendors to keep track of the usage of cloud services based on the role defined and the fingerprint used for the authentication for usage of services to the cloud computing.

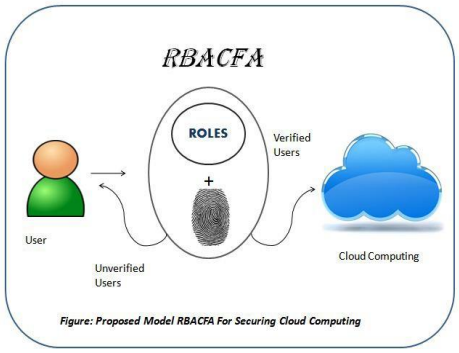

Figure: Proposed Model RBACFA For Securing Cloud Computing

Benefits of Proposed RBACFA

1. **Secure Authentication** – the user will get access to cloud based on identity who you are (fingerprint) versus what you can access based on role defined in (RBAC).
2. **Ease of Use** – the user can have quick access to data based on the roles defined and identity of fingerprints.
3. **Accountability** – The RBACFA restricts access to clouds, protects data on cloud and provides audit trail minimizing misuse for the third party (i.e. Cloud Vendors).
4. **Speed** –RBACFA allows the cloud user to get fast secure access to data based on their roles defined.
5. **Quick Return On Investment** – RBCAFA reduces helpdesk costs and increases productivity.
6. **More Secured than RBAC & Fingerprint Authentication (FA)-** RBACFA is more secured than any one of the single RBAC or FA.
7. **Limiting Number of user per role :** The number of user assigned to particular role will be limited as well as that particular user will be authenticated with his fingerprint then only access will be provided to cloud computing.
8. **Limiting operations on timely basis:** RBACFA helps cloud vendors with the term Pay as you Use of cloud computing the track of use can be kept very easily and with authentication of fingerprint can track the access made by particular user based on its roles and fingerprints.

2. Conclusion:

Cloud computing as new & speedily adaptable technology in IT industry has both positive factors and negative factors. The major effect depends on whether we can adapt its strengths and avoid its disadvantages. The most important and serious issue is clouds security. In this paper we have seen different authentications models like RBAC and Fingerprint authentication for security with their characteristics advantages &

disadvantages. RBACFA is proposed model for access control and security of cloud computing. RBACFA model is extended model for both RBAC & Fingerprint Authentication.

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DIGITAL LIBRARY INITIATIVES IN INDIA AND THEIR ROLE IN HIGHER EDUCATION

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Abstract

Higher education and research institutions in India have made a significant contribution to the transmission of knowledge. The libraries of those institutions play a key role in acquiring and disseminating information for academic and research fields. Digital libraries are a way of making educational and research data and information available to faculty, researchers, students and others at the institutions and worldwide. In India, so many digital library initiatives were undertaken initially with a view to preserve the art, culture and heritage of our country by government and academic institutions. Some special libraries are also engaged in digital library initiatives in a limited way. This paper discusses about some major initiatives of digital library undertaken in India. It also briefly focused digitization, software's, challenges and evolving role of digital libraries in higher education.

Keywords

Digital library, Open Source Software, ETDs, Open Access, Higher Education.

Introduction

Digital libraries are the 21st century knowledge centers a new generation libraries and increasingly a standard for the emerging web based information environment and services. Digital library is a collection documents in organized electronic form, available on the internet or on CD-ROM disks. Traditional methods of collecting, storing, processing and accessing information have undergone a massive transformation due to the growth of virtral libraries, digital libraries, online databases and library and information network. Digital library has been applied to a wide variety of offering from collections of electronic journals to software agents that support inquiry based education to collection of email to electronic version of a public library, to personal information collections, and even to the entire internet (vivek vardhan, 2014)

Few Definitions of Digital Library

1) The Digital Library Federation (USA) agreed in 1999 on the following working definition of a digital library. "Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities" (DLFS 99).
2) "An informal definition of a digital library is a managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network."

Salient Features of Digital Library

Digital libraries bring significant benefits to the users through the following features:

i] Improved access through the internet and CD-ROM.
ii] Wider access of documents
iii] Improved information sharing through the appropriate metadata and information exchange protocol.
iv] Improved preservation of special & rare documents.

Software for Digital Library

There are many digital library software and open source are available and most of them are conform the international standards. Following some of the popular open source software for digital libraries are using in internationally are Greenstone, D. Space, E. Prints, Fedora etc.

Greenstone	http://www.greenstone.org
D. Space	www.dspace.org
E. Prints	http://www.eprints.org/
Fedora	www.fedoraproject.org

Digitization

Digitization is the representation of an object, image, sound documents or an analog signal by a discrete set of Its points. Digitization involves the process of converting print & other material, information into digital format. Some benefits of digitization are to create content of databases to facilitate access, preservation of documents. Easy Accessibility, growth of literature, Easy transmission of documents, Easy handling of rare books, Save the efforts, time & manpower of libraries.

Generally following stages involves in digitizing documents for a digital library:

i] Registering
ii] Scanning
iii] Optical Character Recognition (OCR)
iv] Proofreading
v] Reformatting
vi] Indexing
vii] Final Version

Major Digital Library Initiatives & Digitization Programs in India

The concept of digital libraries in India began in the mid 1990s with the spread of information technology, the internet and the support of the central government. In 1996, this concept was recognized during the conference on Digital Libraries Organized by the Society of Information Science at Bangalore. Though a few libraries have made attempts earlier in this direction, the digital library initiative in India is still at budding stage. Digital library initiatives which have developed in India as an Open Access Channels to access information and working as a form of institutional repositories, R&D in higher education system. Some of the important digital library & programs initiated across the country are reviewed in below.

Digital Library Initiatives	Host Institution	URL Address
Digital Library of India (DLI)	National Institute of Science IISC. Bangalore	www.dli.cdacnoida.in
Kalasampada : Digital Library Resource for Indian Heritage (DL-RICH)	(IGNCA) Indira Gandhi National Centre for Arts	http://ignca.nic.in/dlrich/aboutd/rich.html.
Traditional Knowledge Digital Library (TKDL)	National Institute of Science, Communication Resources (NISCAIR)	www.tkdl.res.in
Nalanda Digital Library	NIT Calicut	http://www.nalanda.nitc.ac.in/
National Science Digital Library (NSDL)	National Institute of Science, Communication & information Resources (NISCAIR)	www.nsdl.res.in
Learning Objects Repository	Consortium for Educational Communication (CEGUGC)	-------
Archives of Indian Labour	V.V.Giri National Labour Institute	www.indialabourarchives.org
Down Memory Lane	National Library of India, Calcutta	www.nationallibrary.org
Indian National Digital Library in Engineering Science & Technology	AICTE-(MHRDI)	http://paniit.iitd.ac.in/indest/
Vidyanidhi	University of Mysore	http://www.vidyanidhi.org.in/
Khuda Baksh Oriental Library	--------	http://kblibrary.bih.nic.in
National Mission for Manuscrips	Dept. of Culture, GOI	http://www.namami.org/digitization
Centrae for Media & Cultural Studies (CMCS)	Tata Instituteof Social Sciences	http://cmcsdigitalauch/search
etd@IISC	IISC, Bangalore	http://etd.ncsi.iisc.ernet.in
Muktabodha Digital Library	----------	http://muktalibs.org/digital
UGC-Infonet e-journal Consortia	UGC.New Delhi(INFLIBNET)	www.inflibnet.ac.in/infonet
India Parliament Library	NIC	----
Indira Gandhi Memorial Library, University of Hyderabad	-----	----
National Chemical Labouratory Pune	NCL, Pune	------
Librarian's Digital Library	DRTC, Bangalor	------

Challenges in Developing Digital Libraries

Digital libraries have attracted attention of academic, commercial and industrial circles. In the transitional phase there are certain issues which need to be addressed for development of such libraries to meet the expectation of stakeholders. (Chahal, 2011). Some of the major challenges in developing the digital library are given below:

i] Technical Infrastructure and Architecture
ii] Building Digital Collection
iii] Conversion of Media into Electronic Form
iv] IPR Issues
v] Naming of Identifiers
vi] Preservation of Digital Material

vii] Digital Assets and Metadata management

Digital Libraries and Higher Education

Libraries have been the companions of higher education for many centuries. They have preserved and given access to all sorts of material-books manuscripts, rare documents, journals, maps, etc- that have supported the process of learning. They have also been keepers of materials produced by students, faculty and researchers-graduate projects, theses and dissertations, technical reports etc. – in this sense they have functioned as the institutional archive.

When a digital library is created, all the functions that have been performed by the traditional library will have parallel in the digital and networked environment. A digital library can perform functions that are impossible with traditional situation and that aggregate value to higher education. Accessibility, availability, interaction customization and reuse are strong reason to use digital libraries for higher education.

The use of digital libraries makes theses and dissertations much more available & visible. Besides this, ETDs (Electronic Theses and Dissertations) allow multimedia to be used making the works richer more attractive in higher education. Digital libraries are suitable to hold and distribute open access materials they can manage contents and with DAI – PMH data providers, make metadata available for harvesting for union catalogs. It is important to asses the importance of open access to higher education. Digital libraries in their role of courseware and reference holder and distributors are of paramount importance in distance learning and training. Current trends in continued education make digital libraries very useful, specially due to the possibility of customization of contents to meet individual needs.

Conclusion

Digital technology, Internet connectivity and physical content can now be dovetailed, resulting in a digital library. Digital libraries and digitization of print materials can preserve resources in art and culture, education, science & technology, literature and humanities, media and entertainment and cultural heritage and history. A substantial number of libraries and information centers have initiated digital library projects including databases and e-journals or by digitizing their own archivally- valuable collections in India. Hundreds of thousands of ancient books in palm leaves, urgently need digitization to preserve cultural heritage of India.

Most higher education and research institutions in India are funded and controlled by the central and state governments many institutions need funds, manpower and guidelines from the UGC and their state government. Digital libraries and digitization are crucial for disseminating and preserving knowledge. So that our heritage of knowledge and culture can the ravages of time and present and future generations can benefit and be guided by them. On a global level digital libraries have made considerable advances both in technology and its application. The digital library initiative in India is still at a nascent or embryonic stage. But with the initiative like digital library policy and or digital India, it can also be said that the nation is serious about digital library implementation.

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NET-BASED FARMING SUSTAIN SCHEMES

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Abstract

In India Farming is a difficult Scheme, related to a wide range of environments, which is difficult to deal with perfectly. Net-based farming sustain Scheme has been proposed to applicable sustain farming activities, which combines net technologies and farming Schemes. In this paper we evaluate the basic characters of the net-based farming sustain Scheme and then describe the functionalities of the Scheme.

1. Introduction

Advances in computer technologies have profoundly influenced the use of computerized sustain in various activities. With the unlimited growth of the Internet and ever expansion of information on the Net, we have come to a new information era]. The Net provides new medium for storing, presenting, gathering, sharing, processing and using information. The benefits of the Net technology have been shown as following:

1. The Net provides distributed infrastructure for information processing.
2. The Net is used as a channel to discuss one of the most popular sustain Schemes,.
3. The Net can deliver timely, secure information and tools with user friendly interface such as Internet Explorer and Netscape.
4. The Net has no time or geographic restrictions. Users can access the Scheme at any time, any place.
5. Users can control and retrieve results remotely and instantly With the rapid development of information technology

Computerized sustain Schemes are emerging more and more diverse groups, such as learning sustain Scheme, education sustain Scheme, research sustain Scheme , etc.

Farming plays a vital role in human development. In the developing countries, farming must multiply its productivity for food security and keep the people from undernourishment or outright famine; in the industrial countries, farming must continue to increases its productivity to provide enough raw materials for the textile, plastics, and other industries, and fulfill the need for expanding populations.

There are many definitions of farming: "Farming means the science or art of Humanizing the land, growing and harvesting crops, and raising livestock. The art of making land more productive is practiced through the world in some areas by methods not far removed from the conditions of several thousands of years ago, and other areas, with the aid of science and mechanization, as a highly commercial type of endeavor."

"Farming science, the science dealing with farm production, including land cultivation, water control, crop growing and harvesting, animal husbandry, the processing of plant and animal products, engineering, economics, and other related matters. The farming industry that is the focus of study includes farming, concerned with production; service industries, concerned with making or supplying machinery, buildings, fertilizers, and pesticides; and the first purchasers of farm products, such as processors, distributors, and marketing boards."

"Farming is the Schematic raising of useful plants by human management. Food production is the main reason for farming, but humanized plants also furnish substances useful as textile fibers, dyestuff, medicines, and ornaments. Gathering wild plants for food or other purpose is not farming. In a broad sense, farming often includes animal husbandry."

"Farming encompasses production of food, fiber, wood products, horticultural crops, and other plant and animal products and includes: financing, processing, marketing, and distribution of farming products; farm production supply and service industries; health, nutrition, and food consumption; the application of science; the use and conservation of land and water resources; development and maintenance of recreational resources; related economic, sociological, political, environmental, and cultural characteristics of the food and fiber Scheme."

We can conclude from above discussion that farming is a difficult Scheme, closely related with natural Schemes and social Schemes. Farming Scheme exchanges substance, energy and information with natural Scheme, and has great effect on society progress, natural environment. In order to understand the farming Scheme and the relationship with human beings, some authors proposed that the farming Scheme be comprised of three sub Schemes: production-sub Scheme, management-sub Scheme and research-sub Scheme, and each one can be divided into more specific sub Schemes, as shown in figure 1.

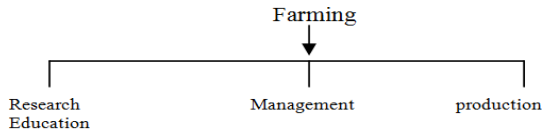

Fig.1 The structure of farming Scheme

Due to the difficulty of farming Scheme, we found it very difficult to deal with it correctly and perfectly. We have confronted series of challenges due to the frequent and unexpected fluctuation, shortage of resources within Schemes:

Lack of resource: water, arable land, forestry resource, energy, and fertilizer;

Ecology degradation: land degradation;

Toxic waste: water toxic waste, land toxic waste, air toxic waste; the weather warmer;

Gap between poverty and rich enlarged;

The frequency of farming disaster; Generally speaking, the farming Scheme encompasses more than namely education Scheme, research Scheme, learning Scheme etc. We aim to study the issues and challenges brought on by the Net technology for various sustain Schemes and try to find out how applications and adaptations of existing methodologies on the Net platform can benefit our decision-makings and various activities in farming.

2. The Basic Characters of the Sustain Scheme

I try to discuss several interrelated characters one by one as the follows:

2.1. Research-education sub Scheme:

2.1.1. Farming research sub Scheme. Farming research focuses on more diverse objectives than other science research, including to crop production, animal husbandry, water management, land cultivation, pesticide /herbicide application, nutrition of nitrogen, etc. The research model proposed by Author is suggested applicable to farming research sub Scheme; we lay out the whole research process into 7 phrases:

Idea-generating phase. The phase aims to identify a study topic of interest. It may also be referred as the preparation or the exploration phase. Literature search and reading plays important roles in this phase.

Problem-definition phase. The objective is to precisely and clearly define and formulate study question from general watching generated from the previous phase. Problem definition involves careful conceptualization and abstraction. Precisely defined problem renders. It easier to find related and solved problems, as well as potential solutions.

Procedure-design/planning phase. The objective is to make a workable research plan by considering all issues involved, such as expected findings and results, available tools and methodologies, experiments designs, Scheme implementation, time and resource constraints, and so on. This phase deals with planning and organizing research at strategic level.

Watching/experimentation phase. The objective is to observe real world phenomena, collect data, and carry out experiments. Depending on the nature of the research disciplines, various tools and equipment, as well as different methods, can be used.

Data-analysis phase. The objective is to make sense out of the data collected. So we can extracts potentially useful information from data. Statistical software packages can be used.

Results-interpretation phase. The objective is to build rational models and theories that explain the results from the data-analysis phase. It is necessary to investigate how the results help answer the research question, and how this answer contributes to the knowledge of the field. The connections to other concepts and existing studies may also be established.

Communication phase. The objective is to present the research results to the research community. Communication can be done in either a formal or an informal manner. Books and scientific journals are the traditional communication media. Net publication is a new tool of communication. Oral presentation at a conference, or discussion with colleagues, is an interactive means of communication.

2.1.2. Farming education sub Scheme. Farming education means training people to produce, process, and distribute food or fiber, and spreading scientific and technical information related to all phases of such work. It strives to help the people of the world improve the quantity and quality of products indispensable to human life. Farming education covers different levels from children's class in village schools to graduate study in universities. Education and training are widely acknowledged as important contributors to national economic development and social well-being,

In general, farming education is divided into three level: higher farming education, for example education in universities and institution; vocational farming education, including various kinds involved knowledge and skills in farming; and the farming training for the adults or the youth. So a farming sustain Scheme should fulfill all such needs.

2.1.3. **Farming extension sub Scheme.** The farming extension sub Scheme plays key role for farming development. The main function of extension is to disseminate useful information, including the research results in farming, home economics, and related subjects. As well as to helps families to apply such knowledge to real problems at farm, home, and community level . Such function are shown as the follows :

First, it is medium between the farming research institutions, universities and farmers;

Second, it fills the gap between farming technology into real practice;

Third, it transfers the skills and knowledge to the farmers as to improve their living standard and farming practices;

Forth, it helps farmers to make decision.

Firth, it helps extension agents or organizations effectively and efficiently identify the goal and which decision it tries to help its farmers,

Last, extension managers can effectively deal with administrative affairs.

2.2. Production sub Scheme

Farming production sub Scheme is the core and basis component of farming Scheme, which can be further divided into three levels: pre-production Scheme, production Scheme, and post-production Scheme.

2.2.1. Pre-production and post-production sub Scheme. The farming pre-production sub Scheme includes all various departments, which provide production material and service for farming. The main tasks include the manufacture and maintenance of farm machineries and other farming facilities; the production of chemical products such as fertilizers and pesticides, the production of farming construction materials, and supplementary materials, the production of farming transportation facilities, the processing of seeds and feed; the circulation, transportation, information and finance service, and etc.

The farming post-production sub Scheme deals with processing the primary products such as grain, oil, food, feed, etc.

2.2.2. Production sub Scheme. Production sub Scheme is a main component, which directly supplies food to human being and raw material to industry. It is comprised of five parts: planting, forestry, animal husbandry aquaculture, etc. The production may effected greatly by land, weather, water etc. Farmers need to overcome all kinds of constraints due to resources limits, etc., in order to get higher yield and better quality products. A combination the net-technology and farming expert Scheme or farming decision sustain Scheme will be very helpful to farmers so that they can get to under certain latitude and land type. Which is suitable for specific crop, how to control the insects, what kinds of Feed stuff to be feed on the livestock etc.

2.3. Farming management sub scheme

2.3.1. Farming administrative sub scheme.

Farming administration is a concept that the government and the ministry of farming should formulate guidelines, provisions, plans, strategic decisions, and policies of farming development and be responsible for carrying out policies for different purposes, such as, production, distributing, financial, credit, labor, etc.

2.3.2. Farming market-management sub Scheme.

Though the transformation from planning-economy to market-modulated economy has taken place since 1980,s, some major conflicts have occurred. One most outstanding contradiction is that circulation channels of the primary products can't meet the demands of market. Market-management by the governmental macro-manipulation can help to stock and protect the crucial primary products which related to the national economy and the people's livelihood. For example, under the market economy, some crucial primary products may overstock largely due to the years' bumper harvest, quantity and quality problems. The price will decrease too much once the primary products can't sell successfully, which leads to the loss of farmers' interest to produce in next year. Under such condition, the government should generate the protective prices to ensure the farmers' essential income. On the other hand, when the farmers are faced with serious natural disasters that they reject to sell their farming products, some farming products will be in serious shortage and result in panic buying and high-rising prices, which can't be accepted by the consumers. In order to deal with such problems, governments should have enough stock of crucial farming products to stabilize prices in the market.

It is obvious that good management will be of great benefit not only to nation but also to farmers and others. So NBFSS should be able to help decision makers for better solution.

3. Functionalities of the net-based farming sustain Scheme

In order to sustain a large spectrum of farming activities, NBFSS must be flexible and has much functionality. This section summarizes the functionalities and required computer technologies.

3.1. Decision sustain or expert Scheme:

There are many factors, which can affect the farming activities. It's not an easy thing to deal with all kinds of farming problems effectively and correctly no matter to the producers or the governors or others related. Farming decision sustain Scheme can serve as an important and very useful tool for farmers and decision-makers for solution to various problems. They can reach an optimal decision based on many considerations. For example, farmers can get information about what kind of crop should be grow under different land type and how to choose the crop varieties, how to fertilize, how to irrigate, how to prevent the diseases and insects, etc.

3.2. Jointly work sustain:

Jointly work sustain provides a sound environment where all experts for farming in different areas can work together virtually, and significantly promote farming development.

Together is one kind of jointly work sustain, which is an open meta-laboratory that spans multiple geographical areas with jointers interacting via electronic means. It gives a good chance to scientists to share research instruments, data and information, to exchange experiences, and to accelerate the development and dissemination of knowledge.

Audio/video conferencing is another kind of jointly work sustain. The virtual conferencing greatly sustains interaction between scientists, farmers, governors, extension agents and any others who are engaged in farming, and it provide a friendly environment to communicate with each other. Lots of the farming problems can be communicated and solved effectively and efficiently with such conference. And the audio/video conferencing can act as a virtual classroom for farming education too.

Chat room is another component of the jointly work sustain, which will facilitate the communications between the users. In the farming sustain Scheme there are various

chat rooms in accordance with the difference of sub Scheme, for examples education chat room for education sub Scheme, extension chat room for extension sub scheme etc. The users who want to communicate with the extension agents can enter the extension chat room.

News walls Scheme (NWS) is integrated into the Jointly work sustain Scheme. The same as the chat room, it is comprised of education NWS, the extension NWS and so on, so the users can easily keep a track of previous discussion contents in which they are interested.

Furthermore, e-mail is a essential tool suitable for exchanging information too.

3.3. Information sustain

Information sustain includes information collection, management, retrieve or searching, exchange of for farming usage.

Farming production is closely involved with many factors a great matter, such as land, precipitation, temperature, altitude, price of the products, transportation etc. So it is very essential to continuously collect information in different aspects and construct database, which is easy for searching and reuse later on.

Good searching sustain is very important for scientists, farmers, governors, and others. The scientists can find information of interest efficiently by researching sustain. With searching sustain, the farmers can get to know information about crops varieties, livestock, price of farming products etc. The extension agents can collect new information of farming technology by searching.. The governors and other decision makers can also benefit greatly from the searching sustain..

Exchange of information allows users to experiences, skills, data etc, thus to promote farming development. Researchers can upload research papers, others can share such information by downloading this; and government or administrator can publicize farming policies, rules; Extension agents can disseminate and popularize new technology through the Scheme, at the same time farmers can keep up with the progress of new farming technology.

4. Conclusion:

Farming Scheme is a difficult huge-Scheme, comprised of three sub Schemes namely research-education sub Scheme, production sub Scheme and management sub Scheme, and there are distinct different characters for each sub Scheme.

Net-based farming sustain Schemes are based on the combination of farming science and computer science. By synergizing computer technology and farming science, we examine the characteristics of farming sustain Schemes with focus on the assembling and integration of existing computer Schemes to farming sustain Scheme. Some preliminary and scattered ideas on the topic were discussed. The NBFSS may play a significant role in farming development in future.

Net-based farming Sustain Schemes will be a very important research topic in the domain of Net Intelligence. Net-based farming sustain Scheme can be used by researchers, producers, farmers and decision makers, etc., for various activities. Net-based technologies make the NBFSS easy to use and access.

The functionalities of the NBFSS are decision sustains, jointly work sustains, and information sustain.

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A STUDY ON ADVANTAGES AND DISADVANTAGES OF E- BANKING

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Introduction

The advent of Internet has initiated an electronic revolution in the global banking sector. The dynamic and flexible nature of this communication channel as well as its biquitous reach has helped in leveraging a variety of banking activities. Electronic banking, also known as electronic funds transfer (EFT), is simply the use of electronic means to transfer funds directly from one account to another, rather than by cheque or cash. You can use electronic funds transfer to Have your paycheck deposited directly into your bank or credit union hecking account. Withdraw money from your checking account from an ATM machine with a ersonal identification number (PIN), at your convenience, day or night. Instruct your bank or credit union to automatically pay certain monthly bills from your account, such as your auto loan or your mortgage payment. Have the bank or credit union transfer funds each month from your checking account to your mutual fund account. Have your government social security benefits check or your tax refund eposited directly into your checking account. Buy groceries, gasoline and other purchases at the point-of-sale, using a check card rather than cash, credit or a personal check. Use a smart card with a prepaid amount of money embedded in it for use instead of cash at a pay phone, expressway road toll, or on college campuses at the library's photocopy machine or bookstores. Use your computer and personal finance software to coordinate your total personal financial management process, integrating data and activities related to your income, spending, saving, investing, recordkeeping, bill-paying and taxes.

What is Internet Banking

Internet Banking refers to the banking services provided by the banks over the internet. Some of these services include paying of bills, funds transfer, viewing account statement, etc. Banks also deliver their latest products and services over the internet. Internet banking is performed through a computer system or similar devices that can connect to the banking site via the internet. Nowadays, you can also use internet banking on your mobile phones using a Wi-Fi or 3G connection. With the ease of availability of cyber cafes in the cities, it has become quite popular.

Banking is now no more limited in going and visiting the bank in person for various purposes like depositing and withdrawing money, requesting for account statement, stop a payment, etc. You can do all these tasks and many more using the online services offered by the banks. You can also keep a track of your account transactions and balance all the time. Now getting passbooks updated to know the total account balance is a matter of past.

History of online banking

When the clicks-and-bricks euphoria hit in the late 1990s, many banks began to view Web-based banking as a strategic imperative. The attraction of banks to online banking are fairly obvious: diminished transaction costs, easier integration of services, interactive marketing capabilities, and other benefits that boost customer lists and profit margins. Additionally, Web banking services allow institutions to bundle more services into single packages, thereby luring customers and minimizing overhead.

First online banking services in the United States

According to "Banking and Finance on the Internet," edited by Mary J. Cronin, online banking was first introduced in the early 1980s in New York. Four major banks—Citibank, Chase Manhattan, Chemical and Manufacturers Hanover—offered home banking services. Chemical introduced its Pronto services for individuals and small businesses in 1983. It allowed individual and small-business clients to maintain electronic checkbook registers, see account balances, and transfer funds between checking and savings accounts. Pronto failed to attract enough customers to break even and was abandoned in 1989. Other banks had a similar experience.

Online banking in the U.K.

Almost simultaneously with the United States, online banking arrived in the United Kingdom. The UK's first home online banking services known as Homelink was set up by Bank of Scotland for customers of the Nottingham Building Society (NBS) in 1983. The system used was based on the UK's Prestel viewlink system and used a computer, such as the BBC Micro, or keyboard (Tandata Td1400) connected to the telephone system and television set. The system allowed on-line viewing of statements, bank transfers and bill payments. In order to make bank transfers and bill payments, a written instruction giving details of the intended recipient had to be sent to the NBS who set the details up on the Homelink system. Typical recipients were gas, electricity and telephone companies and accounts with other banks.

Details of payments to be made were input into the NBS system by the account holder via Prestel. A cheque was then sent by NBS to the payee and an advice giving details of the payment was sent to the account holder. BACS was later used to transfer the payment directly. Stanford Federal Credit Union was the first financial institution to offer online internet banking services to all of its members in October 1994.

Banks and the World Wide Web

In the 1990s, banks realized that the rising popularity of the World Wide Web gave them an added opportunity to advertise their services. Initially, they used the Web as another brochure, without interaction with the customer. Early sites featured pictures of the bank's officers or buildings, and provided customers with maps of branches and ATM locations, phone numbers to call for further information and simple listings of products.

Interactive banking on the Web

Wells Fargo was the first U.S. bank to add account services to its website, in 1995. Other banks quickly followed suit. That same year Presidential became the first bank in the United States to open bank accounts over the Internet. According to research by Online Banking Report, by the end of 1999, less than 0.4% of households in the U.S. were using online banking. At the beginning of 2004, some 33 million U.S. households (31% of the market) were using one form or another of online banking. Five years later, 47% of Americans were banking online, according to a survey by Gartner Group. Meanwhile, in the UK e-banking grew its reach from 63% to 70% of Internet users between 2011 and 2012.

Various Online Services

Online banking account is easy to open and operate. The online services offered might differ from bank to bank, and from country to country. To know about the various services, always go through the welcome kit that you get at the time of opening the account. You also get the password to access your online account, which you are supposed to keep with great care for security reasons.

The common **online services** offered by banks are:

- **Transactional activities** like funds transfer, bill pay, loan applications and transactions.
- **Non-transactional activities** like request for cheque book, stop payment, online statements, updating your contact information

The popular services covered under E-banking include:

1. Automated Teller Machines,
2. Credit Cards,
3. Debit Cards,
4. Smart Cards,
5. Electronic Funds Transfer (EFT) System,
6. Cheques Truncation Payment System,
7. Mobile Banking,
8. Internet Banking,
9. Telephone Banking, etc.

Advantages of Internet Banking

Internet Banking has several advantages over traditional one which makes operating an account simple and convenient. It allows you to conduct various transactions using the bank's website and offers several advantages. Some of the advantages of internet banking are:

- Online account is simple to open and easy to operate.
- It is quite **convenient** as you can easily pay your bills, can transfer funds between accounts, etc. Now you do not have to stand in a queue to pay off your bills; also you do not have to keep receipts of all the bills as you can now easily view your transactions.
- It is available all the time, i.e. 24x7. You can perform your tasks from anywhere and at any time; even in night when the bank is closed or on holidays. The only thing you need to have is an active internet connection.
- It is fast and efficient. Funds get transferred from one account to the other very fast. You can also manage several accounts easily through internet banking.
- Through Internet banking, you can keep an eye on your transactions and account balance all the time. This facility also keeps your account **safe**. This means that by the ease of monitoring your account at anytime, you can get to know about any fraudulent activity or threat to your account before it can pose your account to severe damage.
- It also acts as a great medium for the banks to endorse their products and services. The services include loans, investment options, and many others.

Disadvantages of Internet Banking

Though there are many advantages of internet banking, but nothing comes without disadvantages and everything has its pros and cons; same is with internet banking. It also has some disadvantages which must be taken care of. The disadvantages of online banking include the following:

- Understanding the usage of internet banking might be difficult for a beginner at the first go. Though there are some sites which offer a demo on how to access online accounts, but not all banks offer this facility. So, a person who is new, might face some difficulty.
- You cannot have access to online banking if you don't have an internet connection; thus without the availability of internet access, it may not be useful.
- Security of transactions is a big issue. Your account information might get **hacked** by unauthorized people over the internet.
- **Password security** is a must. After receiving your password, do change it and memorize it otherwise your account may be misused by

someone who gets to know your password inadvertently.

- You cannot use it, in case, the bank's server is down.
- Another issue is that sometimes it becomes difficult to note whether your transaction was successful or not. It may be due to the loss of net connectivity in between, or due to a slow connection, or the bank's server is down.

Internet Banking has definitely made the life easy for users by providing online access to various banking services

Conclusion

From all of this, we have learnt that information technology has empowered customers and businesses with information needed to make better investment decisions. At the same time, technology is allowing banks to offer new products, operate more efficiently,raise productivity, expand geographically and compete globally. A more efficient, productive banking industry is providing services of greater quality and value. e-banking has become a necessary survival weapon and is fundamentally changing the banking industry worldwide. To day,the click of the mouse offers customers banking services at a much lower cost and also empowers them with unprecedented freedom in choosing vendors for their financial service needs. No country today has a choice whether to implement E-banking or not given the global and competitive nature of the economy. The invasion of banking by technology has created an information age and commoditization of banking services. Banks have come to realize that survival in the new e-economy depends on delivering some or all of their banking services on the Internet while continuing to support their traditional infrastructure. The rise of E-banking is redefining business relationships and the most successful banks will be those that can truly strengthen their relationship with their customers.

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THE CONCEPTUAL STUDY OF E-BANKING IN INDIA

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INTRODUCTION

E-banking refers to electronic banking. It is like e-business in banking industry. E-banking is also called as "Virtual Banking" or "Online Banking". E-banking is a result of the growing expectations of bank's customers. E-banking involves information technology based banking. Under this I.T system, the banking services are delivered by way of a Computer-Controlled System. This bank's system does involve direct interface with the customers. The customers do not have to visit the premises. In India E-banking is of fairly recent origin. The traditional model for banking has been through branch banking. Only in the early 1990s there has been start of non-branch banking services. The good old manual systems on which Indian banking depended upon for centuries seem to have no place today. This paper is conducted to search the relative advantages of E-banking over Traditional Banking in india, South-Asia and Developed Countries Perspective. Now, Advantage means getting better one than previous one. So, the advantages of E-banking can be measured after seeing the services that are providing by bank providing through mobile, telephone and Online. Then we can compare what are the advantages we are getting in india by using E-banking. In this paper we will study the conceptual study of e banking with the point of view nation,bank & customer in india.

E – BANKING CLASSIFICATION

In the viewpoint of use and access media, E-Banking can be classified into three narrow (sometimes broad) sections:

1. Telephone Banking (The Oldest & Poorest one)
2. Internet Banking (or Online Banking)
3. Mobile Banking (Including SMS Banking)

TELEPHONE BANKING

Telephone banking is a service provided by a financial institution, that enables customers of the financial institution to perform financial transactions over the telephone, without the need to visit a bank branch or automated teller machine. Telephone banking times can be longer than branch opening times, and some financial institutions offer the service on a 24 hour basis. From the bank's point of view, telephone banking reduces the cost of handling transactions by reducing the need for customers to visit a bank branch for non-cash withdrawal and deposit transactions.

INTERNET BANKING

0nline banking (or **Internet banking**) allows customers of a financial institution to conduct financial transactions on a secure website operated by the institution, which can be a retail or virtual bank, credit union or society. It may include of any transactions related to online usage.

MOBILE BANKING

Mobile banking (also known as M-Banking, mbanking) is a term used for performing balance checks, account transactions, payments, credit applications and other banking transactions through a mobile device such as a mobile phone or Personal Digital Assistant (PDA).

E-B ANKING SERVICE IN INDIA

Online banking: International standard online banking facilities were expanding in banks offered facilities like transaction through any branch under the respective bank online network;Payment against paid order or pay order encashment,Demand draft encashment,Opening or redemption of FDR from any branch of the same bank;Remote fund transfer,Cash withdrawal,Cash deposit,Account statement,Clearing and balance enquiry within branches of the same bank; andL/C opening, loan repayment facility to and from any branch of respective bank under its own online network.

Internet banking: Internet banking services via internet that included

- Account balance enquiry,
- Fund transfer among accounts of the same customer,
- Opening or modified term deposit account,
- Cheque book or pay order request,
- Exchange rate or interest rate enquiry,
- Bills payment,
- Account summary, Account details, account activity, standing instructions,
- Loan repayment, loan information, statement request,
- Cheque status enquiry, stop payment cheque,
- Refill prepaid card, password change,
- L/C application, Bank guarantee application,
- Lost card (debit/credit) reporting, Pay credit card dues, view credit card statement, or check balance.

Mobile banking: The standard package of activated that mobile banking covers are:

- Mini-statements and checking of account history;
- Alerts on account activity or passing of set thresholds;
- Monitoring of term deposits; access to loan statements; access to card statements;
- Mutual funds/equity statements;
- Insurance policy management; pension plan management;
- Status on cheque, stop payment on cheque; ordering check books;
- Balance checking in the account; recent transactions;
- Due date of payment;
- PIN provision, change of PIN and reminder over the internet;
- Blocking of (lost/stolen) cards;
- Domestic and international fund transfers;
- Micro-payment handling; mobile recharging;
- Commercial payment processing;
- Bill payment processing;
- Peer to peer payments;
- Withdrawal at banking agent; and deposit at banking agent.

Tele-banking: Tele banking services widened not enough in daily banking activities in india

DESCRIPTION OF SERVICES

Here the description of some basic services provided by bank.

- **SMS Banking:** Short Message Service (SMS) is the formal name for text messaging. SMS banking allows customers to make simple transactions to their bank accounts by sending and receiving text messages.
- **Electronic Funds Transfer:** Electronic Funds Transfer (EFT) is a system of transferring money from one bank account to another without any direct paper money transaction.
- **Any Branch Banking:** Any branch banking is the service where an account is accessible from any branch of a particular bank. In Bangladesh the term is widely popularized as online banking.
- **Automated Teller Machine (ATM):** ATM means computerized machine that permits bank customers to gain access to their accounts and permit them to conduct some limited scale banking transactions with a magnetically encoded plastic card and a code number.
- **Point of Sale (POS):** Point of Sale (POS) service is an innovative electronic money transferring system that allows the customers of banks to pay for their purchases through their ATM and credit card at any POS enabled retailer.
- **Debit Cards:** Debit cards are linked directly to the bank account of its holder. The holder of debit card can use it to buy goods or withdraw cash and the amount is taken from the bank account right away.
- **Credit Cards:** A credit card is a form of borrowing. Credit cards allow its holder to 'buy goods now and pay later' – called 'buying on credit'. They aren't linked to the bank account of the customers.

- **Banking KIOSK:** KIOSK Banking offers customers the flexibility to conduct their banking transactions via the KIOSK machine. The customer must have a Debit Card and a PIN. When one inserts the debit Card into the Kiosk, he/she will be prompted to enter the PIN. He/she can then begin using KIOSK Banking.

- **SWIFT:** The Society for Worldwide Interbank Financial Telecommunication ("SWIFT") operates a worldwide financial messaging network which exchanges messages between banks and other financial institutions.

Benifites of e-banking

After getting the number of services provided by the Banks through E-banking it is easy to what advantages we are getting by establishing and using e-banking. The Advantages or benefits can be classified in three categories, these are:

1. National Point of View
2. Banks' Point of View
3. Customers' Point of View

To see the benefits based on time these benefits can be classified into two categories:

1. **Short term benefits:** Reduce extra time; Increase productivity and efficiency; Eliminate duplication and wastage; Cut down maintenance, and shortage cost; Curtail security cost.
2. **Long-term benefits:** Create new opportunities of jobs for jobless; participate in the country's economic health; proper planning and monitoring; Proper use resources.

National Point of View

Though in these days banks transaction and activities has brought negative impact on the economy of our country, the investment in e-banking by banks can make some long-term benefits for our country. The advantages that our country is getting from e-banking action are:

Job creation: The issue of computers eliminating jobs of people was quite emotional and painfully real. But it has two sides that automation will eliminate certain types of job like record keeper and also created jobs like administrator, system analyst, programmer, operator etc. and helped to reduce unemployment problem.

Contribution to GDP: Banks with a national economy, work towards building national capital, increasing

national savings and mobilizing investments in trade and industry.

Economic benefits: E-banking served so many benefits not only to the bank itself, but also to the society as a whole.

- E-banking made finance economically possible: (i) Lower operational costs of banks (ii) Automated process (iii) Accelerated credit decisions (iv) Lowered minimum loan size to be profitable.
- Potentially lower margins: (i) Lower cost of entry (ii) Expanded financing reach (iii) Increased transparency.
- Expand reached through self-service: (i) Lower transaction cost (ii) Make some corporate services economically feasible for society (iii) Make anytime access to accounts and loan information possible.

Banks' point of view

From the banks' view point, banks are getting some specific benefits or advantages after starting the e-banking services. These advantages are:

Branding: Banks offering e-banking services was better branding and better responsiveness to the market.

Profit Maximization: The main goal of every company was to maximize profits for its owners and banks were not any exception. Banks are increasing its profit by reducing the cost of paper, time etc. by using e-banking. Thus, automated e-banking services offered a perfect opportunity for maximizing profits.

Increased Services Quality: Features of E-banking services include less time, complete transaction, no human conflict and presence etc. thus the quality of services of bank is increasing day by day.

Customers' point of view

The main benefit from the bank customers' point of view was significant saving of time by the automation of banking services processing and introduction of an easy maintenance tools for managing customer's money. The main benefits of e-banking were as follows:

ü Increased comfort and timesaving-transactions made 24h a day, without requiring the physical interaction with the bank. Quick and continuous access to information.

ü Corporations had easier access to information as, they checked on multiple accounts at the click of a button.

ü Better cash management. E-banking facilities speed up cash cycle and increases efficiency of business processes as large variety of cash management instruments is available on Internet sites of banks.

ü Private customers looked for slightly different kind of benefits from e-banking.

ü **Reduced costs:** This was in terms of the cost of availing and using the various banking products and services.

ü **Convenience:** All the banking transactions performed from the comfort of the home or office or from the place a customer wants to.

ü **Speed:** The response of the medium was very fast; therefore customers actually waited till the last minute before concluding a fund transfer.

ü **Fund's management:** Customers downloaded their history of different accounts and do a "what-if" analysis on their own PC before affecting any transaction on the web.

CONCLUSION

After all, Banking Sector is giving all the services through Electronic Banking which is available in the world. But the services can be varied in case of Geographic cause, networking problem and much more. If these problems are removed then it is expected that the whole country will be under banking services through Electronic Banking Methods.

Electronic banking is the future of conventional banking today. Day by day, the Electronic Banking has been flourishing with numerous technology. Every technology comes and make the Electronic Banking more cost saving and time saving way of banking. It is increasing its safety as much as traditional banking gives or more than traditional banking in some countries. People use Electronic Banking at home with highest comfort. So, the relative advantage of Electronic Banking is higher than conventional banking.we saw in this paper there is provide facility through e banking. It is good service point of view nation, customer as well as for banking sector.

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STRATEGIC MANAGEMENT AND APPRAISAL OF LIBRARIES-A STUDY

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"My library is the place where I find inspiration, information, and connection with the world - and peace." *- Ruth W. Crocker*

Abstract:

All libraries must look into the future to be able to develop long-term strategies to meet user needs. Libraries are an integrant part of the national informational system and strategic institutes ensuring access to any kind of information. Different actions were undertaken and important resources were been used in order to develop digital libraries that can be accessed by IT & C systems, especially via Internet. Until now, the projects and other development initiatives for digital libraries – especially those financed through budgetary funds – did not focus on the appraisal of satisfaction degree for the on-line library users or fulfilling their quality needs at a performance level (efficiency, effectiveness and utility) adequate with the on-line library provided service. The librarians accept appraisal as a key concept underlying the development and improvement of information services, that can ensure the provision of better products and services. The managers have to value qualitatively and quantitatively the resources being managed, as well as to plan services to accommodate functionality improvement derived from research and development. A changing user population, technology enhancement, transformation of the scholarly communication system, digital libraries, new approaches to management and renewed commitment to planning and assessment throughout the organization are propelling the library environment. On the strategic level libraries on average have developed the ability to collect process and assimilate technological innovation.

Keywords: Strategy, Quality, Efficiency, Effectiveness, Innovation and Design.

Introduction

Strategic planning determines where an organization is going over the next year or more, how it's going to get there and how it'll know if it got there or not. The focus of a strategic plan is usually on the entire organization, while the focus of a business plan is usually on a particular product, service or program. There are a variety of perspectives, models and approaches used in strategic planning. The way that a strategic plan is developed depends on the nature of the organization's leadership, culture of the organization, complexity of the organization's environment, size of the organization and expertise of planners. If you need more help, Strategic management is not a clean, step by step process. It is not linear, but a messy iterative process that requires hard work and dedication from most people in the organization to move it toward the future. It represents a new focus for the organization; a focus on a compelling vision of the future. Libraries have been trying to determine the level of appraisal skills their staff should have and how much time the library can afford to dedicate to evaluating services and projects. Nonetheless, it is through continuous review and appraisal of programs and services that a strategic plan is transformed from a static document into a relevant and timely action plan. Libraries today are involved in a wide range of activities, including encouraging reading and providing books, supporting learning across all ages, brokering access to a wide range of types of information, acting as a community space, linking to other public and community.

Review of literature

The universities concentrate on three categories: examining, teaching, and research (p. 28). **Razzaque** (1971) states that the local market cannot supply 25 percent of the needs of the libraries and a number of problems are encountered when acquiring foreign books and journals.

Ahmad (1984) produced a descriptive and critical review of the status of libraries in Pakistan. He discusses things like administrative pattern, selection, acquisition, circulation, loss of material, buildings, technical services, and user instruction. The author concludes that "the vast growth of published literature and an increased pressure caused by overall adverse economic conditions in Pakistan have in their different ways placed libraries and librarians in a very difficult position" (p. 51).

Khurshid discusses book production in Pakistan and problems of library purchases. A better relationship between the book industry and libraries is crucial to run both smoothly. Library automation has emerged as an area to be addressed since 1980s.

Ameen (2007) establishes that libraries are following conventional selection practices in most cases. Faculty and librarians do not have a balanced role in selection strategy in most of the libraries. Relying on faculty members for making selections and on local vendors for supplying current books, causes undue delay in acquiring needed titles. There must be better liaison among faculty, library staff, and vendors to make quality selections. Automation must be introduced for the quick identification, selection, and purchase of quality, current titles. Librarians must be delegated more authority and be trusted to play an active role in selection.

An overview of the literature shows that the core issues discussed have been insufficient funds, inadequate size of collections, problems in acquisition, lack of standards, poor planning for automation, importance of resource sharing, shortage of competent professionals, and lack of standards. It seems imperative to throw light on status of collection appraisal and to furnish workable suggestions for establishing the culture of appraisal. Since it is an almost untouched area in literature, the study will create awareness, and recommendations will help create user-centered collection appraisal.

Objectives of the study

- To know the strategic application in libraries
- To understand management and appraisal of libraries
- To offer suitable conclusions

Strategic Management

"Designing a desired future and identifying ways to bring it about "Involves ideas and actions that are directed to the long-term future of the organization. The library's mission setting of the library's goals and objectives.

According to Chandler (1962), strategy is "the determination of the basic long-term goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out those goals. Strategic management is a top-level and business-level function Tactical management is at the functional and operational levels However, personnel at the tactical level provide information input to management for use in making decisions.

"The process by which the guiding members of an organization envision its future and develop the necessary procedures and operations to achieve that future" ***(Goodstein, Nolan, and Pfeiffer, 1992)***

Strategic management is not a clean, step by step process. It is not linear, but a .messy. Iterative process that requires hard work and dedication from most people in the organization to move it toward the future. It represents a new focus for the organization; a focus on a compelling vision of the future.

Source: www.maine.gove/doe/plan.com

Benefits of Strategic Planning

Strategic planning serves a variety of purposes in organizations, including to:

- Clearly define the purpose of the organization and to establish realistic goals and objectives consistent with that mission in a defined time frame within the organization's
- Communicate those goals and objectives to the organization's constituents
- Develop a sense of ownership of the plan.
- Ensure the most effective use is made of the organization's resources by focusing the resources on the key priorities.
- Provide a base from which progress can be measured and establish a mechanism for informed change when needed.
- Listen to everyone's opinions in order to build consensus about where the organization is going.
- Provides clearer focus for the organization, thereby producing more efficiency and effectiveness
- Bridges staff/employees and the board of directors (in the case of corporations)
- Builds strong teams in the board and in the staff/employees (in the case of corporations)
- Provides the glue that keeps the board members together (in the case of corporations).
- Produces great satisfaction and meaning among planners, especially around a common vision.
- Increases productivity from increased efficiency and effectiveness.
- Solves major problems in the organization.

Libraries have to answer a Series of Challenges:

- Informatics Assimilation in Librarianship Activities content;
- Moving the emphasis from document to information;
- The intersection between digital and traditional libraries provides
- Fertile territory for adapting traditional library measures for use in the digital

- Environment. The digital libraries process appraisal derived from decision
- Making considered a previous stage to action, when of several alternatives
- Must choose the best option in relation to goals, the available resources and
- Digital libraries appraisal.
- Identifying areas of activity which require changes
- Making constructive changes and improvement of library activity
- Discovering techniques to increase efficiency
- Planning activities and services
- Reasoning funding requests by the tutelary bodies
- Redefining the objectives of the system (if applicable)
- Developing a database for future research

Management and Appraisal of Libraries

Appraisal management is the relationship between people and the physical environment in the context of a specific institution and how this relationship affects its programs, Activities, and users' goals. Library appraisal is a powerful tool for management and change. It enables learning from an existing facility about the effectiveness of past actions and design decisions. At the same time, it can give directions for future building construction and/or renovation, target preventative maintenance, suggest facility or operational changes, and offer insight into organizational health. The methods and scope of appraisals vary according to how the information is intended to be used, the client and audience for the findings, and the institutional context within which it is conducted.

A search for literature relevant to library design, management, and appraisal provided detailed discussions on the process and issues involved in library design and management. Most authors are library consultants, librarians, architects, and/or interior designers who have drawn on their experience in library design and management rather than on empirical research.

Appraisal of existing facilities and services, however, was frequently recognized as a vital component in the needs assessments phase of planning for library buildings. The literature emphasizes how and why one should understand library functions such as user services, staff requirements, and materials processing. It also emphasizes the importance of identifying current problems, the design and service impacts of new technologies, and management of planning, design, and change processes. On the basis of this review and our own research, we conclude that there are seven key issues that describe the comprehensive nature of these design considerations.

Materials processing

To understand how a particular library functions one must know how books, periodicals, other "hard" materials which form its collections, and mail are physically acquired and subsequently processed through the organization and building space The rationale for why particular processes and sequences are used is fundamental for understanding staff functions, interrelationships, adjacency requirements, and security measures for future environmental and organizational change.

Behavior Settings

Patterns in the relationships between people and particular places can be analyzed through the concept of "behavior settings". Behavior settings are places such as study areas, circulation desks, and staff workstations occupied by specific groups of people in which recurring and predictable patterns of behavior occur. According to behavior setting theory, one can predict certain types of behavior in a setting, especially places with cultural continuity such as libraries Misfits between people, place, and behavior result in poor working conditions, discomfort, inefficiencies in building use, and other problems. Libraries consist of many behavior settings to support staff and users' activities, materials processing, and the library's role in its immediate community and organizational context .Library design literature tends to focus on one or more of these recurrent behavior settings. These behavior settings include, but are not limited to individual staff workstations with computers, users' study and reading areas, materials processing areas, book and periodicals stacks, reference and circulation service desks, community meeting rooms, and exhibition spaces.

Resolution of Public, Private, and Interface Functions

While most libraries exist to serve their users, they must delineate areas for public access to library services and materials, areas for staff processing of materials and information that are secure and separate from public access, and areas for staff and user interactions such as reference and service desks. Resolution of these functional distinctions in spatial terms and zones within the building requires careful consideration of issues such as material and personal security, staff's need for uninterrupted and quiet work areas, behavior settings for user / staff interactions for access to materials and user service, and differing architectural requirements for storage, user, and staff areas.

Design

Design issues such as the building's relationship to its physical and institutional context, entry and control points, the flexibility and adjustability of the building to future changes in function and technology, and building image are important design considerations for appraisal and recommendations. The issue of designing flexible versus purpose-built spaces within library buildings is currently receiving attention in the architectural and library design literature.

Interface with Technology

Appraisal and planning for the impacts of technological change is an important issue to consider in appraisal and design. Microform and computer technology, for instance, have generated more types of materials and support spaces for accessing them. They

have not replaced hard copy materials or reduced libraries' space needs but have generated new types of spaces and needed infrastructure. On the other hand, the increased availability of materials through speedy inter-library loan programs has reduced on-site requirements for complete collections, most notably in special-purpose libraries. Power and cabling requirements for the exponential increase in computer terminals for staff and patron use, ergonomic considerations in work station design, and lighting considerations are all related to the impacts of continued technological change.

Environmental Controls

Lighting, temperature and humidity controls, noise, wiring, fire safety and security affect people's health and well-being, task performance, and material preservation. Types of lighting and lighting-level standards, access to windows, energy conservation measures, humidity control, and use of operable windows in libraries require appraisal for future recommendations and design guidelines.

Managing the Processes of Change

The process of planning for changes in library facilities has been the subject of several books that outline needs assessments, planning, design, construction, and moving processes. Librarians are often the managers of the library facility and its processes of change. Literature exists on "how to work with an architect, "managing the move process, and developing an understanding of the range of issues and behavior settings in libraries. Management issues are not typically included in post-occupancy appraisals, but they are important mitigating factors in staff's, and to some extent users', satisfaction with the resulting facility.

Conclusions

Libraries in recent years have witnessed an important development because the use of strategically ICT systems, the process appraisal becoming indispensable since it generates data and information on various aspects such as resources, activities, services, collections and their budget. Resulting conclusions have value only in an integrative vision, so it can be argued that assessment is a complex form of knowledge of all organizational realities. By creating a "culture of appraisal", library and library services are continuously evaluated to enable a clear understanding of weaknesses in service delivery and open the way for possible improvements. allow a library manager to quickly and easily evaluate the quality of service provided in different functional areas, during various periods of time, by monitoring the quantitative performance indicators and targets.

- To allow data of these quantitative measurements released on to be easily inserted and loaded into the system.
- To allow the documents and quality management procedures to be created modified, approved and disseminated.
- To allow useful links to be established between such documents and also to create a culture of excellence in providing library services,
- To help libraries to understand better the user perceptions of library service quality, also systematically collect and interpret the library-user feedback;
- To provide libraries information on assessments carried out in the same type of institutions in order to compare experiences;
- To identify best practice in library services
- To develop analytical skills of employees to interpret and act on data

Finally, strategically management and appraisal library services have a valuable role to play in supporting information management, service development, reporting, designing, marketing and advocacy. Also, it can demonstrate the value of digital library services and their contribution to institutional goals. One of the main contributions of this paper is the identifications of strategic management and appraisal

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ROLE OF E RESOURSES IN LIBRARY

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Abstract

We are living in the digital era; the electronic resources (e-resources) have great importance in digital libraries and amongst the academic library users. Due to the information revolution, digital libraries are developing all over the world to collect, store and communicate the information through electronic media. Compared to the different developed countries, there is slow development of digital libraries in India. The users needs and usage of e-resources are day by day increasing, depends on their academic need. Therefore electronic resources are very important and very much useful to students, faculty and researchers, as well as professional librarians, documentationists, information technologists and communicators. This paper discusses the advantages of electronic resources for academic library users. The main objective of this paper is academicians should know the importance and advantages of electronic resources and utilize the maximum electronic resources and given by some suggestions to increase the electronic resources usage in future.

Keywords: Electronic Resources, E-Resources, Academic, Library Users, Digital Era

1. Introduction

In digital library the electronic resources are becoming more and more important. The printed resources are now being digitized, which has given rise in increases of the availability of books and journals in the electronic format. The electronic books are helpful because of their easy portability and its feature of incorporating more than one book in a single hand held device. This helps the poorer also to get the information required free of cost and bridge the digital divide. They need not worry for licensing and usage of the information. The government has taken various steps to introduce e- Resource facility in academic institutions for the benefit of research scholars. The AICTE (All India Council for Technical Education) was issued a mandatory subscription of e-journal packages for all engineering institutions and highly discounted online databases given for INDEST (Indian National Digital Library in Engineering Sciences and Technology) consortium members. Because information resources especially journals are becoming very expensive due to their availability in electronic format. On the other hand libraries are facing financial crunch which has given rise to the birth of library cooperation / resource sharing.

Electronic Resources in Academic Libraries

E-resources are those resources which include documents in electronic or e-format that can be accessed via Internet in digital library environment. E-resources are that electronic product that delivers a collection of data, be it text, image collection, other multimedia products like numerical, graphical mode for commercially available for library and information centre's. These may be delivered on CD-ROM / DVD, over the Internet and so on. Providing access to e-Resources is a service to help academic library users to find E – databases, E- journals, E-Magazines, E-Books, E-Audio, E-Images, Data, GIS, Digital Library Projects, Electronic Exhibitions, E-Subject Guide, E-newsletters, E-White papers, E-conferences proceedings and Web search tools on a range of topic. Many of the electronic resources are freely available to anyone over Internet access but some are commercial resources.

1.1. Types of e-resources

The academicians frequently used e-resources types are:

- E-journals
- E-books
- Full-text (aggregated) databases
- Indexing and abstracting databases
- Reference databases (biographies, dictionaries, directories, encyclopedias, etc.)
- Numeric and statistical databases
- E-images
- E-audio/visual resources

1.2. Methods of accessing e-resources/Online Databases

The following methods provide access to e-journals, e-books and databases provided by the academic libraries.

IP Based Access: Resources access to the specific range of IP (Internet Protocol Address).

Username and Password: Using by username and password to access the resources.

Free Access: Freely available electronic recourse access via the Web.

1.3. E-resources/Online Databases

The academicians commonly accessed online databases/electronic resources are:

- Science Direct

- Web of Science
- IEEE/IEE/IEL Online
- J-Gate
- Springer
- INSIGHT
- Nature
- Pro Quest Science
- EBSCO Online
- ESDU
- Euromonitor (GMID)
- Wiley Blackwell
- Elsevier
- ACM Digital Library
- AIP/APS Journals
- ASCE Journals Online
- ASME Journals Online
- ASTM Standards + Digital Library
- Capitaline Databases
- CRIS INFAC Industrial Information
- Emerald Management Xtra
- ICE+Thomas Telford
- IEC Standards

2. Objectives of the Study

The objectives of the study are:

- To create the awareness of the usage of e-resources among the academic work of students, faculty and research scholars.
- To analysis the advantages and importants of electronic resources for academic library users.
- Users should get the quality of information retrieved through electronic resources.
- To find out the problems faced by the academic library users while accessing e-resources.
- To given some suggestions to increase the electronic resources usage and also improve the electronic library services to academic users.

3. Advantages of Electronic Resources

The several advantages are:

- E - Resources user friendly interface.
- 24 x 7 (Any Time Information available). Library users don't have to wait for the library to open to access them.
- E - Resources can be accessed by several users simultaneously.
- E - Resources are peer reviewed information sources.
- E - Resources are huge information reservoirs.
- E - Resources have multidisciplinary approach.
- Articles published in electronic journals can be updated and corrected even after publishing.
- Electronic journals provide advanced searching facilities.
- Electronic journals can provide access to articles in multiples formats and languages.
- Electronic journals offset the missing issue problem.
- Articles are displayed and printed clearly an easily to read format.
- Articles can be downloaded and printed simultaneously by more than one reader, depending on access rights and permission.
- E - Resources save physical storage space. A single CD ROM can contain many volumes of a particular journal and thousands of full text articles with graphics.
- E - Resources provide quick information, up to date information, easy citations, various search options and special services like SDI *(Selective Dissemination of Information)*, Alerts etc.,
- E-Resources provide access to literally thousands of e-journals, e-books etc., than the library could possibly subscribe to in paper format.
- Some e-resources include publication subscriptions dating back the last 10 years (or more!). While we do have backdated microfilm for handful of e-journals, e-books newspapers, most magazines and newspapers are only kept for a period of months.
- Users can search e-resources to find articles on a particular subject from many different publications at the same time without having to search each publication separately.
- To users especially useful for finding information not yet available in books, or obtaining up-to-date information on current events or issues.
- E-Resources provide us with authoritative, accurate, current, objective reference material not readily available through a search engine like Google.
- Users can be accessed from any computer on campus and usually any computer off campus, any time of the day or night, so there is no need to make a trip to the library
- Every journal can be searched quick and easy often through the complete full text of articles and via online index.
- An electronic resource is lot quicker to browse or search, to extract information from, and to integrate that information into other material and to cross-search or reference between different publications.

4. Disadvantages

The few disadvantages are:

- **Difficulty in reading computer screens**: Electronic journal is the limitations of the computer monitor, this leads to problem with reading and long reading from screen can cause eyestrain.
- **Less permanent**: Electronic version of online journal is easy to lose and their reliance on soft ware's and hard wares makes them impermanent.
- **Higher cost**: Retrieve some electronic articles need more cost.
- **License/ Copyright issues**: Issues regarding revision of the licenses and copying and distributing of resources.

5. Conclusion

Access to e- Resources (e-journals and e-books) is very much useful to both libraries and users as problems of missing issues or delay in receipt of issues can be overcome. Online resources make their appearance on the

net much before the print copies reach the subscribers; therefore users get the resources at earliest and their time is saved. After implementing AICTE mandatory online subscription for engineering institutions is way to increasing the online subscription and electronic resources usage. Based on the analysis of advantages of electronic resources for academicians, Compare with advantages and disadvantages of e-resources maximum majority is more advantages for academic users and they regard them as less reliable. The academic library users facing problems while using the electronic resources maximum overcome by above mentioned suggestions and this is will be helpful to improve the digital resources usage and services for the benefit of students, faculty and research scholars in future. Electronic resources do not occupy a great deal of physical storage space, and can be accessed remotely. Electronic libraries can provide a vehicle for extending collaboration, which is at the heart of the academy, with the aim of more effective education. The increasing the electronic resources subscription bring more satisfaction to users about the library services. The library professionals and information providers should endeavor to give the right resources (e-resources) to the right user at the right time.

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A COMPARATIVE STUDY OF CLOUD COMPUTING AND GRID COMPUTING

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Abstract

Cloud computing is a favourable technology of the present and future which uses the grid computing as its backbone. Cloud computing is the newest topic of information and communication technology (ICT) for implementing it for individual, groups and business. Grid computing is considered as most related ancestor technology of cloud computing. Although Cloud and Grid computing look similar but they differ at many aspects which has been explained in detail. The cloud computing and grid computing is compared side by side on the basis of features & Security issues.

Keywords

Cloud computing, Grid computing, Infrastructure, Platform, Service

I. INTRODUCTION

Cloud computing and Grid computing are two main technologies which are in use in the world for easy and portable computing. Although look similar from layman point of view but they are quite different from each other. With Cloud computing application software can be operated using internet-enabled devices [4]. Grid computing is the collection of computer resources from multiple locations to reach a common goal. The grid can be imagined as a distributed system with non-interactive workloads that involve a large number of files.

II. CLOUD COMPUTING

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction [1]. Resources are pooled and offered on-demand with ubiquitous network access to rapidly configurable and elastic IT capabilities. The three types of services provided by cloud are Software as service (SaaS), Platform as service (PaaS) and Infrastructure as service (IaaS). The deployment model, service models and service attributes are as given below:

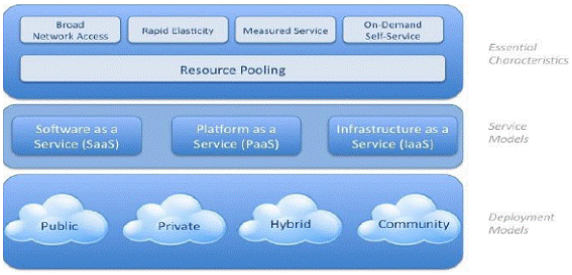

Figure 1: NIST Cloud computing [1]

The key benefits of providing computing power using Clouds are [5]:

1. Avoidance of expensive computer systems configured to cope with peak i performance.
2. Pay-per-use solutions for computing cycles requested on-demand.
3. Avoidance of idle computing resources, resulting in novel business models.

III. GRID COMPUTING

Grid computing can be defined as sharing information and power, which gives us access to another type of heterogeneous resources which are geographically separated [2]. The grid is based on IPs (Internet protocols) and on the principle of parallel and distributed computing. The grid computing provides the sharing of computational resources, storage devices, applications, equipment etc. in an efficient way.

IV. ARCHITECTURE OF CLOUD AND GRID COMPUTING

When viewed in a broader sense both cloud and grid computing look like one and the same thing but if we study minutely then we can see the difference between them very clearly as explained below:

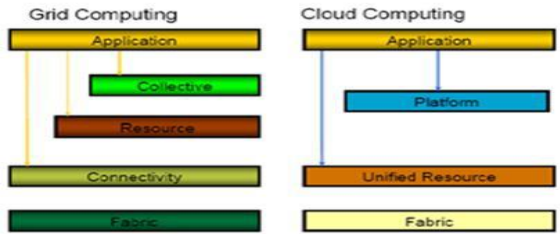

Figure 2: Grid computing and Cloud computing Architecture [2]

Business Models: While in grid business models are usually based on bilateral agreements between academic institutions, provision of resource in clouds requires more differentiated business models. Currently, we observe several types of business models ranging from resource providers who only provide computing resources (e. g., Amazon), over SaaS providers who sell their own resources together with their own software services (e. g., GoogleApps, Salesforce.com) to companies that attempt to run a mixed approach, i. e., they allow users to create their own services but at the same time offer their own services (Sun N1 Grid, Microsoft Azure) [5].

•**Resource Management**: Resource management represents another major difference between grids and clouds. While grids rely on batch systems, utilization of virtualization technologies represents the resource management solution for the clouds.

•**Resource Provision Models**: Grid resource provisioning models are based on virtual organizations where the relationships are established offline. In clouds usage of SLAs, compliance, and trust management is essential.

•**Resource Availability**: In grids resource sharing relies on the best effort manner, sometimes resources are not available and sometimes there are plenty of resources which are idle. Clouds rely on massive elasticity in clouds. Challenging issues in clouds are to find the balance between wasting resources due to the virtualization overhead and standby modes of devices on the one hand, and pooling of resources to facilitate efficient consumption of resources and reducing energy consumption on the other.

Let us differentiate two technologies on basis of features side by side. The difference between cloud and grid computing is given below in tabular form [2] [3]:

TABLE 1 COMPARISON OF GRID AND CLOUD COMPUTING [2][3]

Sr.NO.	Feature	Grid Computing	Cloud Computing
1.	Goal	Collaborative Sharing of resources	Use of service
2.	Principal	Needs processing from you	Does the processing for you
3.	Workflow management	In one physical node	In EC2 instance (Amazon EC2+S3)
4.	Level of abstraction	Low	High
5.	Degree of scalability	Normal	High
6.	Transparency	Low	High
7.	Time to run	Not real time	Real time services
8.	Security	Low	High
9.	Ownership	Multiple	Single
10.	Resource sharing	Collaborative	Assigned resources are not shared
11.	Uses	As computing/storage platform	Offer services
12.	High level services	Plenty	Not defined yet
13.	Standardization	Standardization and interoperability	Lack of standards for interoperability
14.	Examples of real world	SETI,BOINC,GIMPS	Google apps, Amazon Web Services(AWS)
15.	Type of service	CPU, network, memory, bandwidth,device,storage	IaaS, PaaS, SaaS everything as a service
16.	Allocation/Scheduling	Both centralized/decentralized	Decentralized
17.	Dependency	A cloud would usually use a grid	A grid is not necessarily a cloud or part of a cloud
18.	Failure Management	Strong	Limited
19.	Request type	Lots of small allocation	Few but large allocation
20.	Operating System	A hypervisor (VM) on which multiple Oss run	Any standard OS
21.	User friendly	High	Low
22.	Number of users	More	Few
23.	Response time	Real Time	Can't be serviced at a time and need to be scheduled

24.	Pricing of Service	Utility pricing, discounted for large Customers	Dominated by public goods or Privately assigned
25.	Virtualization	Virtualization of H/w and S/w Platforms	Virtualization of data & Computing resources
26.	Data intensive storage	Not suited for that	Suited for that
27.	Configuration	Easy	Difficult
28.	Centralization Degree	Centralized control	Decentralized Control
29.	Future	Next generation of internet	Cloud computing
30.	Architecture	User Chosen architecture	Service oriented
31.	Payment Mode	Flexible	Rigid
32.	Qos Quarantines	Limited Support , focused on availability	Limited Support of Ten Best efforts only

V. SECURITY AND POLICY ISSUES INCLOUD AND GRID COMPUTING

Cloud and grid computing technologies are used asinexpensive systems to gather and utilize computationalcapability together. These technologies try to improve jobsand application services by arranging machines anddistributed resources in a single huge computationalentity [6]

. Clouds mainly consist of data centres which areowned by the same institute. The homogeneity within eachdata centre in the infrastructure is the main feature for thecloud computing compared to grid computing. In this case,any conflict between a heterogeneous data centre and/or different administration domains can become a seriousissue for cloud interoperability. It can be seen that thestages of anonymity and privacy provided by cloud to theexternal users will be less than the user of desktop in numerous situations. [7]

On the other side, grids was originally established on the idea that resources infrastructure are dynamic and heterogeneous in their nature. This means different organization with different administrative domains. This also means that security was taken into account from the beginning when the grid system was originally built. Presently, the security paradigm for clouds appears to be fairly less secure than the model in grids environment. The infrastructure of the cloud normally depends on web models (over SSL) to establish and access account information for the external users, and allows them to change or reset their keys (passwords) with a new ones by email in what can be considered as unencryptedc ommunication.In general, the data in the cloud environment is distributed over multiple servers in the cluster and hosted by third parties (at least for some time) who are hidden from thedata owner or the external users. This means the privacy of the users' data and ability to give the permissions to handle this data to a specific domains or users by the original data owner is less than expected. On the other hand, the situation in the grid environment is completely different, where the grid administrators or grid users can control the handling of their data or the permission and policies over their resources.

V. CONCLUSIONS

In this paper the detailed comparison of two computing models grid computing and cloud computing has been presented. I think the close comparison like this help to understand the concept very easily and clearly. The cloud computing and grid computing are seen as two different names for the same technology which I tried to differentiate with the help of side by side comparison. Cloud and grid computing appears to be the promising model for future computing so there is great scope of future research in this area.

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LIGHT FIDELITY (LI-FI) – WIRELESS COMMUNICATION THROUGH VISUAL LIGHT

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Abstract:

Nowadays, numerous individuals are utilizing the web to fulfill their undertaking through the wired or remote system. *Wireless communication* ***is among technology's biggest contributions to mankind. As more and more users are tapped in with their devices, the clogged airwaves make it difficult to latch on a reliable signal. Optical Wi-Fi would be the course of action over Wi-Fi. Optical Wi-Fi, Li-Fi Technology is the milestone in t%he history of Wireless Communication. Li-fi technology is much safer, cheaper and faster than the Wi-Fi. Li-Fi describes the transmission of data through an LED light bulb. Li-fi technology was demonstrated by Harald Hass, a professor at the University of Edinburgh, which uses light to transmit data wirelessly. The main objective of this research paper to show the usefulness of Li-Fi technology in future.***

Keyword: LED (Light Emitting Diode), Wi-Fi (Wireless Fidelity), Li-Fi (Light Fidelity), VLC (Visible Light Communication), RF (Radio Frequency).

Introduction:

The data communication is one of the most demanded need works in daily routine. Wireless network fulfills our day to day activity. Wi-Fi It uses 2.4 to 5 GHz radio frequency to deliver wireless Internet access around our homes, schools, offices and in public places. The Wi-Fi Bandwidth is typically limited to 50-100 megabits per second (Mbps) today using the IEEE802.11n standard, but it's unable to deliver high definition movies, music libraries and video games. The current wireless networks that connect us to the internet are very slow when multiple devices are connected because of fixed bandwidth. With the recent increase in the use of cloud computing, Wi-Fi is not going to be useful in the future as it will not be able to cater to the need of increasing bandwidth & speed. To avoid such problem, the Li-fi is the best solution, a shift from radio frequency (RF) to optical technology.

What is Li-Fi:

Imagine having a light source that not only provides light but also networking capability at astonishing speeds. Or a home television that communicates with every other gadget around, including the ability to project your smart phone's display onto it for easy presentation to large groups. Or highways lighted by Li-Fi, providing motorists with real-time traffic and weather news as well as internet access to all devices inside. Li-Fi stands for Light-Fidelity and is the optical wireless technology / Visual Light Communication (VLC). Harald Haas was an invited speaker at TED Global 2011, where he first introduced Li-Fi.[2] Li-Fi Technology provides transmission of data through illumination by sending data through an LED light bulb that varies in intensity faster than the human eye can follow. Li-Fi technology comes to be ten times cheaper than the Wi - Fi and also much safer, because regardless of access control systems and passwords.

In Li-Fi, light pulses cannot penetrate on walls. The electric light does not disturb or interfere with communication, without taking the frequency bands. The light sources are providing you internet access at very high speed. Li-Fi technology transmits data wirelessly in the use of LED. Then it would be the best optimum solution over Wi-Fi technology. Li-Fi technology is the same idea band behind infrared remote controls but far more powerful.

Harald Haas says his invention, can produce data rates faster than 10 megabits per second, which is speedier than your average broadband connection. He envisions a future where data for laptops, smart phones, and tablets is transmitted through the light in a room.

Light fidelity (Li-Fi), the high-speed 5G communication and networking variant of visible light communication (VLC), aims to unlock a vast amount of unused electromagnetic spectrum in the visible light region (see Figure 1). Li-Fi works as a signal transmitter with the off-the-shelf white LEDs typically used for solid-state lighting and as a ~~signal~~ receiver with a p-i-n photodiode or avalanche photodiode. This means that Li-Fi systems can illuminate a room and at the same time provide wireless data connectivity.[2]

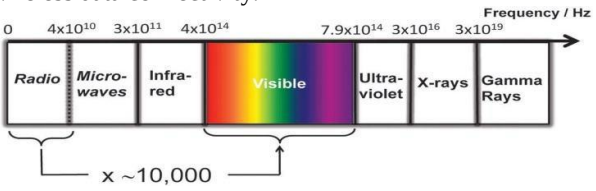


Figure 1.

The figure shows the electromagnetic spectrum and the vast potential of unused, unregulated, safe green spectrum in the visible light part. The visible light

spectrum is 10,000 times larger than the entire radio frequency spectrum. Visible light waves are the only electromagnetic waves we can see. We see these waves as the colors of the rainbow. Each color has a different wavelength. Then why shouldn't we use these visible waves rather than radio frequency waves.

Radio frequency has limited bandwidth, strict regulation, ever increasing health concerns and radiation hazards, exposure to interception, and interference that limits the number of co-located overlapping communications channels, Such interference limits the bandwidth and intensity of Radio frequency communication systems, which in turn limits their transmission ranges and rates. This is especially problematic when RF is used in proximity of sensitive and critical electronic equipment, such as in hospitals, airplanes etc.

However, the high peak-to-average ratio of the signals in radio frequency, can be turned into an advantage for Li-Fi.

Visible Light over Radio Waves

- Visible light is more plentiful than the radio waves. (More bandwidth)
- Visible light can achieve far greater data density.
- Can be used underwater without radio interference because salt conducts electricity
- Transmission can be blocked by walls so there is less risk of data leaking and hacking.
- Can be safely used on planes because it does not interfere with radio equipment.

How Li-Fi Works:

As we all know that light reaches everywhere. Imagine if certain information is to be passed using light as a medium. Not only will the communication get fast but also the possibilities coming with it. Such a technique of using Light as a medium is dubbed as the Li-Fi.

It works by sending data over the light.

For this purpose an LED (Light Emitting Diode) light bulb, anyone at all, can be flicked on and off in order to be able to generate signals. A proper Light Receiver is made for receiving the LED signals.

The LED bulb will hold a micro-chip that will do the job of processing the data.

The light intensity can be manipulated to send data by tiny changes in amplitude.

The LIFI product consists of 4 primary sub-assemblies:

1. Bulb
2. RF power amplifier circuit (PA)
3. Printed circuit board (PCB)
4. Enclosure

The light bulb is flickering up to billions of times a second. At that rate, the human eye simply cannot notice the light bulb being flicked on and off. Function of the Bulb Sub-Assembly: At the heart of Li-Fi is the bulb sub-assembly, where a sealed bulb is embedded in a dielectric material. This design is more reliable than conventional light sources that insert degradable electrodes into the bulb.

An RF (radio-frequency) signal is generated by the solid-state PA and is guided into an electric field about the bulb.

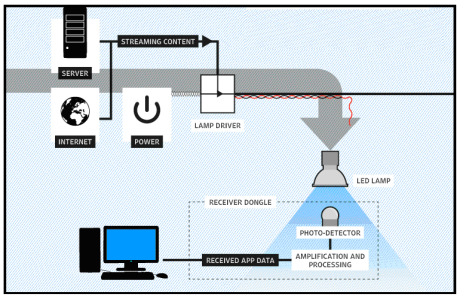
The PCB controls the electrical inputs and outputs of the lamp and houses the microcontroller used to manage different lamp functions

All of these sub assemblies are contained in an aluminum enclosure.

The high concentration of energy in the electric field vaporizes the contents of the bulb to a plasma state at the bulb's center; this controlled plasma generates an intense source of light.

Installation of Li-fi:

An overhead lamp fitted with an LED with signal processing technology streams data embedded in its beam at ultra high speed to the photo detector. A receiver dongle then converts the tiny changes in amplitude into an electrical signal, which is then converted back into a data stream and transmitted to a computer or mobile device.



Advantages of Li-Fi

- Environmentally Friendly: It uses LED instead of bulbs & hence is indirectly helping the environment.
- Higher speed: LiFi speed more than sufficient to download movie, games, music, etc. in less time. High speed connectivity of the rate of 500mbps
- Higher Capacity: Li-Fi has got a better capacity because of 10000 times wider bandwidths than radio waves. The issues of the shortage of radio frequency bandwidth may be sorted out by Li-Fi.
- Non Interrupted transmission: Li- Fi uses light rather than radio frequency signals are so intolerant of disturbances.
- Reduced cost and efficient: LED lights consume less energy and are highly efficient.
- Easy Availability: There are billions of bulbs worldwide, which just needs to be replaced with LED's to transmit data.
- Secured Network: Security is a side benefit of using light for data transfer as it does not penetrate through walls. So, they can't be intercepted and misused.

Drawback of Li-Fi

- The data receiver would have to be in sight of the transmitter-bulb as visible light does not penetrate solid materials.
- Presence of Light is required.
- Interference from external light sources like sunlight , normal bulbs; and opaque materials in the path of transmission will cause interruption in the communication

Difference between Wi-Fi and Li-Fi:

Sr.No	Wi – Fi	Li – Fi
1.	Wi-Fi transmits data over the radio waves. (Note: Both Wi-Fi & Li-Fi transmits data over the electromagnetic spectrum.	Li-Fi transmits data over the visible light & some Li-Fi technologies transfer data over all the frequencies of the electromagnetic spectrum.
2.	It can penetrate solids.	It cannot penetrate solids.
3.	The data transfer rate is much slower.	The data transfer rate is very fast.
4.	It Wi-Fi signals there is a lot of noise when the amount of Wi-Fi network increase in a particular area.	Such type of problem is not faced by the Li-Fi.
5.	No of user attach to Wi-Fi as per availability of bandwidth	Number of users attach to Li-Fi which are present under light

Application of Li Fi

- Li-Fi can be used in Hospitals where Radio Frequency signals are a threat to the medical equipment present in the hospital.
- Li-Fi could be used safely in aircraft without affecting airlines signals.
- Li-Fi can be used in petrochemical plants because Wi-Fi is not secured here.
- Underwater in sea Wi-Fi does not work at all but light can be used and hence undersea explorations are good to go now with much ease.
- On highways for traffic control applications like where Cars can have LED based headlights, LED based backlights, and they can communicate with each other and prevent accidents.
- Using this Technology worldwide every street lamp would be a free data access point as well as to auto-piloted cars that communicate through their headlights.

Conclusion:

The Li-Fi technology, attracting every user because it offers a genuine and very efficient alternative to radio based wireless. Li-Fi is the better alternative to replace the traditional Wi-Fi because of its advantages discussed. Li-Fi can be securely work on airplanes, in petrochemical plants where radio waves are not secured, hospitals, on highways to prevent accident, on street light as source of wireless communication. From this 5G Li-Fi technology, we can see that the Li-Fi is an advanced approach, having the best ever design of networking. Li-Fi technology provides feasible access and enormous application as compared to Wi-Fi and other network. The possibilities seem endless, and the potential is much broader than at first thought. With all the support pouring in, it won't be long now before Li-Fi becomes an everyday technology.

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APPLYING VARIOUS SPATIAL FILTERING ON DIFFERENT IMAGES FOR ENHANCEMENT PURPOSE-A SURVEY.

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Abstract:

Interpretation of image contents is one of the objectives in computer vision specifically in image processing.[1]. This paper has a review of various filters that are applying on digital images to have a better quality image so that we can easily understood the fine details in an image The filters are in spatial domain and applying it on medical images. We see that how these filters are applying on medical images and then how that image looked like after applying these filters. Spatial filtering is one of the principal tools used in these fields for a broad spectrum of application. Spatial filter consist of neighborhood and a predefined operation that is perform on image pixels encompassed by the neighborhood. Filtering creates a new pixel with coordinates equal to the coordinates of the center of the neighborhood, and whose value is the result of the filtering operation. [2]

Introduction:

Image enhancement is the processing images to increase their usefulness. Methods and objectives vary with the application. When images are enhanced for human viewers, as in television, the objective may be to improve perceptual aspects: image quality, intelligibility, or visual appearance.

Image Enhancement is closely related to image restoration. When an image is degraded, restoration of the original image often results in enhancement. In image restoration, an ideal image has been degraded, and the objective is to make the processed image resemble the original as much as possible. In other words image enhancement is the improvement of digital image quality, without knowledge about the source of degradation. If the source of degradation is known, one calls the process image restoration.[3]

The enhancement methods can be broadly classified into two categories:

1. Spatial domain methods
2. Frequency domain methods.

Spatial domain methods directly modify the image pixels to achieve desired enhancement in spatial domain. Frequency domain methods perform the enhancement operations to Discrete Fourier Transform (D F T) of an image in frequency domain [3].

The following filters are discuss in this paper

1) Smoothing Spatial Filter
   i) Lowpass Filter/Average Filter
   ii) Min Filter/Max Filter
   iii) Median Filter
2) Sharpening Filter
   i) Second Derivative for image sharpening: The Laplacian
   ii) Unsharp masking and Highboost Filtering

Basic of Spatial Filtering:

For performing neighborhood operation selecting a subimge from original image. This subimage is called mask.

The values in a filter subimage are referred to as coefficient rather than pixels.

The following figure shows the mechanism of spatial filtering.

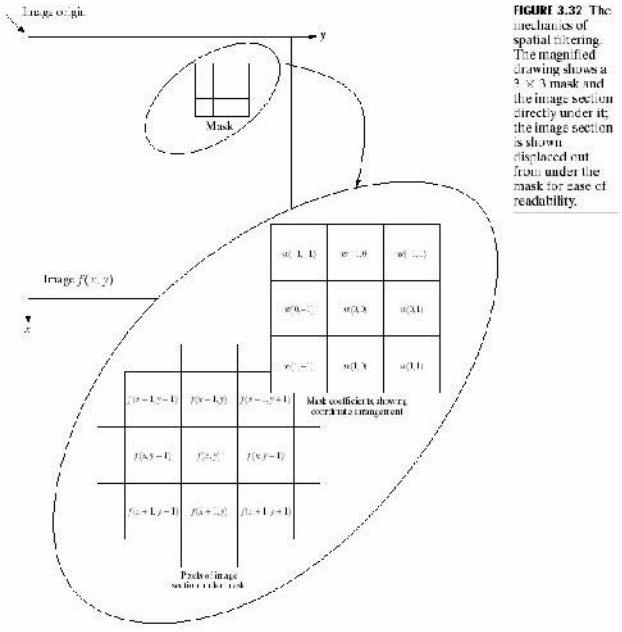


FIGURE 3.32 The mechanics of spatial filtering. The magnified drawing shows a 3 × 3 mask and the image section directly under it; the image section is shown displaced out from under the mask for ease of readability.

The purpose consists of simply moving the filter mask from point to point in an image. At each point the response of the filter at that point is calculated using predefined relationship.

The above figure illustrates the mechanics of linear spatial filtering using 3X3 neighborhood. At any point (x,

y) in the image , the response, g(x, y), of the filter is the sum of products of the filter coefficients and the image pixels encompass by the filter.

$$G(x,y)=w(-1,-1)f(x-1,y-1)+w(-1,0)f(x-1,y)+\ldots\ldots\ldots+w(0,0)f(x,y)+\ldots\ldots+w(1,1)f(x+1,y+1)$$

Observe that the center coefficient of the filter w (0,0), align with the pixel at location (x, y). For a mask of size mXn, we assume that m=2a+1 and n=2b+1, where a and b are positive integers. This means that our focus in the following discussion is on filters of odd size, with the smallest being of size 3X3. In general, linear spatial filtering of an image of size MXN with a filter of size mXn is given by the expression:

$$G(x,y)=\sum_{S=-a}^{a}\sum_{t=-b}^{b} w(s,t)f(x+s,y+t)$$

Where x, y are varied so that each pixel in w visits every pixel in f [1].

1. **Smoothing Spatial Filter**:

Smoothing filters are used for blurring and noise reduction. Blurring may be implemented in preprocessing tasks to remove small details from an image prior to large object extraction [4]

The output of a smoothing (averaging or lowpass) linear spatial filter is the average of the pixels contained in the neighbourhood of the filter mask. By replacing the value of every pixel in an image by the average of the intensity levels in the neighborhood defined by a filter mask, the resulting image will have reduced "sharp" transitions in intensities. Since random noise typically corresponds to such transitions, we can achieve denoising [4].

i. Lowpass Filter/Average Filter/Mean Filter:

The mean filter replace each pixel by the average of all the values in the local neighborhood. The size of the neighborhood controls the amount of filtering. In a spatial averaging operation, each pixel is replaced by a weighted average of its neighborhood pixels. The low pass filter preserves the smooth region in the image and it remove the sharp variation leading to blurring effect [5] . The 3X3 spatial mask which can perform the averaging operation is given below:

$$3X3\ filter\ mask = \frac{1}{9}X\begin{pmatrix}1 & 1 & 1\\ 1 & 1 & 1\\ 1 & 1 & 1\end{pmatrix}$$

It is to be noted that the sum of the elements is equal to 1 in the case of a low-pass spatial mask. The blurring effect will be more with the increase in the size of the mask. Normally, the size of the mask will be odd so that the central pixel can be located exactly [5]

It is to be noted that the sum of the elements is equal to 1 in the case of a low-pass spatial mask. The blurring effect will be more with the increase in the size of the mask. Normally, the size of the mask will be odd so that the central pixel can be located exactly [5]

Examples of such masks [4]:

$\frac{1}{9}\times$

1	1	1
1	1	1
1	1	1

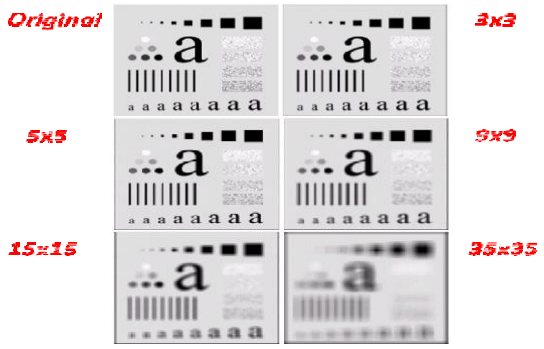
1) A box filter – spatial averaging filter 3x3, all mask values are same

$\frac{1}{16}\times$

1	2	1
2	4	2
1	2	1

2) Weighted average filter – attempt to reduce blurring

Average Filter Applying on Image:



***ii.* Min Filter/Max Filter:**

The median represents the 50th percentile of a ranked set of numbers, but the reader will recall from basic statistics that ranking lends itself to many other possibilities. For example, using the 100th percentile results in the so-called max filter given by:

$$\hat{f}(x,y) = \max_{(s,t)\in S_{xy}}\{g(s,t)\}.$$

This filter is useful for finding the brightest points in an image. Also, because pepper noise has very low values, it is reduced by this filter as a result of the max selection process in the Subimage area S_{xy}. The 0th percentile filter is the Min filter.

$$f(x,y) = min\{g(s,t)\}$$
$$(s,t)\in S_{xy}$$

This filter is used to find the darkest point in an image. Also it reduces salt and peppers noise as a result of min operation [1].

iii. Median Filter:

The median filters are order statistic non-linear filters that are often described in the spatial domain. A median filter smoothen the image by utilizing the median of neighborhood. The concept of median filter was introduced by Tukey in 1977. Its extension to two dimensional images was discussed by Pratt in 1978. Median filter perform the following task to find each pixel value in the processed image:

1. All pixels in the neighbourhood of the pixel in the original image which are identified by the mask are sorted in the ascending order or descending order.
2. The median of the sorted value is computed and is chosen as the pixel value for the processed image[1].

Example. Compute the median value of the marked pixel shown using a 3X3 mask:

1 5 7
2 4 6
3 2 1

Solution: The median value of the marked pixel is computed as follows:

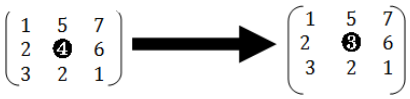
Step 1. The pixel values are arranged in ascending order as follows:

1 1 2 2 3 4 5 6 7

Step 2. The median value of the ordered pixels is computed as follows:

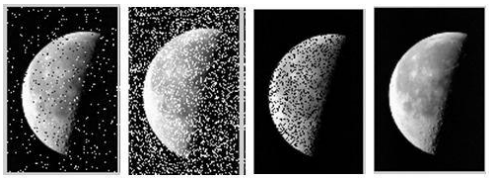
1 1 2 2 3 4 5 6 7

The median value is computed to be 3. Then, the original pixel value of 4 will be replaced by the computed median value of 3.



When median filters are applied to an image, the pixel values which are very different from their neighbouring pixels will be eliminated. . By eliminating the effect of such a odd pixels, the values are assigned to the pixel that are representative of the values of the typical neighbouring pixels in the original image [5].

Noisy Image with salt &pepper noise, output images of max, min & median filters of size 3x3[3]:



2) Sharpening Filter:

The objective of sharpening is to draw the attention to the fine details of an image. This is also related to the situation where an image that has been blurred and now need to be de-blurred. In contrast to the process of image smoothing that normally uses pixel averaging techniques, sharpening to be conducted using spatial differentiation .The image differentiation actually enhance edges and other discontinuities and depress the areas of slowly changing gray level values[6].

Sharpening filters that are based on first- and second -order derivatives [1].

i. Second Derivative for image sharpening: The Laplacian:

As the pixel per area unit increases, the image of higher resolution (shown in fig. 3) which could limit the contrast and cover the sharpness in the image is achieved. highest resolution Therefore, a new sharpening technique is proposed by P. Pattanasethanon and B. Atachoo, which enhances simultaneously the brightness and the contrast of the image with higher resolution [9]

The second order derivative is calculated using Laplacian. It is simplest isotropic filter. Isotropic filters are the ones whose response is independent of the direction of the image to which the
operator is applied. The Laplacian for a two dimensional function f(x, y) is defined as

$$\nabla^2 f = \frac{\partial^2 f}{\partial x^2} + \frac{\partial^2 f}{\partial y^2}$$

Partial second order directive in the x-direction

$$\frac{\partial^2 f}{\partial^2 x^2} = f(x+1, y) + f(x-1, y) - 2f(x, y)$$

And similarly in the y-direction

$$\frac{\partial^2 f}{\partial y^2} = f(x, y+1) + f(x, y-1) - 2f(x, y)$$

The digital implementation of a two-dimensional Laplacian obtained by summing the two Components

$$\nabla^2 f = [f(x+1, y) + f(x-1, y) + f(x, y+1) + f(x, y-1)] - 4f(x, y)$$

The equation can be represented using any one of the following masks[6]

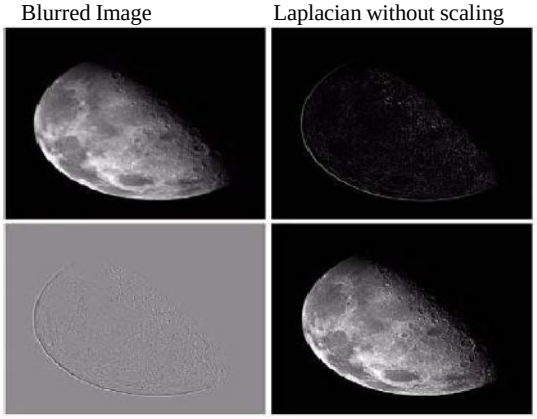
0	1	0	1	1	1
1	−4	1	1	−8	1
0	1	0	1	1	1
0	−1	0	−1	−1	−1
−1	4	−1	−1	8	−1
0	−1	0	−1	−1	−1

Because the Laplacian is a derivative operator, its use highlights intensity discontinuities in an image and deemphasizes regions with slowly varying intensity levels. This will tends to produce images that have grayish edge lines and other discontinuities, all superimposed on a dark, featureless background. Background features can be recovered while still preserving the sharpening effect of the Laplacian simply by adding the Laplacian image to the original image.

Thus the basic way in which we use the Laplacian for image sharpening is [1]:

$$g(x, y) = f(x, y) + c[\nabla^2 f(x, y)]$$

Blurred Image | Laplacian without scaling



Laplacian with scaling | sharpen output image

ii. Unsharp Masking & Highboost Filtering:

It is a process of subtracting a blurred version of an image from the image itself. It has contrast limitations and therefore G. Deng proposes a generalized Unsharp Masking algorithm[7]

This process called unsharp masking, consist of following steps [1]:

1. Blurred the original image.
2. Subtract the blurred image from the original image the result is called mask.
3. Add the mask to original image.

Mathematically Unsharp masking operation is given by:

$$f_s(x,y) = f(x,y) - \overline{f}(x,y)$$

Where f_s (x ,y) denotes the sharpened image obtained by unsharp masking and $\overline{f}(x, y)$ is a blurred version of f(x ,y).

A slight further generalization of unsharp masking is called high boost filtering. A high boost filtered image is defined at any point (x ,y) as

$$f_{hb}(x,y) = Af(x,y) - \overline{f}(x,y)$$

Where f_{hb}(x, y) is a Highboost filtering image. A high-boost filter is also known as a high-frequency emphasis filter. A high-boost filter is used to retain some of the low-frequency components to aid in the interpretation of an image. In high-boost filtering input image h (m, n) is multiplied by an amplification factor A before subtracting the low-pass image. [10]

The following figure shows the original image, a cat (left), and its low-pass (middle) and high-pass (right) filtered versions.

Conclusion:

We have discussed the filters in spatial domain for image smoothing and sharpening. Average filter used for blurring and for noise reduction but having the limitations that: i) It leads to the blurring of an image. ii) If the averaging filter operation is applied to an image corrupted by impulse noise then the impulse noise is attenuated and diffused but not removed. As increasing the size of the mask result in more blurring of the image. Min, Max, and Median filter are non-linear filters. Median filter is capable of removing salt and pepper noise & spot of flat intensity but these filters are also removed uncorrupted data. Sharpening filter highlight transition in intensity. This filter applied in electromagnetic printing and medical imaging. Laplacian filter sometime enhance noise. Unsharp masking and highboost filtering is high frequency filter has been used for many years by the printing and publishing in industry to sharpen image.

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E-SHOPPING AND YOUTH: STUDY OF AWARENESS AND IMPACT

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Abstract:

In India evolution of Computer and Information Technology in the recent years has a profound impact on people, especially on young generation. E-commerce is a new trend of business in India that changes the traditional concept of buying and selling of goods and services by making them available online. E-commerce opened up new opportunities of shopping for shoppers. There are various e-shops available on internet, like Flipkart.com, Snapdeal.com, Amazon.com, Shopclues.com etc. This paper is an attempt to analyze the awareness and impact of e-shopping on the youth. It is the result of a survey conducted in September 2015. The sample size of 100 respondents was obtained by distributing the well structured questionnaire to the students. For sample the stratified random cum convenience sampling method was used. The scope of this study was limited to the students of the KCES's Institute of Management and Research, Jalgaon. The result shows that the awareness level of e-shopping is very high in the young generation. It indicates that Flipkart.com is the preferred e-shop and the most purchased product category is electronics. It is also found that 88% youth is happy by shopping online. This study also shows that the satisfaction level differs on various parameters of product.

Keywords: *Online, E-Commerce, E-shopping, E-shop, Youth, Preference etc.*

1. Introduction:

In the 21st century India is transforming to a digital revolution. Government of India has also launched the Digital India campaign with a vision to transform India into a digitally empowered society and knowledge economy. In India most of the things are available in digital format nowadays, e.g. e-Ticket, e-Banking, e-Insurance, e-Cash, e-Payment, e-Billing, e-Business, e-Shopping, e-Learning, e-Books etc.

Nowadays in India online shopping trend became popular in shoppers, because instead of going to physical store and purchase products, they preferred to shop online as per their convenience. E-Shopping has emerged as a new trend in India.

E-shopping is a part of E-Commerce. E-commerce can be best described as buying and selling of goods and services over the Internet. This includes both business-to-business (called B2B) and business-to-consumer (B2C) transactions (C.S.V.Murthy, 2002) (Placeholder2). E-shopping is the act of purchasing products or services over the Internet. Online shopping has grown in popularity over the years, mainly because people find it convenient and easy to shop from the comfort of their home or office.

According to Business Dictionary, **"Online shopping** (sometimes known as **e-shopping**) is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser".

As e-shops or online stores emerged and evolved rapidly in India, it is important to know that how much people are aware about this new trend of shopping. This paper is an attempt to analyze the awareness and impact of e-shopping on the young generation.

1.1 Objectives of the study:

- To study e-shopping awareness in youth.
- To study the preference to purchase from e-shop.
- To identify which e-shopping websites are preferred for shopping.
- To find out which category of goods are mostly purchased from e-shops.
- To find out satisfaction of e-shoppers.
- To analyze the youth's satisfaction about e-shopping on different criteria.

2. Research Material and Design:

This study is empirical in nature which considers primary as the main source. Secondary sources of information such as books, journal, websites etc. were used for developing basic understanding about the concepts, terms and techniques. The sample includes the students of KCES's Institute of Management and Research, Jalgaon. The survey instrument is a questionnaire. In the data collection process, 120 questionnaires were distributed to the students, out of which only 100 complete questionnaires were obtained for analysis. The sampling method used was stratified random cum convenience sampling. In the survey, objectives type, yes-no type questions were framed as well as five point scale were also used for various criteria. Data analysis was done using frequencies, cross tabulation, and percentage etc. The statistical software SPSS 23 was used to analyze the result and minimize the errors.

3. Findings and Discussion:

Total 100 respondents were selected out of which 52 were undergraduate students and 48 were post graduate students, the age group of the respondents was between

18 to 26 years. Female respondents were 49 and male respondents were 51. Maximum respondents were from lower middle class as family annual income is less than 3 lakh rupees. Previous study shows that the popularity of Flipkart is maximum followed by Snapdeal and Amazon (Author name and year).

As per the statistical analysis of the data using SPSS software the following results are observed:

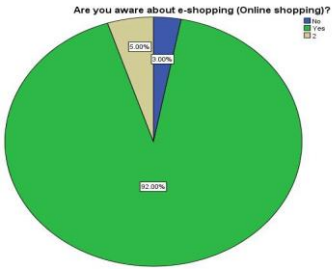
3.1 E-Shopping awareness in youth:

Are you aware about e-shopping (Online shopping)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	3.0	3.0	3.0
	Yes	92	92.0	92.0	95.0
	Note sure	5	5.0	5.0	100.0
	Total	100	100.0	100.0	

Table 1

This data is also represented through following chart:



Pie Chart 1

Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	85	85.0	90.4	90.4
	Yes	9	9.0	9.6	100.0
	Total	94	94.0	100.0	
Missing	System	6	6.0		
Total		100	100.0		

This study shows that 92% respondents are aware about e-shopping. Only 3% percent respondents are not aware about e-shopping, and 5% respondents are not sure about what actually e-shopping is.

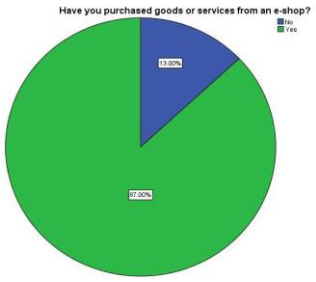
3.2 Whether youth has purchased from e-shops:

Have you purchased goods or services from an e-shop?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	13	13.0	13.0	13.0
	Yes	87	87.0	87.0	100.0
	Total	100	100.0	100.0	

Table 2

Above result also described through following chart:



Pie Chart 2

This study found that 87% respondents purchased goods or services from e-shops and only 13% respondents are there who did not purchased from an e-shop. This result shows that maximum respondents have purchased from e-shops.

3.3 Frequency of e-shopping websites from which shopping has been done:

Amazon.in

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	54	54.0	57.4	57.4
	Yes	40	40.0	42.6	100.0
	Total	94	94.0	100.0	
Missing	System	6	6.0		
Total		100	100.0		

Table 3

Flipkart.com

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	19	19.0	20.2	20.2
	Yes	75	75.0	79.8	100.0
	Total	94	94.0	100.0	
Missing	System	6	6.0		
Total		100	100.0		

Table 4

Snapdeal.com

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	54	54.0	57.4	57.4
	Yes	40	40.0	42.6	100.0
	Total	94	94.0	100.0	
Missing	System	6	6.0		
Total		100	100.0		

Table 5

Table 6

Above frequency tables shows the respondents choices of e-shops from which they had done e-shopping. This study shows that 94 respondents provide their choices and only 6 respondents who were not selecting any choice.

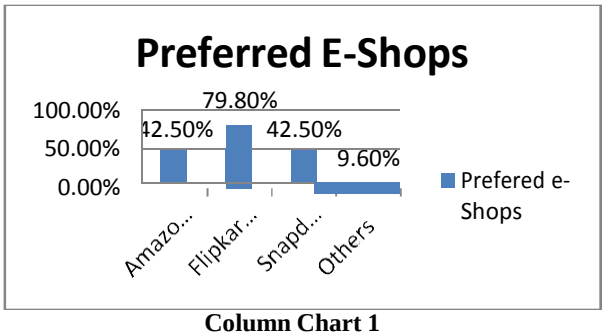
According to above frequencies 42.6% respondents did their e-shopping from "Amazon.in", 79.8% respondents purchased from "Flipkart.com", 42.6% respondents selects "Snapdeal.com" for e-shopping, and only 9.6% respondents preferred other e-shops for shopping such as yepme.com, shopclues.com, myntra.com, jabong.com, IRCTC.org, etc.

This above result shows that "Flipkart.com" has emerged as the most preferred e-shopping brand, whereas

Amazon.in and Snapdeal.com has come in second jointly. This result is described through following chart:

Amazon. in	42.5%
Flipkart.com	79.8%
Snapdeal.com	42.5%
others	9.6%

Table 7



Column Chart 1

3.4 Mostly purchased goods category from e-shops:

Following are the frequency tables that shows the frequency of various categories of goods which are purchased:

1. Electronics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	36	36.0	38.7	38.7
	Yes	57	57.0	61.3	100.0
	Total	93	93.0	100.0	
Missing	System	7	7.0		
Total		100	100.0		

Table 8

2. Books

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	71	71.0	76.3	76.3
	Yes	22	22.0	23.7	100.0
	Total	93	93.0	100.0	
Missing	System	7	7.0		
Total		100	100.0		

Table 9

3. Clothing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	65	65.0	69.9	69.9
	Yes	28	28.0	30.1	100.0
	Total	93	93.0	100.0	
Missing	System	7	7.0		
Total		100	100.0		

Table 10

4. Footwear

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	68	68.0	73.1	73.1
	Yes	25	25.0	26.9	100.0
	Total	93	93.0	100.0	
Missing	System	7	7.0		
Total		100	100.0		

Table 11

5.Other

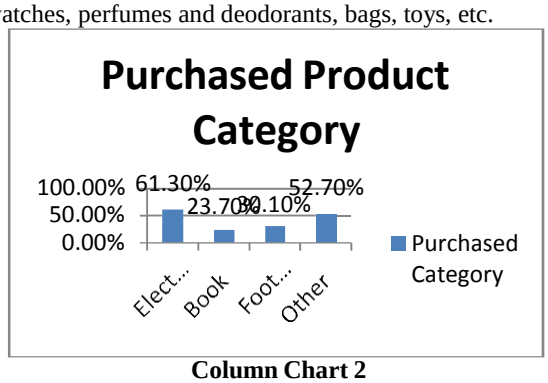
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	44	44.0	47.3	47.3
	Yes	49	49.0	52.7	100.0
	Total	93	93.0	100.0	
Missing	System	7	7.0		
Total		100	100.0		

Table 12

Above frequency tables shows the respondents answers to the question that "which category of goods they have purchased online?" This study shows that 93 respondents provide their answers and only 7 respondents who were not answering.

According to above frequencies 61.3% respondents purchased electronic goods, 23.7% respondents purchased books, 30.1% respondents purchased footwear, and 52.7 respondents purchased other categories of goods.

This result shows that the "electronic goods" are mostly purchased from e-shops as compare to others categories of goods such as books, clothing, footwear, sunglasses, watches, perfumes and deodorants, bags, toys, etc.



Column Chart 2

3.5 Satisfaction of e-shoppers by shopping online:

Are you happy with e-shopping?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	5.0	5.0	5.0
	Yes	88	88.0	88.0	93.0
	Dont Know	7	7.0	7.0	100.0
	Total	100	100.0	100.0	

Table 13

Above frequency table shows that 88% respondents are happy with shopping online, where only 5% respondents said that they were not happy with e-shopping, and 7% respondents said that they are not sure. This result is described through following chart:

Pie Chart 3

3.6 Youth's satisfaction about e-shopping according to their rates on different criteria:

For the analysis of youth's satisfaction about e-shopping a five scale method were used. This method contained Totally Dissatisfied, Dissatisfied, Ok, Satisfied, and Fully satisfied scales. The used criteria are Product Quality, Product Variety, and Product Delivery etc. The analysis is as follows:

Product quality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Dissatisfied	3	3.0	3.0	3.0
	Dissatisfied	4	4.0	4.0	7.0
	Ok	33	33.0	33.0	40.0
	Satisfied	51	51.0	51.0	91.0
	Fully satisfied	9	9.0	9.0	100.0
	Total	100	100.0	100.0	

Table 14

Product Variety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Dissatisfied	1	1.0	1.0	1.0
	Dissatisfied	2	2.0	2.0	3.0
	Ok	33	33.0	33.0	36.0
	Satisfied	50	50.0	50.0	86.0
	Fully satisfied	14	14.0	14.0	100.0
	Total	100	100.0	100.0	

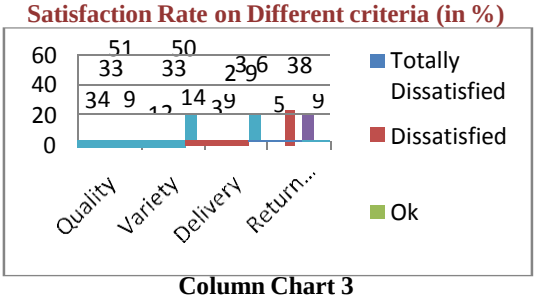
Table 15

Product Delivery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Dissatisfied	3	3.0	3.0	3.0
	Dissatisfied	9	9.0	9.0	12.0
	Ok	29	29.0	29.0	41.0
	Satisfied	36	36.0	36.0	77.0
	Fully satisfied	23	23.0	23.0	100.0
	Total	100	100.0	100.0	

Table 16

According to above result following chart is prepared that shows overall satisfaction rate of respondents depending on different product criteria:



Column Chart 3

The above chart show that 59%, 64%, and 59% respondents are satisfied about product quality, product variety and product delivery respectively including "Satisfied" and "Totally Satisfied" rates, as compare to this the satisfaction level about return policy of product was very low that is only 31%.

4. Conclusion and Recommendations:

The study shows that 92% of the youth is aware about e-shopping which is a very high rate of percentage, but the effort should be made to make it 100%. It is also showed that 87% of the youth have already purchased through e-shops, and the efforts should be made by the online stores that the percentage moves further. The most popular website or e-shop is Flipkart.com (79.80%), followed by Amazon.com and Snapdeal.com both (42.5%). Other website needs to make extra efforts to become popular in the youth by offering various schemes and discounts on purchasing. The youth preferred to buy electronics items using e-store (61.30%), the other major categories of products are footwear (30.10%), books (27.70), other product categories are not having significant presence in youth market for e-shop. User's satisfaction level differs from parameter to parameters. Maximum satisfaction is expressed regarding product quality is 60%, product variety is 64%, and product delivery is 59% including "Satisfied" and "Totally Satisfied" rates.

E-shopping companies need to pay attention to its return policy as maximum dissatisfaction of the respondents is regarding return policy.

If the problematic areas are taken care of and effective promotional activities for creating awareness and positively pursuing youth is done then e-shopping will have bright future and the youth which is hooked to this shopping style will continue this habit even in the later years.

5. Limitation of the study:

This study focused on young generations only, and did not survey the others. Study area was limited for 100 respondents only. Also, the study did not consider the other colleges of the Jalgaon city due to time constraint hence it is a representative study.

6. References: Books:

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3. Source URL: http://www.digitalindia.gov.in/content/introduction

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E-SHOPPING AND YOUTH: STUDY OF AWARENESS AND IMPACT

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Abstract:

During the past few years, India has seen several Indian Digital Library initiatives and resources at the institutional, organizational and at national levels. Indian Digital libraries have attracted almost all the developed and developing countries due to its multifaceted features and the opportunities it extend to the information providers and information seekers. Creating effective digital libraries and providing cutting edge digital information services poses serious challenges for existing and future technologies. They include collection building, infrastructure, acceptability, access restrictions, readability, standardization, authentication, preservation, copyright, policy and strategic issues, user interface, funding etc. However, optimists expect a rapid change and impact of the digital information.

Keyword: Electronic Resources, Digital Library, ICT, IT, Digitization

INTRODUCTION

Knowledge Management leveraging on Information Science, Information Technology (IT) and Information Management (IM) is the recent trend and strategy seen in the advanced academic and corporate environment. Particularly, in India, open Digital Library initiatives are picking up unprecedented institutional as well as professional group attention owing to a variety of excellent features offered by these DLs. One of the major reasons being, presently, more than 70 percentage of world's scholarly literature are bornliterature of similar works. digital. Naturally when they are acquired by the libraries for patron's use they will have to be acquired in the digital form. A digital library is a collection of information that is both electronic as well as digitized and it gives us powers we never had with traditional libraries.

The libraries of those institutions also play a vital role in acquiring and disseminating information for academic and research activities. Digital libraries are a way of making educational and research data

and information available to faculty, researchers, students, and others at the institutions and worldwide.

Digitization & Digital Library Development:

The term 'Digitization' and 'Digital Library' have evoked a wide range of responses among the people who have interest in digital Information. In the last fifteen years, developments occurred in digital information world, have a significant impact on digital resources. The Information world has already switched from the conventional print to the digital information. The degree of the digital impact in the information world depends on where we live. In developed economies, digital resources determine the information handling activities almost exclusively. This, it becomes essential for information professionals to investigate and understand and digitization and digital library development process.

DEFINITION

'Digitization' to mean the electronic assembling, disassembling, and transmitting of the basic elements of intellectual capital. Digitization refers to the process of translating a piece of information such as a book, sound recording, picture or video, data, into bits. Bits are the fundamental units of information in computer systems. Turning information into these binary digits is called digitization.

OBJECTIVES OF THE STUDY

1. Identify the status of resources available on Digital Library
2. Motivate the users to maximize the use of electronic resources available on Digital Library
3. Platform for sharing of information and knowledge resources
4. Providing Digital/Information Literacy for teacher empowerment

METHODOLOGY

The present study is based on review of literature of similar works.

SCOPE OF THE STUDY

The present study deals with Resources available on Digital Library initiatives in India. The study of work is also facilitate sharing of high cost resources available at various institutions with a view to improving their capacity utilization.

Digital Library Initiatives in India

During the past five years, India has seen several Digital Library initiatives at the institutional, organizational and at national levels. Some of them are quite successful while others are making significant progress.

Major Initiatives on Digital Libraries in India:

1. **Indian Institute of Technology, New Delhi**
   :http://www.iitd.ac.in/

Digital library initiatives began in 1998 with an upgrade to a faster Internet connection. The high-speed Internet connection led to a number of digitized collections. IITs receive grants from government bodies such as AICTE (All India Council of Technical Education) and the Ministry of Human Resources Development and Management (MHRD) to develop digital libraries. Online courseware has been developed and older volumes of journals have been digitized, among other projects. More than 500 dissertations are available in the repository. The campus has facilities for submitting material to the repository. More than 25,000 pages of journals were scanned and are available on the Institute intranet.

2. **Indian Institute of Technology, Kharagpur:** http://www.library.iitkgp.ernet.in/usr/elib/digital.htm

The Central Library, IIT Kharagpur, created an electronic library in 1994, which is now called a digital library. Older documents have been digitized, and it has large number of electronic resources such as EiTech index, Compendex, IEEE / IEE journals in full text, INSPEC, Current Contents, Chemical Abstracts, Biotechnology Abstracts, Agricultural Abstracts, Library and Information Science Abstracts, ASTM standards and ABI. The institutional repository collects, preserves, and disseminates research output. At present, access is restricted to the IIT Kharagpur campus LAN only and submission of documents to this repository is also limited to the IIT Kharagpur research community.

3. **Indian Institute of Technology, Mumbai (**http://www.library.iitb.ac.in/~mnj/gsdl/cgi-in/library

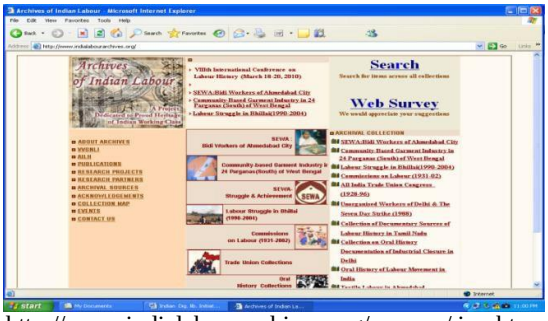
The repository has bibliographic information and abstract for dissertations beginning in 1965. The masters thesis database has bibliographic information and abstract from 1999 on. More than 3,000 full text theses and Dissertations are available in the ETD database. The repository uses Greenstone, open source software, which complies with the Open Archives Initiative (OAI) protocol.

4. **Archives of Indian Labour at the V.V. Giri Institute of Labour :** (http://www.indialabourarchives.org/sources/ jnu.htm)

Its objective is to cater primarily to the academics needs of students, researchers, faculties and other communities of the university. Its collection are mainly on the Social science, Administrative Science, Demography, Economics, Education, Geography, History, Informatics, law, Anthropology, Sociology, Social Welfare etc.

The Archives of Indian Labour was set up in July, 1998 as a collaborative project of V.V. Giri National Labour Institute and the Association of Indian Labour Historians. The Archives of Indian Labour is dedicated to the cause of preserving and making accessible the fast depleting documents on the working class with the belief that, "Archive is to society what memory is to human beings"

Fig 1: Homepage of Archives of Indian Labour



http://www.indialabourarchives.org/sources/ jnu.htm

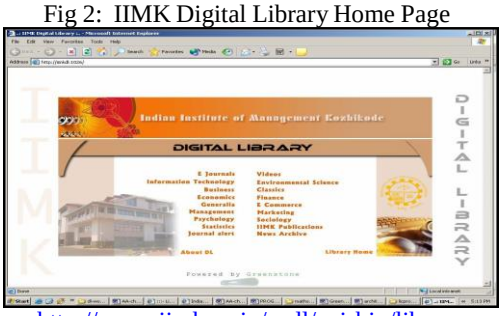
5. **Indian Institute of Science NCSI** (http://vidya-mapak.ncsi.iisc.ernet.in/cg-in/library)

The Institute uses e-Prints, an institutional repository of research output. The archive is maintained by the National Center for Science Information (NCSI) and it supports self-archiving in various file formats (pdf, word, html, etc.) Around 5,000 articles are available.

6. **Indian Institute of Management Kozhikode (**http://intranet.iimk.ac.in/cgi-in/library)

A fully automated modern Library & Information Centre (LIC) is on its way to becoming an outstanding learning resource centre catering to the ever growing and uncompromising information and intellectual requirements of the students, faculty, and researchers. A balanced programme on the development of the collection of hard copy, audio/video, CD-ROM, and other electronic forms of documents is being followed.

Fig 2: IIMK Digital Library Home Page



http://www.iimk.ac.in/gsdl/cgi-bin/library

7. **Digital Library SDL at DRTC Bangalore** (https://drtc.isibang.ac.in/index.jsp)

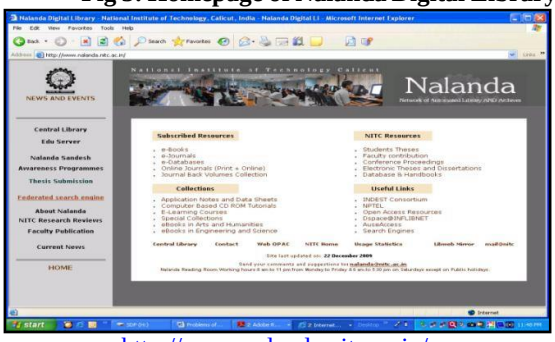
To disseminate results of research, information analysis and consolidation, in the different branches of Information Sciences through publications and extension services, as the case may be. To develop manpower for information management and for advanced teaching in Library and Information Science. To ensure and promote professional advancement of the educated and trained manpower by offering continuing education and training programs.

8. **Nalanda Digital Library, National Institute of Technology (NIT) Calicut** (http://www.nalanda.nitc.ac.in)

The Library at National Institute of Technology, Calicut, Kerala State, India decided to go digital in 1997. We started by automating the routine operations of the Library by installing a Library Management Software and

by Bar Coding our entire collection of books and back volumes. And then, we set up a Digital Library. We call it Nalanda Digital Library.

Fig 3: Homepage of Nalanda Digital Library



http://www.nalanda.nitc.ac.in/

The Nalanda Digital Library are referring to

1. **INDEST Consortium**
2. NITC Library
3. **What does Nalanda Offer to CampusUsers?**
4. What does Nalanda Offer to Guests?

9. Vidyanidhi Project (http://www.vidyanidhi.org.in)

Vidyanidhi is all about our belief in the global community to come together for a partnership for basic education. The Government of Andhra Pradesh through its Sarva Shiksha Abhiyan programme has facilitated the creation of a Primary School facility in every habitation of Andhra Pradesh. These are schools run by the community, supported by the State Government through its Mission for Basic Education.

Fig: Homepage of Vidyanidhi Project

http://www.vidyanidhi.org/

Internet has created a global community. Let us use it to open a window to provide opportunities for the less privileged to equalize. With a contribution to Fund-a-school, you become a partner in building the future of the children of a village in Andhra Pradesh in India.

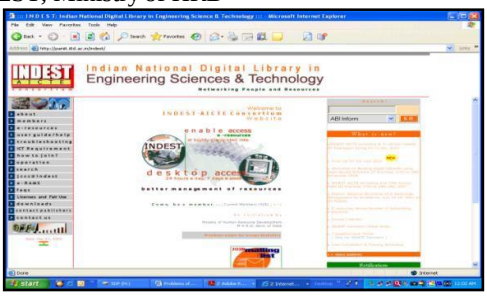
12. INDEST, Ministry of HRD, GOI

(http://paniit.iitd.ac.in/indest)

The Ministry of Human Resource Development (MHRD) has set-up the "Indian National Digital Library in Engineering Sciences and Technology (INDEST) Consortium" on the recommendation made by the Expert Group appointed by the ministry of HRD, GOI. The Ministry provides funds required for subscription to electronic resources for (48) institutions including IISc, IITs, NITs, IIMs and a few other centrally-funded Government institutions through the consortium headquarters set-up at the IIT Delhi. Besides, (60) Government or Government-aided engineering colleges and technical departments in universities have joined the Consortium with financial support from the AICTE. All electronic resources being subscribed are available from the publisher's Website.

The benefit of consortia-based subscription to electronic resources is not confined to 38 major technological institutions in the country but is also extended to all AICTE-accredited and UGC-affiliated institutions. (353) engineering colleges and institutions have already joined the consortium on their own. Recently (457) engineering colleges and institutions joined under self support- new scheme.

Fig: Homepage of INDEST, Ministry of HRD

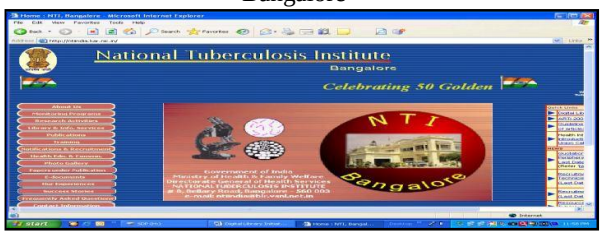


http://paniit.iitd.ac.in/indest/

13 .National Tuberculosis Institute (NTI), Bangalore (http://ntiindia.kar.nic.in/)

The National Tuberculosis Institute, Bangalore under the initiative & support from the **Health Internet work Project, India - TB** has launched the digital library and released the CDs on tuberculosis as ready reference tool for programme workers at District and Primary Health Centre level on 28th October 2003. The CDs on TB has the relevant documents and scientific literature on programme, treatment, drug resistance and control aspects of tuberculosis.

Fig: Homepage of National Tuberculosis Institute (NTI), Bangalore



http://ntiindia.kar.nic.in/

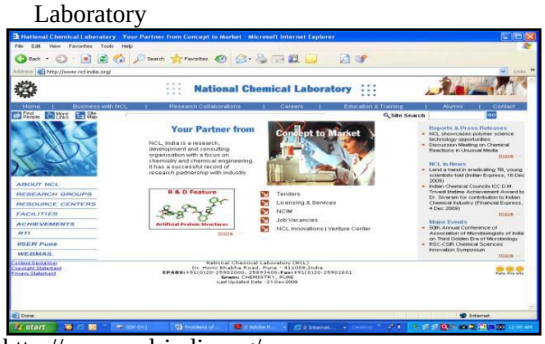
14. IITMK Trivandrum:

http://www.iiitmk.ac.in/iiitmk/digitallibrary.htm

Use of these resources is governed by license agreements, which restrict use to the IIITMK community and IIITMK Library members. If you are in search of information for a research paper and preparing a presentation for a class, or seeking for information in latest topics, or looking for an interface where you can find most of the resources related to your field, then visit our Digital Library.

15. **National Chemical Laboratory (NCL, CSIR)** (http://dspace.ncl.res.in)

Fig: Homepage of National Chemical Laboratory



http://www.ncl-india.org/

16. **Indian Parliament Library** (http://parliamentofindia.nic.in)

This library serves members of Parliament and officers and staff of Lok Sabha Secretariat. Large databases were initially developed by the computer centre. The data are stored and available now in PARLIS (Parliament Library Information System).

Digital Library Development

Issues in India

There are umpteen numbers of problems the Digital Library development teams face in India while they embark on the digital library development as well as during the progress phase. Some of the prominent and predominant among them include the following:

1. **Lack of proper Information & Communication Technology (ICT) Infrastructure Digital Libraries demand cutting edge IT and Communication infrastructure**

such as:

a. High end and powerful Servers; Structured LAN with Broadband Intranet facilities, ideally optical fibre based Gigabit networks

b. Required number of Workstations capable of providing online information services, computing and multimedia applications

c. Internet connectivity with sufficient bandwidth, capable of meeting the informational and computational requirement of the user community

2. **Lack of Proper Planning and Integration of Information Resources**

Presently the library acquisitions in India are either paper based and electronic. In most of the libraries, paper based documents outnumber the electronic subscriptions and acquisitions. Literature on related studies show that there is a severe lapse on the libraries with regard to proper planning of their information resources which are conducive for developing digital libraries. Also, the electronic resources penetrate to the libraries in a multiplicity of complex formats and with different access terms and conditions. These information resources are scattered and distributed across a wide variety of publication types and a vast number of publishers.

3. **Rigidity in the publishers' policies and data formats**

Having successfully installed and configured a digital library does not qualify a library to automatically populate all its digital collection into the digital library. One has to obtain publisher's consent and copyright permissions for the same. Digital library softwares usually accept and process all popular and standard digital formats such as HTML, Word, PPT, or PDF. Most of the publishers put their materials in their own proprietary e-book reader formats, from which the text extraction becomes almost impossible. A vast majority of the scholarly content rests in journal literature and due to copyright issues they cannot be easily find its way into the local repositories of the digital library.

4. **Lack of ICT Strategies and Policies**

A vast majority of the libraries in India do not have laid down policies on ICT panning and strategies to meet the challenges posed by the technology push, the information overload, as well as the demand pull from the users.

5. **Lack of Technical Skills**

The Human Resources available in the libraries need time-to-time professional enrichment inputs and rigorous training on the latest technologies which are playing around in the new information environment. The kinds of training programmes being imparted in India at the moment are not able to meet the demand in terms of quantity as well as quality.

6. **Management Support**

For the provision of world class information systems, resources and services the libraries need the wholehearted support from the respective management. Institutional support in terms of proper funding, human resources and IT skills enrichment are prerequisites for the development and maintenance of state-of-art digital library systems and services. There are many more pressing problems being faced by the libraries in India in its pursuit of building digital libraries.

7. **Copyright / IPR Issues**

Issues of copyright, intellectual property and fair use concerns are posing unprecedented array of problems to the libraries and librarians are struggling to cope with all these related issues in the new digital information environment.

DIGITAL LIBRARY:

A **digital library** is a library in which collections are stored in digital formats and accessible by computers. The digital content may be stored locally, or accessed remotely via computer networks. A digital library is a type of information retrieval system.

An organization, which might be virtual, that comprehensively collects, manages and preserves for the long term rich digital content, and offers to its user communities specialized functionality on that content, of measurable quality and according to policies.

DIGITAL LIBRARY RESOURCES

Resources on Digital Libraries in India are furnished below:

1. **E-Prints at IISc**: www.ncsi.iisc.ernet.in

Fig: Homepage of eprints@IISc

www.ncsi.iisc.ernet.in

The National Center for Science Information in Bangalore hosts e-library facilities and provides full-fledged comprehensive set of e-publishing tools set up as part of the Open Archives Initiative Protocol for Metadata Harvesting. This is one of the very first initiatives to provide online publishing facilities for research scholars and academia.

National Centre for Science Information (NCSI) is the information centre of Indian Institute of Science, Bangalore, which provides electronic information services to the Institute academic community.

2. **TIFR Digital Library Initiative:** www.tifr.res.in/~library/

The TIFR online public access catalog provides access to several standard international publications and journals such as IEEE and Springer. This resource is also involved in the process of providing digital access to materials, e-books.

Services (http://www.tifr.res.in/SIRC/index.php)

1. Online Public Access Catalogue

SIRC has Web OPAC which is a powerful web based search engine for searching books and journal holdings database.

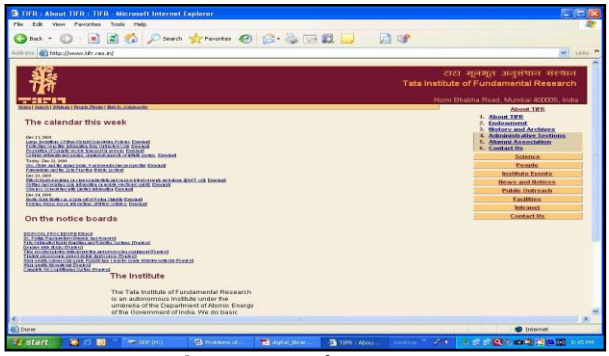
2. Issue of Books/Journal Volumes

Users may borrow books and bound volumes of journals for a stipulated period.

3. Reference Service/Assistance

Reference queries from users are answered over telephone, email or in person. While general queries are answered by the staff at the desk, specific queries regarding books or journals could be referred to with personnel of the concerned section.

Fig: - Homepage of TIFR



http://www.tifr.res.in/

4. Photocopy Service

Instant photocopy of limited number of pages from loose issues of journals is provided free of cost to users by the desk staff. Photocopies of journal articles from bound volumes are provided free of cost to academic/scientific staff of TIFR.

5. Inter-library Loan

SIRC has an inter-library loan arrangement with all important government and semi-government academic institutions of India. Books or journals which are not available with TIFR can be procured from these institutions for a short period.

6. On-line Databases

SIRC provides access to over 3000 on-line journals. SIRC also has access to some of the back files, even to 1660s. SIRC has access to full text databases such as Springer LINK, ACM Digital Library and IEL Online.

7. CD-ROM Search

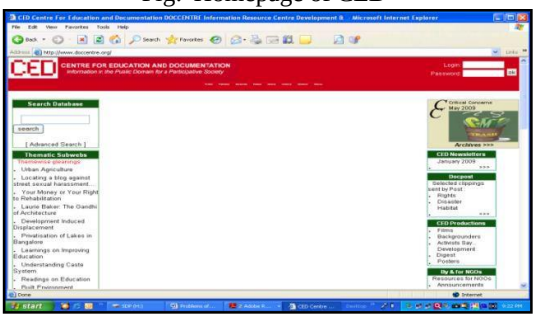
SIRC, for the use of TIFR Scientific Community, has installed a CD-Mirror Server. This sever contains various electronic information resources such as Encyclopedia Britannica, the National Geographic (1888-1999), and back files of various journals etc.

8. Multimedia resources

SIRC has a collection of audio-visual materials. Users can make use of these preferably after normal working hours.

3. **Center for Education and Documentation:** www.ced.org

Fig: Homepage of CED



http://www.doccentre.org/

The Center for Education and Documentation hosts a variety of resources including books, journals and newspaper clippings on contemporary history and video documentaries on social change and

development in its premises in Bangalore and Mumbai. CED has also come up with online reference facilities such as DocPost and DocEmail, where one could selectively request photocopies or softcopies of material to be sent via post or email with subsidized charges.

Apart from the numerous books and documentation kept in its physical and electronic libraries, CED provides information and documentation through various supports:

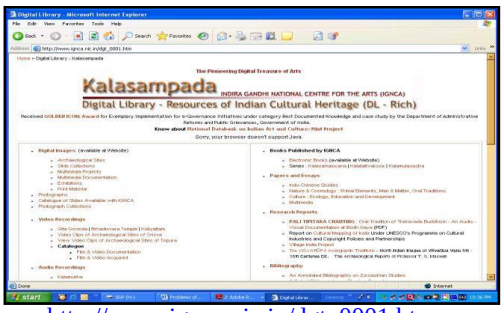
- ***Docpost*** are physical copies of clippings and articles organized subject wise mainly on the following topics: legal and human rights, habitat, disaster.
- ***Critical Concerns*** is a monthly selection of articles and clippings from newspapers, journals and other sources on current trends' topics. It provides critical update on development matters of justice, peace and sustainable futures, which are considered essential for NGOs, social activists and persons concerned with social change.
- ***Development Digest*** is a state of the art series of carefully selected articles on issues of development, social justice and structural transformation, compiled from newspapers, journals, reports, newsletters, books, magazines and the Internet, put together because of their relevance and public importance.
- ***Docsweb*** (or E-Digest) are summarized collection of articles with links to the original texts to support an argument and explore an issue. They provide overviews and gleanings of important issues concerning development and social change. These webpages are continuously updated and upgraded. But it offers any interested person or group to make special and personalized Docsweb according to its needs.

4. IGNCA Digital Library: www.ignca.nic.in/dgt_0001.htm

This digital library created in 1999 by the Indira Gandhi National Centre for the Arts (IGNCA) affords a varied documentation of resources such as digital images, audio and video recordings, animations, electronic books and so forth related Indian arts and culture. The main objective behind establishing this online tool is to encourage preservation of art and culture through digital documentation of works.

Now Implementation for e-Governance Initiatives under category Best Documented Knowledge and case study by the Department of Administrative Reforms and Public Grievances, Government of India.

Fig: Homepage of IGNCA Digital Library



http://www.ignca.nic.in/dgt_0001.htm

5. CSCS (Centre for the Study of Culture & Society)
(http://www.cscsban.org/html/media_archive.htm)

This component of the CSCS Media Project assembles what could be the definitive media archive of post-Independence India. Material will include press clippings and reviews; pamphlets, reports and papers by government agencies, independent organizations, and individual work; visual images, advertising and publicity leaflets; market research reports; it will also facilitate video archiving through the Internet.

CSCS was launched as an independent research institution in 1998 as an experiment in institutionalized research excellence in the Humanities and Social Sciences. Training and outreach include institutional handholding and incubating proof-of-concept technological systems that would sustain the pedagogic needs of the future. Three years after inception, i.e. in 2001, CSCS inaugurated its Ph.D. programme in Interdisciplinary Cultural Studies.

6. INFLIBNET: Information and Library Network Centre (www.inflibnet.ac.in)

Developed by the UGC in collaboration with NISSAT, this digital library network is probably one of the more full-fledged steps towards digital libraries in India. Major Activities of this association include Library Automation, Database Creation, Software Development, Human Resources Development, Information Services and Networking. They have created a software SOUL that is based on a relational database management language, which is used for cataloguing, archiving as well as online public access of resources.

Fig: Homepage of INFLIBNET

http://www.inflibnet.ac.in/

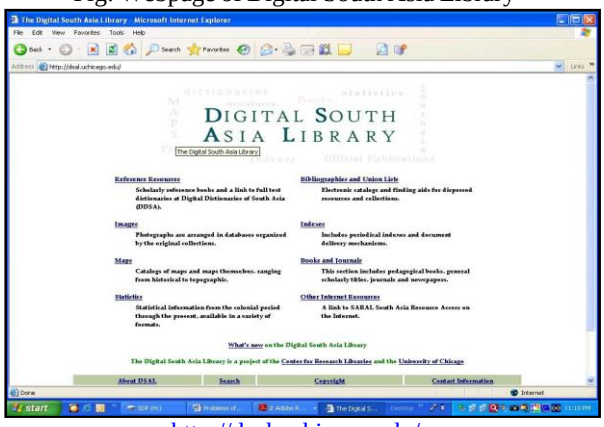
Electronic Theses and Dissertation Project of INFLIBNET Centre

INLIBNET hosts a bibliographic database 200,000 dissertations from about two hundred Indian universities going back to 1905. The Repository uses DSpace, which complies with the Open Archives Initiative (OAI) framework allowing publications to be easily indexed and searched by web search engines and other indexing services.

7. Digital South Asia Library(http://dsal.uchicago.edu)

The Digital South Asia Library is a global collaborative effort to make important and rare resources available to the international community. DSAL includes resources from many disciplines as well as a variety of data types. The component parts of the project include maps, statistics, bibliographies, union lists, indexes, photographs, books and journals, as well as a reference collection that is strong in pedagogical tools for South Asian language learning.

Fig: Webpage of Digital South Asia Library



http://dsal.uchicago.edu/

CONCLUSION

The Indian digital library initiatives are mainly seen as academic and research oriented. The current trends in the recorded and explicit scholarly knowledge finding its way into our institutions and some of the proven methods of their efficient handling, effective access and management. Any forward looking enterprise or institutions of these days need to be open to the changing information environment. Strategically framed organizational transformation is a prerequisite for survival alone. For a learning organization in particular, scholarly information is the critical piece that transforms fact into knowledge. In the current practical institutional setting the recorded knowledge reaches our libraries by way of established scholarly publication types both in print as well as digital formats. There is an amazing penetration of scholarly digital information through a variety of forms and formats, standards and platforms, in which documents are published. It is heartening to note that Greenstone, and e-Print installations are picking up quite fast in India, and institutions like DRTC, INFLIBNET, NCSI, IIT's, IIMK, IISc and many others are giving wide popularity and training opportunities on these softwares.

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CONCEPT OF LIBRARY AUTOMATION IN PRESENT LIBRARY SYSTEM

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INTRODUCTION : Library Automation is a buzz word in contemporary environment which refers to the implementation of information and communication technology in library and information centres. Library Automation is conversion of manual system into computerized system which makes it suitable for co-operative networking and resource sharing among the library and information centres.MARC standards allows libraries to share bibliographic resources with other libraries and information centres.

The appearance of computer has greatly increased the library automation. In addition to computer advancement, telecommunication and audio-visual technologies gave way to new possibilities in information handling In India; the use of computers is limited to only some specialized libraries unlike the case of developed countries. Library automation includes use of computers and other semi-automatic devices like punched cards to reprography. These are semi-automatic because human intervention is greater in extent. So, when we talk of library automation, these days, it is principally the use of computers; associated peripheral media and computer based products and services in library work.

DEFINING LIBRARY AUTOMATION :

Library automation may be defined as the application of automatic and semi-automatic data processing machines i.e. computers to perform traditional library house-keeping activities such as acquisition, circulation, cataloguing and reference
and serials control. Today "Library Automation" is by far the most commonly usedterms to describe the mechanization of library activities using the computer.

Encyclopedia of Library and Information Sciences "Library Automation is the use of automatic and semiautomatic data processing machines to perform such traditional library activities as acquisitions, cataloguing, and circulation. These activities are not necessarily performed in traditional ways, the activities themselves are those traditionally associated with libraries; library automation may thus be distinguished from related fields such as information retrieval fields such as information retrieval, automatic indexing and abstracting and automatic textual analysis"

OBJECTIVES OF LIBRARY AUTOMATION :

- Bibliographical Records : Library automation helps to maintain bibliographical records of all the materials, in a computerized form.
- Bibliographical details : Library automation facilitates to provide bibliographical details through a single enumerative access point of holdings of a library.
- Reduce repetition : With the help of library automation we can reduce the repetition in the technical processes of housekeeping operations.
- Faster information retrieval : Helps to provide access to information at a faster rate.
- Resources Sharing : Library automation makes easy to share the resources through library networking.
- Implementation new IT : implement new IT supports to implement new IT processes to provide high quality information.

NEED FOR LIBRARY AUTOMATION :

Need of computers is present in all areas depending upon its usage.They range from acquisition control, serial control, and cataloguing and circulation control. They are also used for library manager's evaluation of reports, statistics, etc. For the good administration of the library computers are used in all levels of work. Above all, the unique characteristics of computer made it the right choice for the library world.We can explain it as following..

- The library services, products and increase its awareness to promote the use of libraries.
- To avoid retyping, if we want to include or delete any matter, thus saving time and energy.
- To retrieve much more precise and accurate information in less time as compared to manual search.
- To get printed list of a specific subject within a few minutes.
- Heavy bulk of data can be stored in the computer and thus certain problems, which arise with storing records in wooden cabinet, are avoided. (Jain, 1987).

Due to these advantages of a computer, computer became a universally accepted tool to provide assistance to man in all fields. In the field of Library Science, the need for making use of computers i.e. library automation was felt due to the following reasons:

Inadequate Traditional Methods

Traditional methods for handling information are inadequate.This age is termed as the 'information age' because large amount ofinformation is being generated every moment. This information which is generated isstored and retrieved in a library which is used by the users. In the libraries, there arevarious methods of

handling of information like providing reference service,cataloguing etc. due to the information explosion, these traditional methods ofhandling information have become inadequate and hence automation is necessary.

Increase in Research Activities

Due to increase in research activities, and interdisciplinary specialization in different fields, resulted in information explosion and due to this it becomes very difficult for the libraries and information centers to update the information. Difficult to update information due to voluminous increase and rise in degree of. specialization Therefore library automation is necessary.

Speed and Storage Capacity

Techniques are suggested for applying the computers with its advantage of speed, vast storage capacity and accuracy in library work.These three, viz. speed, storage and accuracy are some of the characteristics of a computer, which permits humans to rely on computers in doing certain operations.

Co-operation and Resource Sharing

It is necessary for co-operation and resource sharing. No library in this world is self-sufficient and therefore to satisfy its users' demands, the concept of resource sharing comes into existence. In resource sharing the resources of one library are lent to another library for a stipulated period of time. So, library automation helps to promote resource sharing by saving a lot of time and effort of library staff as well as the users

ADVANTAGES OF COMPUTERS IN LIBRARY OPERATIONS :

computers are useful in library operations as follows..

- A computer offers flexibility in information search
- Speed up processing.
- Greater accuracy, efficiency, consistency and improved work control.
- Reduce repetitive clerical work.
- Provide better bibliographic control at local/regional/national and international level.
- Inability of users to explore unlimited literature and information of interest.
- Wastage of lot of precious time in handling routine and repetitive library operations.
- To introduce and provide new services revitalize the existing services by providing faster access to the resources.
- Retrieval of information and dissemination of information in user defined format becomes easy.
- Capacity to handle any amount of data and information.
- Participating in network programmers and resource sharing.
- Standardization of library procedures.
- Facilitate interdisciplinary nature of research and information.
- Overcome geographical and other barriers to communication.

PREREQUISTIES FOR LIBRARY AUTOMATION :

Since automation of a library is an important and essential step, it should be properly planned and implemented. Hence, while considering library automation we should take into consideration the essential requirements for this.

Feasibility

The aim of feasibility study is to determine if this is achievable, if the benefits outweigh the disadvantages and to examine alternative solutions. It should answer the following..

a) Is it necessary?
b) Is the proposed system realistic?
c) Is it affordable?
d) Is it fulfils the purpose?
e) Is it useful for the library
f) What other options are available?

Hardware

When automating the library, the hardware to be procured should also be given a thought. Today, different types of hardware are available in the market and due to new kinds of hardware available in the market; the earlier ones are getting outdated soon. Also, while procuring the hardware, it should be seen whether the software which will be implemented will be compatible with the hardware procured.

Software

The term software refers to a set of computer programmes, procedures,and associated documents (flow charts, manuals, etc.) that describe the programme and how they are to be used. To be precise, software is a collection of programmes to enhance the working capabilities of the hardware. Software is a set of programmes written or developed to enable the computer to do desired operationsIt is one of the most important components which should be taken notice of,while automation. Today, a number of application software are available in the market manufactured by different companies of India and abroad with distinct feature and hence while selecting software Manjunath has given the following criteria..

a) Who has developed the software? Whether institution or company or an individual? In such a case, first preference should be given for an institution and second preference should be given for software developed by a company.Software developed by an individual should be as far as possible avoided because there will be no continuity in the software.
b) How many times the software has been revised since its first launch?
c) How many parameters are available for each module?
d) Whether the software has the facility to import bibliographic data available in ISO 2709 format and at the same time export data in this format.
e) Whether the software is user friendly and menu driven to facilitate access?
f) Whether training and guidance will be provided after installation?
g) If it will be available to operate on major operating systems and in multi-user environment.

h) Whether it is web interface able and supports data security through password?

i) Whether it can be interfaced with email system of the campus network?

j) How many installations it has got in the country, since when and its major clients?

k) Whether it can offer OPAC and different rights to different logins?

l) Cost of the software has also to be taken into account and compared with different softwares available in the market. This is important because if particular software provides good facilities but if the cost is very high, and software provides the similar facilities with slightly less cost, then the later will be preferred. Therefore, comparative study of the cost factor of different softwares should be done before installation.

Budget

When planning for library automation and networking sufficient funds has to be provided by the institution or the funding agencies for purchasing of hardware, software, furniture etc. It should be noted that if sufficient funds are not available for purchasing the entire software, then the library should automate only those areas, which are of utmost importance and then later on go for overall automation modules.

Training

Manpower or personnel of the library is also an essential necessity. To provide effective and efficient services to the users, the staff should be provided training about the computers, how to work on computers, and the essential features of the software adopted and how the software is used.

LIBRARY AUTOMATION AND HOUSE-KEEPING OPERATIONS :

Housekeeping operations of a library include all operations such as acquisition, cataloguing, circulation and serials control.

ACQUISITION

Acquisition is one of the important functions of any library. The goal of the library which is to satisfy the users will depend on the acquisition system of the library i.e. the user of the library will be satisfied only if the library acquires reading materials based on the users' demands. Acquisition also results in effective and efficient collection development of the library and hence acquisition of reading materials is an important job and is also highly labour intensive. Therefore automation in this area is very much required.

According to Kimber main objectives of an automated acquisition system may be:

a) Elimination of maintenance of several manual files which consumes a lot time

b) of the staff which intern eliminates may errors in reporting, control etc.

c) Improve accuracy in all facets of acquisition process.

d) More effective and efficient handling of claims and cancellations.

e) More accurate and timely financial data recording, accounting and reporting.

f) Eliminating of the need for manual processing of discount. Foreign exchange

g) and other invoice data.

h) Improved ability to track orders, receipts, invoice and claims.

i) Improved binding control including maintenance of binding data records,

j) provision of binding alerts, production of binding orders and tracking.

k) Integration of acquisition with cataloguing and serial control for more

l) effective bibliographic holdings.

m) To provide necessary management information reports.

n) Improved services to the users through faster, timelier processing of orders

o) and receipts.

CATALOGING

The library catalogue is considered as a mirror of the library because it reflects the collection of the library i.e. whether the library possesses good, bad or satisfactory collection. It is considered to be the base for most of the library activities such as acquisition, reference, inter library loan etc. In acquisition activity, the catalogue is referred to avoid duplication of reading materials. In reference and inter library loan activities, the catalogue is consulted to see reference and other documents which can be provided on loan or can be consulted to answer reference queries. Hence, the catalogue is considered as an important tool in the library. So, if automation of the catalogue is done, then it will be very much beneficial to the users and the staff wherein they can get the desired information with no time. Similarly if the catalogue is made available in a network environment through LAN, then users can have simultaneous access to the same database. So also the library staff will appreciate the automated system since it will eliminate their job of printing the cards, filing the cards, keeping the catalogue up-to-date, etc. The automated catalogue also conserves space as compared to the large catalogue cabinet, which occupies a lot of space in the library.

CIRCULATION

The main component of a circulation control system is the transaction of documents i.e. issue and return of documents. This database contains bibliographic details of the documents which provide information on titles, authors and publishing details, which are used in notifying the users about the overdue. Circulation involves the charging and discharging of library materials, reservations, statistics, sending of reminders for the over-due material, etc. Rao has given the following functions of an automated circulation control.

a) Provision of information on location of circulation items.

b) Identification of items on loan to a particular borrower or class of borrowers.
c) Recording of hold or personal reserves for items on loan but desired by another borrowers often with additional provision for notifying the library staff when the item is returned and printing a 'book available notice' for mailing to the persons who requested the item.
d) Printing recall notices for items on long term loan.
e) Renewal of loans.
f) Notification to library staff of overdue items and printing of overdue notices.
g) Notification to library staff of diligent borrowers (i.e. those with unpaid fines or overdue books) either at time of an attempted loan or at time a borrower is leaving the institution or on request forms the library.
h) Calculation of fines, printing fine notices, recording receipt of fines and sometimes printing of fine receipt.
i) Calculation and printing of statistics of various types.
j) Analysis of both summary statistics and statistics related to circulation of particular items for use in acquisition, planning of services and for other administration purpose.
k) Provision for printing due date slips, automatically generating orders for lost book or needed addition copies and printing mailing labels for remote borrowers.

SERIAL CONTROL

Serials are published at regular intervals and the publication is intended to continue indefinitely. Besides scholarly journals and popular periodicals, serials include magazines and all other periodical publications as newsletters, newspapers, annual reports, proceedings of learned bodies, monograph series etc. the term serial control usually denotes two very distinct aspects: bibliographic control and processing control. Bibliographic control of serials involve preparation and maintenance of a central master list of all serial publications which includes full title, short title, variation form earlier titles, publishers, ISSN, frequency etc. Serials processing control comprises of acquisition, claims controls, cataloguing, circulation, binding,

weeding out etc.The functions of an automated serials control system are:

a) Input the data when the library receives issues.
b) Ordering new serials and renewing the presently subscribed journals.
c) Sending reminders to follow up missing issues.
d) Accessioning of individual issues when the library receives them.
e) Cancellation of presently subscribed journals.
f) Controlling of budget spent on subscription binding etc.
g) Binding of issues when a particular volume is complete.

OPAC

Online Public Access Catalogue is one of the existing aspects of library automation. OPAC is a catalogue, which is available for searching online. Such OPAC may be searched from a terminal within the library or at a terminal elsewhere in the organization remotely via national or international telecommunication networks. Today majority of the softwares which are used for automation in libraries provide a separate module of OPAC. With the latest developments in integrated systems the OPAC is connected to the circulation system so that the used can come to know whether the document he/she is looking for is currently available in the library or on loan. OPAC also promotes resource sharing program and bibliographic search can be done by author, title, accession number, ISBN, Keywords etc. Search in OPAC is by using Boolean logic or by truncation.

LIBRARY AUTOMATION AND LIBRARY SERVICES :

CAS

Current Awareness Services (CAS) are those services which keep the users abreast of the developments and advances taking place their fields of specialization or in areas of research in which they are engaged. This method is limited to a few, as it is not meant to generate comprehensive review of all activities in any subject area. CAS can be given in various forms such as by title, current content list, indexing and abstracting etc. In a library by making use of computers the embers can be provided CAS by sending emails, through various databases, CD-ROMs etc.

INFORMATION RETRIEVAL

Online search is done through online terminal. The search comprises of a series of keywords together with Boolean logic. The search strategy or the search statement should be framed before logging-on. When communication is made by logging-on, data of the system will be displayed on the screen of the terminal and the user will be requested to select the required database. As search proceeds the interaction between the machine and the user goes on and the user gives a series of commands to which the computer responds.

Patwardhan has given the following advantages..

a) Search process is interactive i.e. response form the system is almost instantaneous. The results are printed at terminal within few seconds.
b) Facility to develop search strategy step by step by evaluating results at each stage.
c) Availability of large number of databases providing various types of information like bibliographical data, commercial and full text.
d) User need not have knowledge about computer programming and operational to search computer files.

PRINTED INDEX

In information retrieval, computers were used for preparation of in-house indexes i.e. within the library and also for production of indexes for major abstracting journals. Index consists of a series of terms arranged in

alphabetical order. There are different types of computer produced indexes..

a. KWIC

In a Key Word In Context (KWIC) type index, an entry for a document is made under each keyword in the title of the document. The computer must be told how to derive the keywords, these being the words which characterize the subject.

b. KWOC

In Key word Out of Context (KWOC) index, the keyword remains in the title. This method greatly increasesthe size of the index but if there are many entries under one term, it sub-divides the entries. It is used by many special libraries for indexing reports, journals, patents etc.

c. PRECIS

Preserved Context Index System (PRECIS) allows the user to enter an alphabetical subject index at any one of the significant terms which together make up a compound statement and establish at that point the full context in which has chosen term has been considered by the author.

d. POPSI

In POPSI (Postulate Based Permuted Subject Indexing) index depends on word order and relational signs. The order of words elements in the chain is predetermined and fixed according to the seats, postulate categories or relational operators.

SELECTIVE DISSEMINATION OF INFORMATION:

In SDI service, the information in a library is matched against the subject interests of the users; which means that the user receives only that information which is relevant to his research work. In computerized SDI service, a user profile is constructed. Simultaneously, document profile is also constructed when documents are received in the library. Both these profiles are matched by the computer and sent to the user. Feedback is received from the user. Incase the user is not satisfied then the profiles are checked and adjusted on the basis of user's evaluation.

INTER LIBRARY LOAN

This is true when number of user increases and means of communication reduce the barrier of distance, language and specialization. So Inter Library Loan is provided. Inter Library Loan in automated era can be provided by a) Thermal transfer printer with suitable barcode printing b) Barcode labels. All the books should be bar-coded. The pre-printed self adhesive barcode labels are being pasted on all books, one on title page and another on secret page. Each member is provided with barcode and matched with the help of a laser scanner during transaction.

STOCK VERIFICATION

Stock verification is an important activity in any library. It is one of the most
tedious jobs to be done which involves a lot of time. Traditionally, it took many months to complete stock verification for a normal collection but with the impact of information technology, this has been overcome and less time is required comparatively. By using bar-coding technology, all accession numbers can be saved in the barcode scanner memory. The most economical and fast way of entering accession number is to use a mobile bar code reader to scan accession numbers of books from bar code tags in books. This laser scanner is passed over the bar-coded books in the stack. The accession numbers of books available in the stack are recorded in the memory and the accession numbers, which are not in display, are checked if they are on loan and thereby, the number of missing books is known. It is also possible now with the proliferation of personal computer to just key in all accession numbers as and when checked to consolidate the loss in terms of missing accession numbers.

REFERENCE SERVICE

Initially, the reference librarians depended on printed indexing and abstracting services, bibliographic sources and directories to perform literature search and answer questions of factual or bibliographical nature. But today it is seen that the important reference books like encyclopedias, directories, bibliographies, are available in the non-print format either in the form of CD-ROM or are displayed on the internet. They can be used as a database for accessing information for answering queries.

CHALLENGES IN LIBRARY AUTOMATION :

Library automation brings great changes in the functioning of the library and proving effective and efficient library services. But in spite of these great advantages, there are many barriers which occur at the time of implementing the automation in libraries. Ramesh has given the following barriers faced by the library during automation.

BUDGET CONSTRAINTS

Apprehension that the technology could be too expensive There is an apprehension that the technology, both hardware and software would be expensive and unaffordable. The cost of hardware and software depends on the level of automation. From the user point of view cataloguing system is most important and also forms the base for other library activities. Keeping these two points in view UNESCO developed PC based software titled 'CDS/ISIS' and is available at a very nominal price to all the libraries in developing countries. This software which works on a simple IBM compatible PC/XT is also available on UNIX and NOVELL platform. Recently the WINDOWS version has also been released. This software can export data in ISO 2709 format and therefore at later stage if one decides to go in for some other software, data transfer poses no problem. INFLIBNET has developed public domain library software titled 'ILMS' which is available on DOS AND UNIX platform.

EXTENSIVE TRAINING

The library staff has to undergo extensive training. The in-house training for handling the software is usually provided by the developers and one can choose the software which can suit their budget. However, training for CDS/ISIS is available at INSDOC,

INFLIBNET and DRTC. For further information on training programmes one can contact NISSAT. The training of library staff also depends on the level of automation. If one decides to go only for cataloguing a minimum training of one or two week's duration will enable the librarians to develop a database and maintain it. With this basic training one can easily transfer the same data on a server/main machine in a network environment. The job becomes easy as most of the institutions have systems department with computer professionals maintaining the network.

PATRON ATTITUDE

lack of support from the management, may be owing to budget constraints, will be one of the barriers. Here the role of librarians becomes crucial in convincing the management that the users of libraries will also be the major beneficiaries of automation. Also, the skill and initiative play a major role in convincing the management.

DATA CONVERSION

The fourth reason could be retrospective conversion of data. As mentioned earlier the manpower saved could be utilized for retrospective conversion and later on for analytical cataloguing.

IMPACT ON EMPLOYMENT

If we analyze the various jobs such as book acquisition, technical processing, circulation and reference service one can conclude that human interference is necessary at each and every step. The only area where substantial manpower can be saved is the cataloguing. The data entered at the time of ordering can be used for cataloging with some updating would eliminate multiple card preparation and subsequent filing. The manpower thus saved can be utilized in retrospective conversion and later on for analytical cataloguing or introducing new services. Therefore, there will be no adverse impact on employment.

CHALLENGES IN SERIAL CONTROL

Serial Management is an integral part of the library operations. It has fewer titles to handle as compared to acquisition system but must record more details for each title and hence it is one of the most complex and expensive procedures.

COMPATIBLE SOFTWARE

Selection of compatible and suitable library management softwares is a big challenge for library professionals during library automation process**.** There are different types of software manufactured by different companies and institutions, each of which has distinct features. Upto date and detailed information on softwares available in India can prevent several issues that may arise in the course of computerisation. The suitability of a package could be assessed based on the following..

a) Producer/vendor reputation and reliability base on the performance of previous installations
b) Software functional flexibility and expandability
c) Indexing and searching capabilities
d) Interactivity of input and output interfaces
e) System security provisions
f) Good system documentation and manuals7Cost
g) Scope of customer training
h) Possibility of system upgrading
i) Compliance with the Internet

MAINTENANCE

Maintenance of computers and networks breakdowns or failures is an another challenge.These problems may interrupt the house keeping operation and services of the library. To handle the growth of the library database and ensure fast data entry, retrieval, and inquiry through the OPAC, there is need for regular and consistent upgrade of computer facilities and maintenance,so that the objective of library automation ,be fulfilled.

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BRIEF SURVEY ON PERFORMANCE ANALYSIS OF SOME STATISTICAL FEATURE EXTRACTION TECHNIQUES

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Abstract:

Image processing is one among mostly researchable area. In order to do processing on image lots of work is needed to be carried out at different phases. Feature extraction is an important phase of image processing. Extraction of features is one of the essential problems of character identification. The accuracy of character recognition is relies on appropriate feature extraction as well as choice of accurate classifier. A feature extraction technique belongs to statistical or structural category. In this paper some statistical feature extraction techniques like Moments, Fourier Transforms, Projection Histograms, Crossings, Zoning and Celled Projections are explained. Their results are compared. These techniques are considered because these are most widely used. For classification purpose k-Nearest Neighbour classifier is used. Analysis shows that celled projections give highest accuracy which is 94.10%.

Keywords: Feature extraction, Moments, Fourier transforms, Crossings, Celled projections.

1 Introduction

In recent years much more has been carried out in area of an image processing. Still lots of work are needed for recognition of character to transform human legible characters in computer legible codes. For many scripts and language, this is lively exploration field open for exact recognition solutions. Performance of the recognition rate is heavily relies on appropriate features extraction techniques [14]. Currently there are number of feature extraction techniques with their individual benefits or drawbacks as compare to other techniques. In order to meet greater recognition accuracy there exist number of vital measures of feature extraction techniques to be assumed. Primarily, actual feature is essentially to be invariant with respect to disparity of character contour variation triggered by numerous writing styles of diverse persons. One more important thing is to show the raw image data of character using a minimized set of information which are majorly applicable for recognition to raise the proficiency of classification method. In case of real time appliances simplicity of implementation as well as speedy extraction from raw data are too assumed crucial. Lastly, supplementary preprocessing work like noise removal, thresholding, thinning, normalization etc minimizes the practical proficiency of features. Character features are categorized into 2main categories like statistical features, structural features [12]. In case of statistical feature severy image of character is denoted using n features set which might be assumed as a point for ndimensional feature space. Key objective of feature choice is to make linear, non-linear decision boundaries in feature space which appropriately isolates the character images of diverse classes. Generally statistical techniques are utilized to minimize the aspect of feature set in order to docalm extraction as well as speedy calculation where restoration of rigorous original image isn't crucial. Statistical features are invariant with respect to character distortion and also writing style to some magnitude. Few among mostly utilized statistical features for recognition of character are crossings [1], moments [2], zoning [5] , projection histograms [8] etc. In second category, structural features like end points, branches, connectivity, holes, convex or concave strokes, junctions etc. definet opological, geometrical stuffs of character. As far as hierarchical view is concern a character encompassesgreener components known as primitives [12]. For classification of structural pattern, a character is assumed as an arrangement of primitives as well as the topological correlation between them. Stroke primitives like curves, lines create the character structure and mostly dig out from skeleton that made the shape of basic character. Typically structural primitive's extraction needs numerous costly preprocessing comprising skeletonization, binarization etc. which mightgrounds shape alterationsas well asloss of structural information, and as a consequence recognition of character needs a complex guesstimate matching model. Though structural features are stronger as far as distortions and diverse writing styles are concern.

2 Feature Extraction Techniques

Some statistical feature extraction techniques explained are as follows.

2.1 Moments

Moment invariant feature extraction techniques are comprehensively studied for image processing as well as pattern recognition areas [10, 11]. There are diverse invariants of moments for proficient and effective mining of features from images of altered domains [2]. 2 dimensional moments of order (p+q) of binary image or a gray level can be defined as,

$$m_{pq} = \sum_x \sum_y x^p y^q f(x,y)$$

Here p, q = 0, 1, 2…, ∞and the function f (x, y) provides pixel value of x^{th} column and y^{th} row of an image. The summations are found over all the pixels of an image. The central moments with translation invariance of order (p+q) can be defined as,

$$\mu_{pq} = \sum_x \sum_y (x-\bar{x})^p (y-\bar{y})^q f(x,y)$$

Here $\bar{x} = m_{10}/m_{00}$ and $y = m_{01}/m_{00}$. The translation invariant central moments put an origin at the center of image gravity. Here scale invariant moments are unnecessary since normalized images are utilized for all tests. Feature vector is generated with 15 translation invariant central moments that are μ_{00}, μ_{10}… μ_{40}, μ_{04}. Here central moments up to 4^{th} order is used and is necessary since it's perceived that higher order moments depends on writing style differences and noise as well. Hu [10] explains rotation invariant moments. This paper studied the seven Hu moments for tests however the recognition rate is unfortunate as compare to else features.

2.2 Fourier Transforms

In order to do recognition of character this feature extraction technique might be used in number of ways [9].Fourier domain affords appreciated material regarding structure of character. Fourier domain high frequency components indicate finer details and on other hand low frequency components indicate elementary shape. In case of recognition of handwritten character elementary shape structure are crucial over finer details for the reason that finer details greatly affected by style of writing and noise. Here feature vector for classification as well as training is prepared by using sixty four lowest frequency components however high frequency components in spectrum are discarded. It's perceived that feature vector variances among character classes are at time sminor since time domain changes do not every time create discrete changes on Fourier domain. Hence certain classifiers are not able to afford better recognition rate.

2.3 Projection Histograms

In 1956 Glauberman [8] utilized projection histograms for hardware based OCR system. For projection histogram, an image is scan along a line from one side to other side. Here numbers of foreground pixels on the line are calculated. Therefore it is also called as histogram projection count which can be defined as $H_i = \sum_j f(i, j)$ for horizontal projection. Here f (i, j) isthe pixel value of i^{th} row and j^{th} column of an image. Here foreground pixel is represented as 1 and the background pixel is considered as 0.In the same way, vertical projection histogram can be considered. Projection histogram feature is extensively used in numerous preprocessing steps of image segmentation where it is applied for segmenting lines, words, characters [7].Here both horizontal as well as vertical projection histograms are generated and together those into a feature vector for purpose of training and also for testing. Projection histogram feature doesn't consider stroke width deviation for handwritten characters.

2.4 Crossings

This is one among most famous statistical feature extraction technique for character recognition [1]. Crossing is defined as number of moves from foreground to background or vice a versa along a straight line of an image. It means here is a counting of stroke on a line from one side towards another side of an image. In the consideration crossing is calculated for each row as well as column to create the feature vector of an image. Disparate other features crossing feature isn't subjective to the width of strokes and it can be calculated without skeletonization of an image.

2.5 Zoning

Calera is OCR system which is developed by using zonal feature extraction technique and is described in Bokser [5]. According to this thinning, contour extraction aren't consistent for self-touching characters. In order to get this feature an image is broken into certain overlapping, non-overlapping zones, Cao [6] deliberated the overlapping zones observed as fuzzy borders nearby the zones for character image. Afterwards number of foreground pixel is calculated and for every zone density is figured. In some cases zoning is considered with other features like contour direction how eve there focus is on use of the word zoning only for pixel density feature since it is easy, fast enough. Zoning feature is comparatively slope independent and scaling. The feature vector is considered to have the densities of 4*4 = 16zones for every image.

2.6 Celled Projections

In celled projections, image of every character is separated into k regions after that the projection is get for every region. In case of horizontal celled projection the feature vector of r^{th} region of m*n image is defined as Pr = $<p_1, p_{2\ldots} p_m>$here $p_i$is calculated as

$$p_i = \bigvee_{i=1}^{n/k} f\left(i, \frac{n(r-1)}{k} + j\right)$$

and f (x, y) is nothing but the value of pixel in x^{th} row, y^{th} column. In this case foreground pixel is considered as 1whereas background pixel is considered as 0. Feature vector of entire image is $V = P_1 U P_2 U \ldots U P_k$.In the same way vertical as well as diagonal celled projection can be expressed. Celled projections are applied on binary image but it's also probable to mine feature straightly from gray scale image by using a proper threshold value that divides background pixels and foreground pixels. As compare to other feature extraction technique scelled projection technique need a less number of arithmetic, logical operations and merely essential to consider every pixel of image in poorest case. Every feature in $p_i$needs only 1 bit to accumulate therefore a huge number of features might be filled into a single machine word that considerably reduces the storage need of a feature vector. Classification process can be augmented using appropriate emethods like determining hamming distance between machine words in place of determining Euclidean distance between bits. Feature vectors are prepared by using horizontal celled projection, vertical

celled projection of 4 and 8 cells. Celled projection is less affected by writing style variations.

3 Classification

The major work of classification is to utilize the feature vectors delivered by the feature extraction techniques to allocate an object to specific class. In this paper classifier considered is k- nearest neighbor.

3.1 k-Nearest Neighbour

k-NN is one of most widely used classifier. It classifies an unidentified sample based on the acknowledged classification of its neighbors. With an unidentified data, the k-NNclassifier examines the pattern space for the k training data which is closest to the acknowledged data. These k training tuples are nothing but k "nearest neighbors" of an unidentified data. Closenessis expressed in terms of a distance metric like Euclidean distance.

4 Result Discussions

Table-1. Comparison Table

For experimental purpose after calculating their bounding rectangles, all input images are normalized to particular size16*16. According to [4] and as shown in table1, performance of k-NNclassifier for 3, 5, 7 values of k is reported and all the features offer its maximum recognition rate for these values of k. Unlike celled projection the classifier k-NNdo not provide satisfactory recognition speed for moments feature extraction technique and it too needs a extensive training period for the complex. Similarly Fourier transforms also not giving better performance. Projection histogram and crossing feature extraction methods provides considerable results with horizontal and vertical parameters. Much more accuracy is produced when k-NN classifier is used in combination with zoning feature extraction technique. But highest recognition performance which is 94.10% is given by k-NNclassifier with celled projections feature extraction method, which indicates that celled projections doesn't require further backings from difficult classifiers.

5 Conclusions

Objective of this paper is to equate recognition accuracies of some diverse statistical feature extraction techniques with k-NN classifier. Every feature extraction method explained performs excellent in certain belongings and unfortunate in else belongings. Accordingly recognition performance of these discrete features extraction techniques as well as classifiers aren't always exception a however relating diverse methods like different number of celled projection with k-NN classifier[3] might afford brilliant recognition performance.

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DIALECT IDENTIFICATION AND SPEECH CORPUS OF ISOLATED AGRICULTURE WORDS FOR AHIRANI LANGUAGE

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Abstract:

Automatic Dialect Identification and classification has recently gained substantial interest in the field of speech processing. Dialects of a language normally are reflected in terms of their phoneme space, word pronunciation/selection, and prosodic traits. These traits are clearly visible in natural speaker-to-speaker spontaneous conversations. However, dialect cues in prompted/read speech are often neglected by the community. This study narrate a method to develop a speech database of isolated agriculture words in Ahirani dialects which is helpful for Dialect Identification system useful in agriculture sector. The speech corpus developed will help to design and develop various assertive devices. This will overall help to improve the common life of man and a bridge is designed filling the space between man and technology.

Introduction

A dialect is a particular form of language which is peculiar to specific region or society group. In recent time dialect identification (ID) has emerged to be of considerable interest in the speech processing community [1]. Dialect ID systems used dialect dependent acoustic and language models to progress the performance of Automatic Speech Recognition (ASR) engines. Due to variations by speaker dialect/accent, traditional speech recognition systems are not robust. As human speech is highly variable signal and there is immense growth needed in this field to built up various assertive devices [2]. For development of these models there is need of speech databases. However, little work has been done to development and collection of Ahirani database. This paper attempts to explore the creation of database and its design for dialect ID systems. The proposed study drafts the speech corpus for Ahirani language with agricultural background. As agriculture is the most common occupation in Northern part of Maharashtra, this database will be helpful in various speech and dialect identification techniques. This paper is structured as follows. In Sec. 2, we describe the applications of Dialect System. Significance of involved study is mentioned is Sec 3. Next we discuss the Corpus collection in Sec4. In Sec 5. Experimental setup and recording are explained. Conclusion and references are mentioned in 6 and 7 respectively.

Applications of Dialect Identification System

Current research on speech science & technology facing challenges for understanding & modelling individual variation in spoken languages. The main aim of Dialect Identification is the recognition of speaker's regional dialects, within an established language given the acoustic signal alone. Dialect Identification systems not only provide important benefits to speech technology but also improves speech recognition. Dialect Identification system allow us to modify features used in speakers recognition to regional origin[3] .In telephony based help system Dialect Identification help to become accustomed the outcome of text to speech synthesis in spoken dialog system to generate regional speech or forward the telephone conversation to an agent whose dialects is same as caller[4] .In military situation & forensic speaker profiling in judicial Dialect Identification system is very useful .The performance of Automatic Speech Recognition engines can be improve by employing dialects dependant acoustic & language models[5]. In data mining & spoken document retrieval dialect Knowledge is very useful. Performance of Automatic Speech Recognition System excellent when the training & test sets are matched for dialects.

Significance of the Study

Speech is efficacious & general way of communication. To create computer that can understand & talk like human, for this researchers have been motivated from long time. Dialect Identification system plays vital role in the natural interfaces for those who can't recognize the particular language. The domains like education sector, domestic sector, military sector, agriculture sector, AI etc dialect identification can be very useful. In India, 70% of population relives on agriculture as sector. So farming is the basic employment and source of generation among Indians [6]. This study will benefit the farmers to use the technology and improves the standard of living among farmers. The research has done with some Indian language dialects. So there is a scope for developing speech database for Ahirani dialect benefiting the farmers living in Northern part of Maharashtra. This will also benefit the farmers to use these assertive devices and develop the life with the help of technology.

Ahirani Dialects

Ahirani is a major dialect of Khandesh.It was originally spoken by the Ahirs living in Khandesh region like Jalgaon, Nandurbar & Dhule. It is also spoken in some parts of Nasik & Aurangabad. Borrowing & bending the words from Marathi, Hindi & Gujrathi. Ahirani has its own words not found in any these languages. Ahirani is basically in informal form & uses the Devanagari scripts for its writing. Linguistic research done in Ahirani. This is deviceful work in developing Ahirani dialects speech database for isolated agriculture words. The proposed study focuses on the development of speech corpus focusing on agriculture field. So, with the same idea the database involves the words and sentences with maximum involvement of agriculture words. Selecting text corpora for speech database, the basic requirement is grammatically correct text corpora. It should be correct in terms of typography & grammar. The words will be selected from books, dictionary, poem, songs & movies etc. The words will be categorized into names of vegetables, grains, cash crops, pesticides, fertilizers, equipment. The database created for the study will be completed in following three steps.

- **Speaker selection:**

Speakers are resident of village & comfortable to speak & read the language. Speakers have diversity in age group, gender, literacy & spoken language. The speakers are selected from Jalgaon & Dhule districts. The age of speaker is varying from 18 to 30 years. The speakers were male & female to indulge the variability associated with human speech.

- **Data Collection:**

The recoding and collection of database is drafted using PRAAT software [7]. Sennheiser pc360 & Sennheiser pc350 headset used for recording the signal.

- **Statics of data:**

The database proposed for the study involves the vocabulary of isolated agriculture words which are regularly used Ahirani words with related to agriculture background. To achieve the high variability rate each words will be composed of 3 utterances of the same speaker.

Corpus collection and Recording

The goal to achieve the database for Ahirani dialects, the vocabulary of 200 agricultural words is prepared. It involved all speech corpus text associated with the agricultural terms. The lists of some Ahirani words are as follows.

Ahirani words	English terms
□ □ □ □ □ □	KOTHMER
□ □ □ □ □	KARLA
□ □ □ □ □	BATATA
□ □ □ □ □	KAPASHI
□ □ □ □ □ □	BHUIMUG
□ □ □ □ □	KOYTA
□ □ □ □	BAJARI
□ □ □	TOR
च □ □	CHVYA

Table 1. List of Ahirani words

Each word is recorded with 3 utterances, so the variability of human speech can be achieved. Thus the total size of database is 600 utterances. The table 2 shows the size of database.

Speech samples	Utterance
200	03 (each)

Table 2. Size of database

The words are recorded with the frequency of 16000 Hz using PRAAT software []. The high quality microphone is used for setup and recording is performed in sound proof room The figure1 shows the recording of the word" Chvya"in Ahirani language.

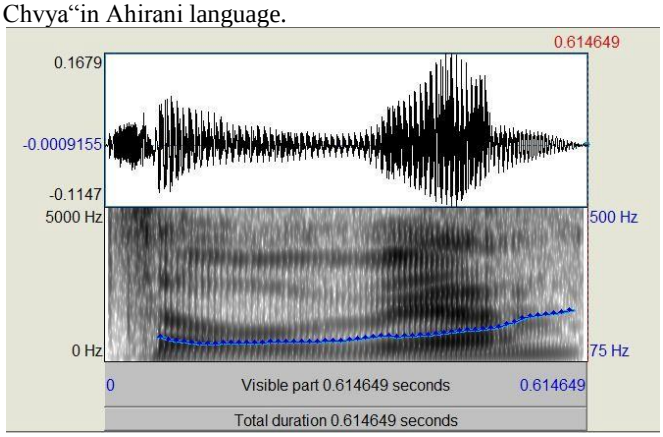

Figure1. Recording of word" Chvya"in PRAAT

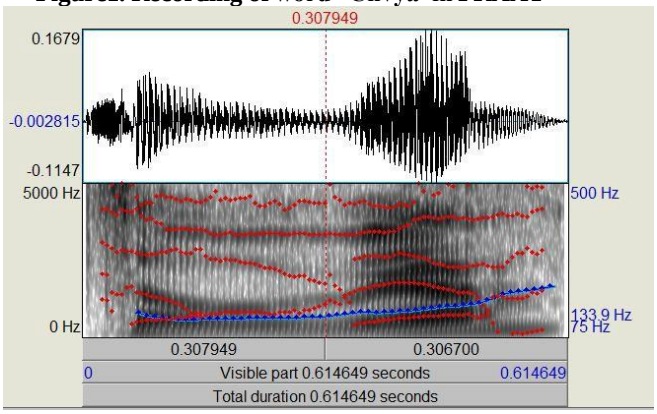

Figure 2. Formant Analysis of word "Chvya"in Ahirani Language.

Formant Analysis of the collected words is extracted for further study of the database. Formant Analysis involves energy, pitch contour of the speech samples which helps to design the Dialect identification system [8].

Conclusion

The work is carried out at the preliminary stage with the view to develop a speech database of isolated Ahirani Dialects for agricultural purpose from Khandesh

region of Maharashtra. All the useful phonetic variations of the Khandesh region is cover by database associated with the Ahirani language. In future scope, the experimental analysis is performed to study the speech parameters involved with the Ahirani language. It will be useful to develop an Automatic Speech Recognition System for agricultural assertive devices.

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COMPARATIVE STUDY OF DIFFERENT MOBILE OPERATING SYSTEMS

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Abstract:

In the fast growing mobile revolutionary era, many operating systems are playing vital role in present market. This study is intending to identify the apt and secure mobile based on mobile operating systems capability and user requirements.In the present scenario, mobile technology is a technology which is increasing at a fast pace. This advancement in mobile technology has impacted everyone's life. Nowadays various mobile technologies as well as mobile phones compete in the market. It has reduced the burden of work of a human being in some way or the other. In this paper we will discuss about the various mobile technologies along with the different mobile phones available in the market and the difference between them.

Keywords: Android, Symbian, iOS, Windows, Blackberry, Mobile OS

INTRODUCTION:

In the recent period, mobile operating systems are getting a tremendous growth. Analysts are upbeat further more potential developments in coming days. Today's markets, a wide variety of mobile phones are available in various brands with different operating systems. So the selection of an optimal and secured one is a confusing task. Present mobile operating systems are equally or more playing vital role than a computer operating system. It is covering most of the activities which were doing in a computer. We can see many of them are highly relay on mobile phones for their office activates like outlook, communicator etc. That indicates mobile operating systems are leveraging the high capability. Security is one of the key features of any mobile operating system. Many studies are keeping progressing in the same area. These studies are trying to provide a glance about the various mobile operating systems and its security measures which were expecting and each cell phone has different features and use different operating system. There are number of operating systems that are used by different companies. These operating systems are listed below:

Symbian OS: Nokia uses the Symbian OS in their cell phones.

Android OS: Google developed android OS and it was based on Linux kernel. Samsung and HTC use the Android OS.

iOS (iPhone OS): Apple developed the iOS. It is used in iPhone, iPod.

BlackBerry OS: BlackBerry uses the BlackBerry OS in their cell phones.

Windows phone: Nokia and HTC use Windows Mobile Operating System in their Windows Phones.

Symbian OS:.

Symbian is a Linux based mobile OS currently used only Nokia on their smartphones. It has been used by many major handset manufacturers including BenQ, Fujitsu, LG, Mitsubishi, Motorola, Noki a, Samsung, Sharp, and Sony Ericsson. Current Symbian-based devices are being made by Fujitsu, Nokia, Samsung, Sharp, and Sony Ericsson. Nokia recently decided to concentrate more on Windows Phone OS rather than Symbian OS in their future editions. Even though Symbian lost a huge portion of the market, they are still a power to reckon with. Hopefully they might come back with major changes and upgrades for a better platform to attract more users. There are other mobile Operating System in the market now including Samsung Bada, Meego and a soon to be released Baidu Yi from Baidu, the largest search engine in China. Their share in mobile OS market is negligible to some extend, but surely a force to reckon with in the future.

Android OS:

Android OS is a Linux based operating system developed for using in mobile devices such as smartphone and tablet PCs. After google bought the original developers of Android OS, Android Inc in 2005, they currently own Android OS and release it as open source under Apache license. One of the major advantages of Android is the huge developer communities who regularly updates and create apps using a customized version of Java.

Advantages of Android OS:

- Open Source Platform supported by a wide range of mobile device manufacturer
- Easy access to lot of free and premium apps that support Android OS
- Multitasking – Android OS is capable of running many applications at the same time
- Easy notification of any SMS,email or RSS reader alert

- The continuous development in looks and features might soon leave other mobile OS far behind in the long run.
- Great for programmers who would like to mess with Linux Kernal for making changes in OS.

Disadvantages of Android OS:

- Very unstable and prone to crashes compared to other Mobile OS
- Being open source, large number of apps are created by developers. Some of these apps might have bugs which can be exploited by hackers or viral infections.
- To log on as administrator for making advanced changes, you need to know linux commands.
- Continuous updates on the OS might want you to upgrade to the latest which is called rooting. Rooting needs to be done carefully or else you might end up with a piece of brick in hand.
- Most of the Apps require an internet connection for functioning which sometimes is a disadvantage. For eg, an app for dictionary should have an induild dictionary which allow it to function even when there is no internet connection
- Poor battery backup

Iphone OS:

Apple company designed this operating. The native language is C and apple company products use this OS.iOS is Apple's mobile operating system. It was developed for iPhone, but later extended support for iPad and Apple TV. iOS root comes from Mac OS X, hence it is unix based OS..

Advantages of iOS:

Very stable and secure OS for mobile phones

- Maybe the most loved interface for any mobile OS in the market. Beautifully designed desktop and app icons which go hand to hand with the stunning looks of Apple devices.
- Less bugs and secure OS because of high standardization followed when developing apps or updates
- High support for latest web standards
- Good support for cloud storage.
- Easy access to free and premium apps from Apple store

Disadvantages of iOS:

- iOS only support Apple Hardware
- Very costly

Blackberry OS:

BlackBerry OS is a proprietary mobile OS, for its BlackBerry line of mobile devices and developed by Research In Motion (popularly known as RIM). Blackberry was once the undeniable ruler when it comes to mobile OS. But because of stiff competition from Android and iOS, they lost considerable share of mobile market. Blackberry OS also have different versions. A lot of apps developed in market are compatible with Blackberry OS. Blackberry manufacturers are currently working on some major changes which hopefully increase their popularity and get back their share of mobile devices market.

Advantage of Blackberry OS

- Great business phone infrastructure
- Free BBM messaging service

Disadvantage of Blackberry OS

- Less apps present in the market for Blackberry OS

Windows OS:

Windows Mobile is the mobile Operating System developed by Microsoft for mobile devices. This comes with a metro interface and integrates operating system and 3rd part services to work with the device where it is installed. This is definitely a mobile OS to look out for the future. Windows phone like other OS also keeps updating regularly and is now running on windows phone version 7.10. Microsoft have partnered with some bug names such as Nokia, HTC, Samsung, LG etc for using Microsoft Phone. Windows phone now supports 25 languages and it allows selling and buying application in 35 countries. Already windows phone 7 has received numerous recognition from the technical community for the user friendly interface, easiness to use and touch screen response precision.

On the basis of the above discussion about the various mobile operating system, we can differentiate between various mobile phones. Below in the discussion, in our paper, we will be considering iphone and other android mobile phones. iPhone is the first smart phone which is a touch screen mobile phone, developed and supplied by Apple. It has the ability to touch the tasks easily which in turn requires a computer to work on. Whereas Android is Google's Linux based mobile operating system that has powered many smart phones. It is just a software. Both of them have their unique applications store. The apple iphone has apple app store while android has got an android market.

1) If we compare the loading time between the iphone and android mobile phones then we can say that an iphone takes much less loading time as compared to the loading time taken by the android phones. And therefore, due to the several beneficial features of an iphone, it is more in demand and is more searched on internet in comparison to android phones.
2) There is a feature in Apple iphone wherein it alerts the user in case of any missed instances, but this feature forces the user to end up the task he is performing. Whereas the google android phone has a drag and drop screen that also alerts the user of any occurrences but it allows him to continue his work.
3) It is easy to perform the necessary accessory maintenance in apple iphone since it controls all of its hardware. While google's android is a simple platform that functions on different platforms, & does not allow for easy accessory support.

The features of some of the mobile platforms can be defined below as:

Vendor	Programming Language	Operating System	Application Store
Symbian Foundati	C++	Symbian OS	NakiaOvi Store

on			
Open Handset Alliance	Java	Android OS	Android Market
Apple	Objective-C	iPhone OS(iOS)	iPhone App Store
RIM	Java	BlackBerry	BlackBerry App World
Microsoft	Visual C#/C++	Windows Phone	Windows Mobile Market Place

Fig: Features of some mobile platforms

Now we will discuss the difference between iphone and blackberry.

(i) In blackberry phone GPS feature is provided which enhances the feature of google maps especially for turn by turn directions.

(ii) The phone quality of Blackberry is better than the iphone's quality.

(iii) The iphone lacks basic cut & paste capabilities. .The blackberry has a unique feature for contacting people that makes contacting to people more easily.

After discussing the difference between aniphone and blackberry, we willdiscuss the difference between an iphone and symbian.

(i) In the case of frameworks & programming languages, symbian has a complex C++ variant and takes more time to master as compared to the iphone's objective C language.

(ii) The iphone's development tool is very proficient. It carries everything from an accurate simulator, visual debugging to a very nice profiling tools. And I case of symbian it just do not support the development tool.

(iii) In iphone, the Cocoa framework provides a lot of features for free. But for symbian this all will require explicitly extra code. From the above discussion we can conclude that an iphone application can be written with much less code which in turn invites much less bugs, with more number of features.

CONCLUSION:

If we talk about today's mobile generation the mobile phone is the ideal technology. And few years, internet connected mobile computing devices will drop radically in price and will increase in functionality. Therefore, there will be clear winners and losers in the mobile app market. Apple and Android has appreciably started in the market. Critical to the success of this market's growth, and the success of mobile application stores, are the armies of software developers that create mobile apps. The most sophisticated competitors are already creating or enabling the ecosystems that will allow access to content and applications across devices.

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ANALYSIS OF THE PERFORMANCE OF CONTENT BASED IMAGE RETRIEVAL SYSTEMS FOR MOBILE DEVICES

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Abstract

Content-based image retrieval area has an incredible potential for search and operation similarly for researchers and people in industry due to its encouraging outcomes. Efficient retrieval of desired images necessitates indexing of the content in large-scale image databases beside through extraction of low-level features based on the content of these images. With the modern improvements in wireless communication technology and accessibility of multimedia accomplished phones it has become animated to permit query operation in image databases and retrieve results based on the image content. Through the rising quantity of mobile devices and the access probability to thousands of images from these devices, the users request for effective image search techniques for mobile devices. Modem multimedia mobile devices are prepared with camera and higher storage abilities; this desires the need of effective multimedia content management concluding several networks. In this paper analysis has been conducted through Client-Server architecture and M-MUVIS. Client server content-based image retrieval architecture for mobile platforms is established, which provides the ability of content-based query looking from mobile devices. In this client-server architecture, a client requests to the server for retrieval of specific images with a certain content. The server implements a content-based retrieval of images from a particular database and the retrieved results sends back to the client in an effective way. The query results are connected with a wireless network and of similar images are condensed on the mobile device screen using thumbnail dimensions. In this paper analysis of the ideas regarding image retrieval on mobile devices has been accomplished.

Keywords
Content, image, retrieval, client-server architecture, M-MUVIS, mobile devices

1. Introduction

Modern multimedia mobile devices with integrated support of camera provide new multimedia services, which have become an essential part of our daily life. The mobile phone industry is going through phenomenal change over the past few years with significant advances in areas of communications and multimedia. 3 G [20] services are already in the market and offer a great bandwidth to meet the rising demands of the users with delivery of high quality multimedia services. The processing power and memory capacity of mobile phones are increasing all the time. Nowadays, mobile platforms offer rich Application Programming Interface (APIs) to developers. With the generation of digital media by capturing and storing facility in smart phones, there is a need for content management and system to provide rapid retrieval of digital media items from large archives. Therefore, it has become vital to retrieve desired information expeditiously and efficiently using these devices. On the other hand, the content-based image retrieval area possesses a tremendous potential for exploration and utilization equally for researchers and people in industry due to its promising results. It has been an active area of research over a past decade. Rapid retrieval of desired multimedia content requires indexing of the content in large-scale databases containing media items along with extraction of low-level features based on content. The low-level features based on shape, color and texture are extracted from images using automated feature extraction algorithm. Systems such as "Multimedia Video Indexing and Retrieval System" (MUVIS) [16], [3], VisualSEEk [9], Photobook [7], Virage [21] have common feature of having a framework for indexing and retrieving images and audio-video files. The contemporary MUVIS has been developed as a system for content-based multimedia retrieval on a PC-based environment. MUVIS provides an integrated and global framework and consists of robust set of applications for capturing, recording, indexing and retrieval combined with browsing and various other visual and semantic capabilities.

With encouraging results of content-based information retrieval, favorable mobile platform support and limitations imposed by text-based queries [4] researchers and scientists have undertaken challenge of meeting content management of users using mobile devices. Annotation of digital media at the time of capture or store is difficult for a mobile user, which has been the basis of metadata creation process [8]. Systems such as IDeixis [10] find application in content-based image retrieval for location based services but the users usually experience a

large latency because of an insufficient mechanism for image transport which is based on Multimedia Message Service (MMS). In this paper, discussion has been on a content-based image retrieval system which uses combination of low-level features for image retrieval as compared to previous retrieval schemes which only works over a single feature for content-based retrieval [1], [2]. In this paper survey has been conducted on content based image retrieval on mobile devices. Research work targets to bring the MUVIS beyond the desktop environment into a realm of wireless devices (mobile phones, Personal Digital Assistants (PDAs), communicators etc.). In these survey researchers has designed and developed a content-based image retrieval system, which enable any client supporting Java [13] platform to retrieve images similar to query image from an image database.

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LIBRARY CONSORTIA

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Abstract:

The emergence of the Internet, particularly the World Wide Web, as a new medium of information storage and delivery in the 21st century. The phenomenon of consortia or group of libraries buying e-information together has become very important in the last few years. This paper briefly discusses the concept, need, factors, advantages, disadvantages of library consortia. Also this paper covers various models and the benefits of e-journals consortia .

Kew Words: Library Consortia, E-Journal; Models

Introduction

Library Consortia is the sharing of resources among the participant's libraries. A consortium may be a formal or in have enabled library consortia to expand both in formal agreement between two or more libraries based on a number and functions over their respected areas. Library-common principle.

For example, a consortium library consortium development is rooted in the may be based on librarytype academic, Special, public etc.A history of library cooperative efforts for doing work. A regional and local consortium may be based also driven by the need to provide remote users on a geographical area. A consortium is "an agreement, common platform other goal, aiming to reduce costs per unit through or group (as of companies) formed to undertake formation of purchasing consortia. These national regional and an enterprise consortia will be the focus of member"

2 Definition of Consortia

A Consortium could be described as a group of organizations who come together to fulfill a combined objective that usefully requires co-operation and the sharing of resources. And need to have a clear mutual goal in order to ensure their success. The aim should be to deliver "more than the sum of the individual parts". A library Consortium formation can be local, regional, state, national and inter institutional level

Concept of Library Consortia

Library consortia concepts came first time from academic libraries formed consortia for the primary purpose of sharing printed materials. Recently, academic libraries are having consortia to provide common access to electronic resources across the Internet, and they are forming these consortia ona statewide basis Library This task is very difficult for a single library. However, by forming a consortium among libraries, it becomes possible to purchase information in stabilized and reasonable prices. Historically, the common platform of library co-operation was the sharing of union catalogue, document delivery services, storage facilities, collection development and human resources at local, national and regional level. Another form of co-operation was based on inter library loan services where cooperating libraries agree to share their resources among the member libraries. This form of cooperation enabled libraries to borrow books, periodicals and other reading materials which were not available locally. The sending of requests and delivery of materials through the postal, fax and courier services. However, the real drive for co-operation was seen after when more and more libraries started getting automated and used computers for libraries all house keeping programs.

Factors To Consider Before Consortia Formation

Various factors to be taken for an effective functioning of a successful consortium. like resources identification on the basis of usage and usability, long run planning of the technology infracture, access to back runs of periodicals will have to clearly spelt, copyright and licensing, archival issue, price issue should be economically favouable. Last but not least, designing and launching a library consortium should be long term sustenance and robust models towards achieving the above goals.

Consortia Goals

The consortia being an association of like-minded libraries and in the present context to provide access to e-Journals and databases. It can have its own structure of governance and can act as a corporate body on behalf all members with set goals and benefits mentioned below.

7 Increase the access base – More e-Journals
7 Rational utilization of funds - A little more pays a lot
7 Ensure the continuous subscription
7 Qualitative resource sharing - Effective document delivery service
7 Avoid price plus models - Pay for up-front products not for R&D
7 Enhanced image of the library - Visibility for smaller libraries
7 Improve existing library services - Boosting professional image
7 Harness developments in IT - Facilitate building digital libraries
7 Cost sharing for technical and training support
7 Increase user base – Access from desktops of users

A library consortia formation can be at local, state wide, national and inter institutional level for making available the resources and services available both within the premises of members and outside for the benefit of members.

Consortia Models

Consortia models are not well defined and vary depending upon types of libraries Consortia models are not well defined and vary depending upon types of libraries participating, parent organizations they belong to, subject areas they cover, purpose of coming together and so on. Consortia could be a club of highly decentralized or highly centralized organizations. The characteristics of consortia model are also influenced by other players like publishers and vendors. Highly decentralized models suffer due to non-availability of common agenda, no external funds, central sponsor and central staff. On the other hand, highly centralized models overcome these lacunae and also get maximum discounts. Participants oriented models may be a group of organisations of a particular

Consortia in India

These are library consortia in India following below.

CSIR Library Consortia (Council for Scientific and Industrial Research)

E-journals Consortia

NISCAIR is the central organization for developing a "Consortium for CSIR Laboratories for Accessing e-journals". The activity shall range from creation to monitoring of the access facility of scientific periodicals published by leading international institutions. To start with, an agreement has been signed with, e-journal publisher, M/s Elsevier Science for a period of four years for 1200 journals. Under this scheme, CSIR scientists shall be able to access these journals and download material for

INDEST

The INDEST is consortium of all Indian Institutes of Technologies, IISc and few other institutes through the Ministry of Human Research and Development, Government of India is in the advanced stage for providing access to e-journals of Elsevier Science and IEEE. While this in the pipeline, few institutions like IIT, Chennai have already given access to Elsevier e-Journals with an understanding with the publishers.

INFLIBNET Initiatives

Information and Library Network has taken the initiative to provide access to e-Journals as well JCCC. Initially few selected university libraries, JCCC a product of private initiative provides access to contents of all the journals to the subscribed by all members of consortia along with database search facility and links to the full text articles depending upon the members' arrangement with publishers concerned. The most attractive feature of the service is automatic generation of e-mail request for Inter Library Lending among the consortia members.

ICICI Knowledge Park, Hyderabad.

ICICI Knowledge Park at Hyderabad has signed an agreement with Informatics India Ltd to provide access to J-Gate Custom Contents for Consortia service to four Hyderabad based and one Pune based R&D institutions. Initially this service is free for the members with the objective of making it self-sustaining in the later stage.

ISRO Initiatives

The resource sharing initiative taken by ISRO libraries by avoiding duplicate subscription to bibliographic databases is expected to result in savings of Rs. 41 lakhs per year. Further, the proposed cancellation of duplicate journal titles by its centers is likely to save the surplus amount that could be used to provide access to e-journals for the benefit of the all centers. A move is there to form formal consortia for providing access to e-journals and also J-Gate Custom Contents for Consortia.

Consortia Constraints Specific to Indian Libraries

7 Lack of awareness about consortia benefits
7 Slow acceptance of e-information by the users.
7 Difficulties in changing the mind setup of librarians
7 Maintenance and balancing both physical and digital library
7 Inadequate funds
7 Single point payment
7 Rigid administrative, financial and auditing rules
7 Problems of defining asset against payment
7 Pay-Per-View not yet acceptable
7 Uncertainty about the persistence of digital resources.
7 Lack of infrastructure for accessing electronic sources
7 Unreliable telecommunication links and insufficient bandwidth
7 Lack of appropriate bibliographic tools
7 Lack of trained personnel for handling new technologies
7 Absence of strong professional association
7 Big brother attitude

Conclusion

The consortium, with its collective strength of participating institutions, has attracted highly discounted rates of subscription with most favorable terms of agreement. Consortia are tools, which will aid in exploiting the features of the e-journals as well as in effecting savings. Now a revolution may be happening in the way scholarly communication is carried out, using the Internet. Electronic journals open up many exciting opportunities and potentials for academic libraries also. They possess many advantages and also disadvantages. Librarians need to be able to identify and balance the factors that would make electronic journals a success or failure in their libraries. Developing a common vision of the future of information technology can consolidate efforts to tap into the evolving telecommunication infrastructure. There is a general consensus that

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PERFORMANCE ANALYSIS OF VARIOUS FILTERING TECHNIQUES AND THEIR IMPACT ON EDGE DETECTION IN IMAGE PROCESSING

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ABSTRACT

Edge detection is the first step in many computer vision applications. Most images contain some amount of redundancies that can sometimes be removed when edges are detected and replaced during reconstruction. This is where edge detection comes into play. Edge detection significantly reduces the amount of data and filters out unwanted or insignificant information and gives the significant information in an image. This information is used in image processing to detect objects. There are some problems like false edge detection, problems due to noise, missing of low contrast boundaries etc. This paper presents various filtering techniques and their impact on edge detection. The code has been tested using MATLAB.

1. INTRODUCTION

Edge detection is a low level operation used in image processing and computer vision applications. The main goal of edge detection is to locate and identify sharp discontinuities from an image. These discontinuities are due to abrupt changes in pixel intensity which characterizes boundaries of objects in a scene. Edges give boundaries between different regions in the image. These boundaries are used to identify objects for segmentation and matching purpose [1].These object boundaries are the first step in many of computer vision algorithms like edge based face recognition, edge based obstacle detection, edge based target recognition, image compression etc. So the edge detectors are required for extracting the edges. There are many edge detection operators available [2].
These operators are very sensitive to noise and edges that contain high frequency contents. So removal of noise is required that may result in blurred and distorted edges. A wide range of operators are available that can extract the edges from noisy image [3][4]. But these edges are less accurate. That is due to the presence of noise they extract false edges. They do not find the boundaries of object having small change in intensities values. That result in poor localization of edges. So the operator is required that identify such a gradual change in intensities. So there are problems of false edge detection, problem due to noise, missing of low contrast boundaries, high computational time etc. Therefore, objective is to do the comparison between various edge detectors when noise is present.

The paper is organized as follows: Section 2 presents the theoretical background of various filters and edge detectors (derivative operator/masks). The experimental figure with various filters is shown in Section 3. The experimental results on figures are given in Section 4. Section 5 makes the concluding remarks.

2. BACKGROUND

2.1 Filtering techniques

Filtering is a technique for modifying or enhancing an image. For example, you can filter an image to emphasize certain features or remove other features. Image processing operations implemented with filtering include smoothing, sharpening, and edge enhancement.

Filtering is a *neighborhood operation*, in which the value of any given pixel in the output image is determined by applying some algorithm to the values of the pixels in the neighborhood of the corresponding input pixel. A pixel's neighborhood is some set of pixels, defined by their locations relative to that pixel. Image filtering can be grouped in two depending on the effects:

- *Low pass filters (Smoothing)* Low pass filtering is employed to remove high spatial frequency noise from a digital image. The low-pass filters usually employ moving window operator which affects one pixel of the image at a time, changing its value by some function of a local region (window) of pixels. The operator moves over the image to affect all the pixels in the image.
- *High pass filters (Edge Detection, Sharpening)* A high-pass filter can be used to make an image appear sharper. These filters emphasize fine details in the image - the opposite of the low-pass filter. High-pass filtering works in the same way as low-pass filtering; it just uses a different convolution kernel.

2.1.1 Averaging filter

An averaging filter is useful for removing grain noise from an image. Because each pixel gets set to the average of the pixels in its neighborhood, local variations caused by grain are reduced

2.1.2 Median filter

Median filtering is a nonlinear process useful in reducing impulsive, or salt-and-pepper noise. It is also useful in preserving edges in an image while reducing random noise. Impulsive or salt-and pepper noise can occur due to a random bit error in a communication channel. In a median filter, a window slides along the image, and the median intensity value of the pixels within the window becomes the output intensity of the pixel being processed

2.1.3 Gaussian low pass filter

Gaussian low pass and Gaussian high pass filter minimize the problem that occur in ideal low pass and high pass filter. This problem is known as ringing effect. This is due to reason because at some points transition between one color to the other cannot be defined precisely, due to which the ringing effect appears at that point. The one-dimensional Gaussian filter has an impulse response given by

$$g(x) - \sqrt{\frac{a}{\pi}} \quad e^{-a \cdot x^2}$$

2.1.4 Laplacian of Gaussian filter(LoG)

The Gaussian has some very desirable properties that facilitate edge detection procedure. First, the Gaussian function is smooth and localized in both the spatial and frequency domains, providing a good compromise between the need for avoiding false edges and for minimizing errors in edge position. . In fact, the Gaussian is the only real-valued function that minimizes the product of spatial and frequency-domain spreads. The Laplacian of Gaussian essentially acts as a band pass filter because of its differential and smoothing behavior. Second, the Gaussian is separable, which helps make computation very efficient.

2.2 Edge Detectors

Various types of operators are available for edge detection. But these operators are classified into two categories. In First order derivative [2] the input image is convolved by an adapted mask to generate a gradient image in which edges are detected by thresholding. Most classical operators like sobel, prewitt, robert [5] are the first order derivative operators. These operators are also said as gradient operators. These gradient operators detect edges by looking for maximum and minimum intensity values. These operators examine the distribution of intensity values in the neighborhood of a given pixel and determine if the pixel is to be classified as an edge. These operators have more computational time and can't be used in real-time application.

In second order derivative [2], these are based on the extraction of zero crossing points which indicates the presence of maxima in the image. In this, image is first smoothed by an adaptive filters [6].Since the second order derivative is very sensible to noise, and the filtering function is very important. Canny [9], which says in an optimal operator for step edge detection, includes three criteria: good detection, good localization, and only one response to a single edge.

2.2.1 Prewitt operator

Prewitt operator is used for edge detection in an image. It detects two types of edges

- Horizontal edges
- Vertical Edges

Edges are calculated by using difference between corresponding pixel intensities of an image. All the masks that are used for edge detection are also known as derivative masks. Prewitt operator provides us two masks one for detecting edges in horizontal direction and another for detecting edges in an vertical direction.

1	0	1
-1	0	1
-1	0	1
		Horizontal direction
1	-1	-1
0	0	0
1	1	1

2.2.2 Roberts operator

The idea behind the Roberts cross operator is to approximate the gradient of an image through discrete differentiation which is achieved by computing the sum of the squares of the differences between diagonally adjacent pixels. Only four input pixels need to be examined to determine the value of each output pixel, and only subtractions and additions are used in the calculation. In addition there are no parameters to set. Its main disadvantage is that since it uses such a small kernel, it is very sensitive to noise. It also produces very weak responses to genuine edges unless they are very sharp

2.2.3 Sobel operator

The sobel operator is very similar to Prewitt operator. It is also a derivate mask and is used for edge detection. Like Prewitt operator sobel operator is also used to detect two kinds of edges in an image:

- Vertical direction
- Horizontal direction

The major difference is that in sobel operator the coefficients of masks are not fixed and they can be adjusted according to our requirement unless they do not violate any property of derivative masks.

Following is the vertical Mask of Sobel operator

-1 0 1

-2 0 2

-1 0 1

2.3.4 Canny operator

The canny operator first smoothes the intensity image and then produces extended contour segments by following high gradient magnitudes from one

neighborhood to another. The Canny operator works in a multi-stage process. First of all the image is smoothed by Gaussian convolution. Then a simple 2-D first derivative operator is applied to the smoothed image to highlight regions of the image with high first spatial derivatives. Edges give rise to ridges in the gradient magnitude image. The algorithm then tracks along the top of these ridges and sets to zero all pixels that are not actually on the ridge top so as to give a thin line in the output, a process known as *non-maximal suppression.*

3. FIGURE

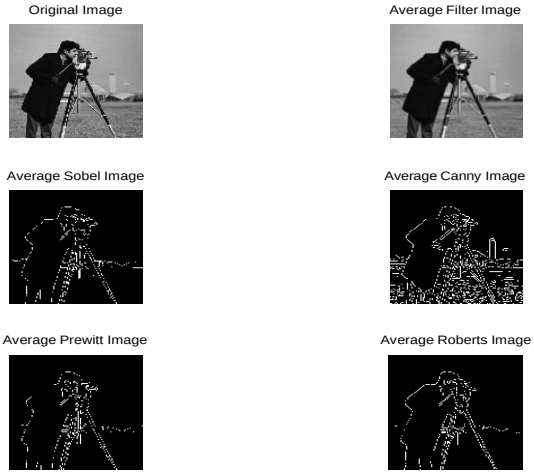

Fig – Averaging filter with different operators

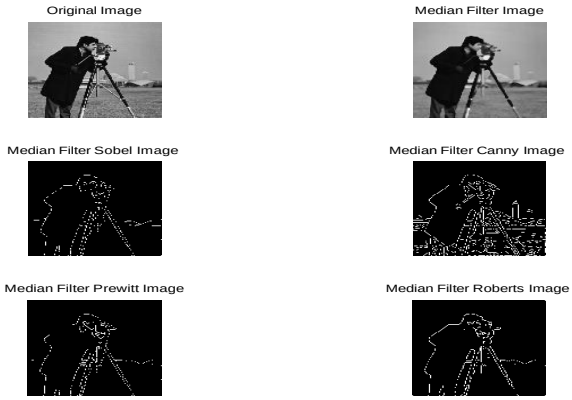

Fig – Median filter with different operators

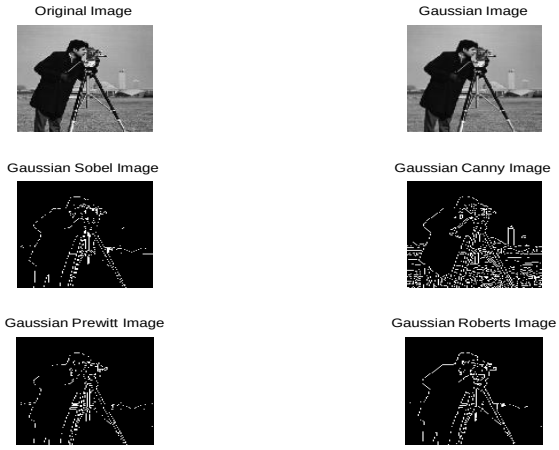

Fig – Gaussian filter with different operators

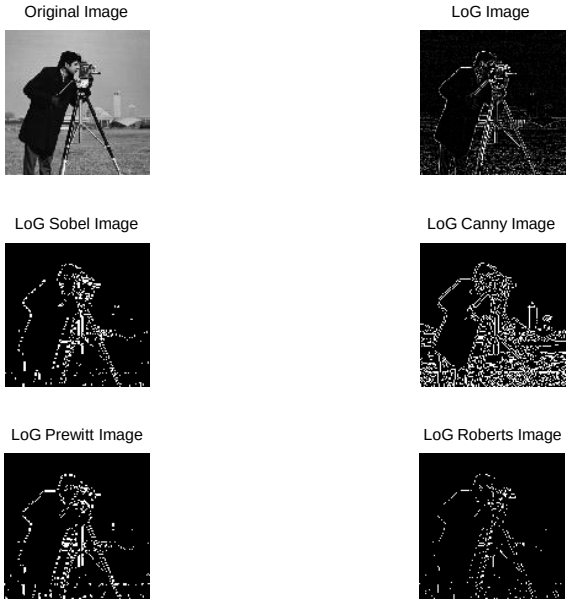

Fig – LoG filter with different operators

4. EXPERIMENTAL RESULTS AND ANALYSIS

Result analysis of *Averaging* filter

No	Edge Detector	Image Statistics				
		Mean	STD	Skew	Energy	Entropy
1	*Prewitt*	50.87	96.50	1.53	0.55	1.88
2	*Robert*	45.22	91.28	1.72	0.57	1.91
3	*Sobel*	39.51	85.54	1.94	0.59	1.89
4	*Canny*	58.54	92.85	1.32	0.37	3.32

Result analysis of Median Filter

No	Edge Detector	Image Statistics				
		Mean	STD	Skew	Energy	Entropy

1	*Prewitt*	43.20	90.64	1.79	0.60	1.71
2	*Robert*	38.06	84.87	1.99	0.61	1.75
3	*Sobel*	45.01	92.59	1.73	0.59	1.68
4	*Canny*	53.86	92.16	1.46	0.41	2.99

Result analysis of Gaussian Low Pass Filter

No	Edge Detector	Image Statistics				
		Mean	STD	Skew	Energy	Entropy
1	*Prewitt*	44.08	89.93	1.76	0.57	1.96
2	*Robert*	41.01	86.76	1.87	0.58	1.96
3	*Sobel*	50.21	95.50	1.55	0.54	1.97
4	*Canny*	58.66	91.54	1.32	0.35	3.50

Result analysis of *Laplacian of Gaussian*

No	Edge Detector	Image Statistics				
		Mean	STD	Skew	Energy	Entropy
1	*Prewitt*	52.75	96.33	1.47	0.51	2.25
2	*Robert*	39.71	87.05	1.94	0.60	1.73
3	*Sobel*	49.58	93.06	1.57	0.51	2.31
4	*Canny*	66.24	92.67	1.10	0.29	4.04

Result analysis of Entropy with various filters

No	Edge Detector	Entropy			
		Averaging	Median	Gaussian	LoG
1	*Prewitt*	1.88	1.71	1.96	2.25
2	*Robert*	1.91	1.75	1.96	1.73
3	*Sobel*	1.89	1.68	1.97	2.31
4	*Canny*	3.32	2.99	3.50	4.04

5. CONCLUSION

From above result analysis of entropy with various filters it is clear that Canny with Laplacian of Gaussian (LoG) is the best technique to detect the edges.

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NOISE DETECTION AND REMOVAL FROM WEB PAGES

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Abstract

Removing the noise patterns from web pages for effective web mining is the new research area for researchers. Different types of web pages on the World Wide Web are containing many informative blocks. Apart from the informative main content blocks, WebPages usually have such blocks as banner ads, navigation bars, links, and copyright notices. These blocks that do not form the main contents are termed as noisy or non-informative blocks. This noisy or non-informativeblockhas an adverse effect on web data mining process. Therefore it is necessary to remove such type of noise or non-informative blocks. This paper proposed new approach for removal of noise from web pages.

Keywords: Web Page, Noise Block, Web Mining, HTML Tag, Main Content, Text density.

1. Introduction

In the era of internet,the World Wide Web (WWW) has become a popular place for publishingdifferent kind of information. The web provides a very useful and helpful means of gathering information. Recent estimates suggest that there are more than 4.77 billion Web pages on WWW (Estimated by Google's index).Web mining is the use of data mining techniques to automatically discover and extract information from World Wide Web documents and web services. Web mining, data collection can be a substantial task, especially for Web structure and content mining, which involves crawling a large number of target Web pages.

In the WWW, Web pages inner content provide basic source of information used in various web mining applications. Unfortunately, this useful information in Web pages is often accompanied by a large amount of noise information or noise blocks such as banner ads, navigation bars, links, and copyright notices. Though such information items are functionally useful for human browsers and necessary for the Web site owners, but this information hamper automated information collection and Web mining tasks, e.g., information retrieval and information extraction, Web page clustering and Web page classification etc.

2. Web Page Noise

Lan Yi [9] has grouped noise data of Web documents into two categories:

Global noises: Global noises are usually no smaller than individual pages. A global noise includes mirror sites, legal/illegal duplicated web pages and old versioned web pages to be deleted, etc.

Local (intra-page) noise data: Local noise data are noisy regions/items within a Web page. Local noise data are usually incoherent with Web pages main contents. Such noise data includes banner ads, navigational guides, decoration pictures, etc.

Generally, Web mining task decomposed into the subtasks, namely, Resource finding, Information selection and pre-processing, generalization and analysis. Apart from these tasks enumerated under Web mining, another task viz. 'cleaning' be applied in web content mining with objective of removing Web page noise.

1.Related Work

Researchers have worked in this area for retrieving and extracting main content and removing noise data from different Web pages. Most of them have focused on detecting main content and informative blocks in Web pages; relatively list of the work has been done in this field such as,

Kushmerick [4] proposed some learning mechanisms to recognize banner ads, redundant and irrelevant links of Web pages. However, these techniques are not automatic. They require a large set of manually labelled training data and also domain knowledge to generate classification rules.

Kao et al. [5] enhances the HITS algorithm of by using the entropy of anchor text to evaluate the importance of links. It focuses on improving HITS in order to find informative or useful structures in Web sites, though it segments Web pages into content blocks to avoid unnecessary authority and hub propagations, it does not detect or eliminate noisy contents in Web pages.

Kao, Ho, and Chen [6]InfoDiscoverer, was proposed an approach to discover informative contents from a set oftabular documents of a Web site by dynamically select the entropy threshold. The system first partitioned a page into several content blocks according to HTML tag <TABLE> in a Web page. The system is not applicable general Web pages which is consisted using tag <DIV>.

Debnath et al. [8] proposed an approach similar to the one in [9]. They also select portions of web pages, called blocks, which have importance level above a given threshold. However, while Yi [9] defined the notion of importance based on features of the whole target site summarized in style trees; Debnath estimate the importance for each individual block. Two distinct

strategies are proposed. One is based on occurrence of similar blocks among the pages of the site and another is based on a specific predefined set of desired features that must be present on blocks.

Most of the techniques needs for extracting the content structure of a web page. Researchers have considered using the html tag information and dividing the page based on the type of the tags. Some useful tags include <P> (paragraph), <TABLE> (table), <UL> (list), <H1>~<H6> (heading), etc.

Diao et al. [11] treats segments of web pages in a learning based web query processing system and deals with these major types of tags.

Kaasinen et al. [12] split the web page by some easy tags such as <P>, <TABLE> and <UL> for further conversion or summarization.

Wong et al. [13] defines tag types for page segmentation and gives a label to each part of the web page for classification. Besides the tag tree, some other algorithms also make use of the content or link information.

1 Web Page HTML Tag

Web pages is construct through its source code, source code are text files with an ".html" suffix and HTML commands / tags. The different types of HTML tags are used to design any web page. Web page data is enclosed within a pair of open and a close html tag, a web page block is a portion of web page enclosed within an open-tag and its matching close-tag.

In study and analysis of different web pages and their html tag information, we found that HTML tags can be divided into two categories such as,

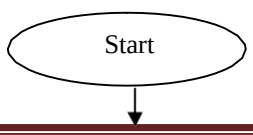
Container tag :Used to plan the layout of the web page, these tags visually divided the web page into several content blocks. Common container tags include <body>, <table>, <tr>, <td>, <ul>, and <form> etc.

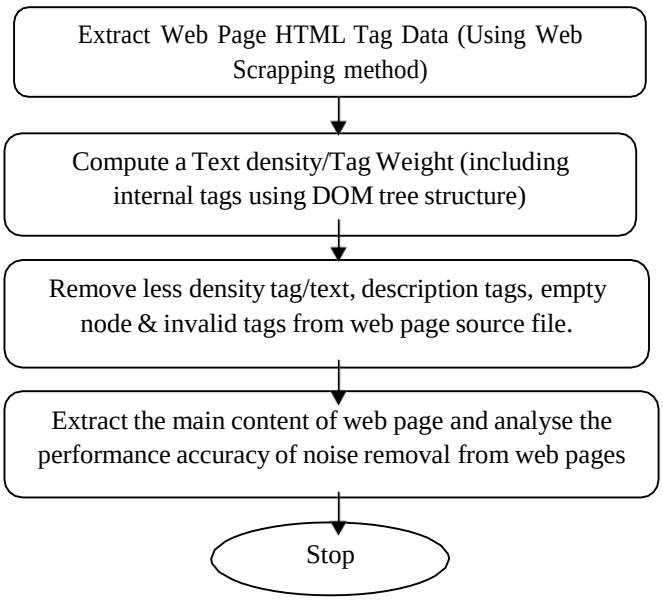
Description tag :Used to describe a segment of contain in the web page, these tags have no use of the layout of the web page but just a picture or a hyperlink, common description tags include <a>, <img>, <font> and etc., as well web page has some invalid tags such as<script><meta><form><marquee><style>&<anchor> etc., which are unrelated to the content.

Generally main content i.e. informative content are found in <BODY> tag and its corresponding tags , so we are interested at most to extracts the in information of <BODY> tag.

1. Proposed Work:

In this experiment to extract main content and remove noise content from web pages we have used following proposed approach outline,





5.1 Data Set:

Using information of web Page tag elements (i.e. text/ tag density) we decide main content and noise content data tag of web pages. These text/tags are categories in two types named as,

Black Listed Tags: - Black Listed Tags and its data are supposed to be noise data or pattern that should be removed.

White Listed Tags: - White listed tags and its data is a main content block on web pages areproviding for further web mining tasks.

This experiment has been done on news domain data set of web pages as follows,

Web Site Name	Source Category
CNNIBN	Main
	Sport
	Technology
ABB News	Main
	Sport
	Technology
Times of India	Main
	Sport
	Technology

5.2 Textual Importance:

In order to collecting information from a Web page the textual importance of both main content and noise block are taken into consideration. It was found that the noise part has short sentences means it has small number of textual information and main part contains large number of textual information and it also has lesser number of hyperlinks as compared with the noise.

The count of characters and tags in each node can be identified for computing text density.

Text Density: Text density will help to found the noise which is more formatted and contain a small text and main content usually lengthy and less formatted.

Text density or Tag weight can be defined as,

TDi =TCi

Where,

TDi = Text Density or Tag Weight

TCi = No. of Characters per tag (including corresponding tags)

After getting text density of each tag of web pages we apply a threshold approachon it, to find less density tags and high density tags and based on that we categories these web page tags in to two types,

Number of Black Listed Tag per Page: - Less density text/tag element of web page source file.

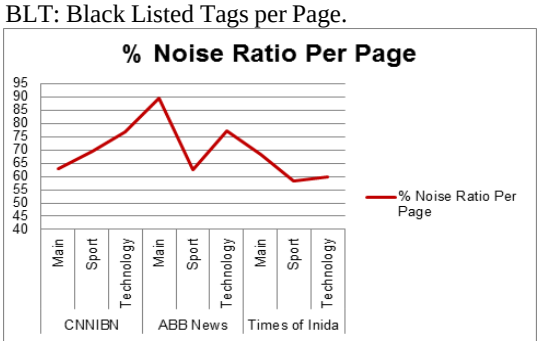
Number of White Listed Tag per Page: - High density text/tag element of file.

With the help of these tag information, we remove less density tags and its data, because these tag is supposed to be noise data tag or pattern.

This experiment provide us statistical information of web pages as follows,

Web Site Name	Source Category	B L T per Page*	Total No. of Tags per Page	% Noise Ratio Per Page
CNNIBN	Main	340	540	62.96
	Sport	305	438	69.63
	Technology	400	521	76.77
ABB News	Main	1322	1480	89.32
	Sport	870	1388	62.68
	Technology	820	1064	77.06
Times of India	Main	45	66	68.18
	Sport	56	96	58.33
	Technology	52	87	59.77

* BLT: Black Listed Tags per Page.



We remove less density tags & description tags and it's contain information and extract only the information of high density tags & container tag of web pages for further web mining tasks. This proposed work gives the performance accuracy of removal of noise is between 40 to 50%.

6.Conclusion :

Inweb page tag information we found that, generally web page main content tags can hold large text or characters as compare noise content or pattern tags of web pages. Wealso found that approx. 60 to 75 % data on web pages is noise data or items that are not related with main content and only 25 to 40 % data of web page is useful data i.e. main content required for web mining.This proposed approach for noise data removal of web pages is not work based on similarities of web pages (i.e. does not need similar structure of web pages) because it works on HTML tag information of web pages. So, it is not a site dependent.

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E-BANKING

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Abstract: -

E-banking is growing in a fast way in today's world of Information and communication technology. The banking relationship & business dimensions are changing rapidly with the use of Internet in the most effective way. Only tangible branches were the service points for the customers which are now a day getting replaced by the virtual branches. Whatever task a person has it is mostly possible today because of the use of Internet as he has his unique customer ID linked to the respective accounts he has with the bank by way of several secured ways viz. OTP, 3D securitization password. Most of the developed and developing countries are having this internet based E world of banks as it offers so many advantages like low cost of operating a mass class of varied customers. This is certainly a positive motive for the Indian banking sector as its contribution has passed over 7% in the GDP of India making it one of the most attractive career options too. The aim of E-banking is to assist financial organizations in utilising the opportunities via a new set of technologies.

Key words: -

E-Banking, OTP, I-mobile, POS, Plastic Money

Objective of the study:-

1. To study the latest changes taking place in the electronic banking segment.
2. To review and discuss the current trends in the E-banking.

Research Methodology:-

For this paper Secondary data are collected from sources such as Internet, newspapers, articles, business magazines, governments' websites and banking websites, various publications, personal records, study text books and online journals.

Introduction:

E-banking is an honest effort to use the internet connectivity to deliver the various services to the ultimate customers. The basic objective can be cited as to improve work flow, reduce paper work, provide online document imaging for users and create industry wide standards in order to improve cost efficiencies and profitability. The challenge in E-banking is related actually to create a technically sound infrastructure to ensure 24-hour availability, integrating backend, front end and other supporting tools to create a flawless experience for the customer, and processing of data which enables the provision of timely information to the management for effective decision making. The rapidly advancing global information infrastructure enables the development of E-commerce at a global level.

These all developments have actually created an innovative type of economy that may be called as the 'digital economy'. The key features of this new economy is bringing with it rapidly changing technologies, increasing knowledge intensity in all areas of business, and creating virtual supply chains and new forms of businesses and service delivery channels
like e-banking.

To meet the varied demands of the customers like quick and accurate services, business houses need to develop all innovative ways to create additional value which require different enterprise architectures, different IT infrastructures and different way of thinking about doing business.

This actual journey of business from an aged company to a new responsive electronic corporation is not easy as it requires a lot of innovative thinking, planning and investment.

Definition of the key terms:-

1. E-banking: - It simply refers to the use of electronic mediums for the regular functions of marketing like selling, promotion or online purchase of products from a website. All the marketing activities carried out using new technologies is nothing but
2. OTP: - It stands for one time password. It is a password generated by the system that has a limited time validity and access. It is a must to complete a transaction. It is a kind of security that cannot be completed without a mobile phone.
3. I-Mobile:- Most of the banks are giving the Internet banking apps link to be downloaded from the respective customer's mobile phone. I-mobile is for ICICI Bank customers. It is a facility that enables a customer to complete the transaction with the help of Internet connectivity available in his mobile phone.
4. POS: - It refers to the Point of Sale. It is generally a place or electronic item from where the transactions are carried out. It includes customer, banking organization and third party that provides this facility to complete the activity of payment for utilizing any kind of service or buy product.

5. Plastic Money: - It is simply the new age money in the form of cards money. Plastic money is nothing but the money in the electronic form stored in debit card or credit card or any seasonal card offered by the banking institution to the customer on certain terms and conditions.

What is the concept of E-Banking?

E-banking can mean the provision of information about a bank and its services via a home page on the World Wide Web. More stylish e-banking services provide customer an access to their accounts 24x7, the ability to transfer their money between different bank accounts and making payments or applying for loans through e-Channels.

Many financial organizations & banks are willing to use this channel to deliver their services because of its relatively lower delivery cost, higher sales and huge potential for offering superior convenience for customers. A large number of organizations from within and outside the financial sector are currently offering e-banking which include delivering services using Wireless Application Protocol (WAP) phones and Interactive Television (iTV). E-banking is just another step in banking evolution. Although start up costs for an internet banking channel can be high, it can quickly become profitable once a significant mass is achieved.

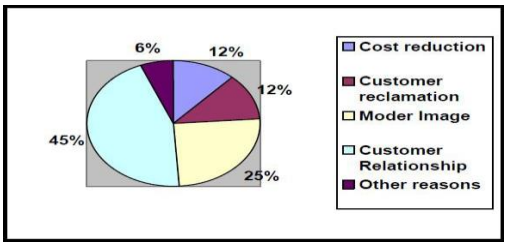
What are the advantages of E-banking?

BANK	❑ good image on the market; ❑ reduced costs of transactions; ❑ rapid answer to the market demands; ❑ increase of revenues; ❑ increase in the clients' number.
INDIVIDUAL CLIENT	❑ reduced costs for the access and use of different products; ❑ ease; ❑ rapidity; ❑ funds' administration;
INSTITUTIONAL CLIENT	❑ reduced costs for accessing and use of products; ❑ liquidity administration.

There are a lot of short term as well as long term advantages for a bank by adopting the E-banking technologies.

1. It becomes easy to do a segmentation of a bank's customer base if it follows E-banking methods to serve the customers. This helps in easy segmentation to identify and focus on core competencies and progress.
2. Once the people who are technologically advanced know the new Internet banking they can educate others in this regards. Customers would be very satisfied if they use the technology based banking. If we take an example of OTP where the transaction will be completed only if your registered mobile is available with you, a customer is surely more satisfied by this quick and assured service. He knows that no one can transact in his online account without the use of OTP.
3. It is said that retaining a customer is more important and difficult that simply getting a customer. It is a competitive field as all banks are in the race to provide the best services to its customers, it will be possible to retain the customers only if a bank is trust worthy and this trust is obtained if its providing the latest technologically based application with the highest security features to its customers.
4. The use of the internet based service gets the world at one glance. The geographical differences diminish when a bank offers internet based service. The best part is that it saves a lot more cost for a banking institution. A mass customer can be served if a bank use internet based services. When compared with the traditional methods of servicing a customer, these innovative features comparatively save a lot of cost.
5. The quality of the service is always quick and updated with the global technology only if a bank is using internet based techniques for its customers so naturally customers will get attracted to the banking products and services being offered.

Why do banks try to move from conventional banking to E-banking?



From the above diagram it is clear that Cost reductions, customer reclamation, modern image, customer relationship management coupled with several other reasons are the key reasons for a bank to go online.

What are the offerings over E-banking channel for a customer?

Once a customer starts using E-banking he has an ocean of transactions available at just a simple click of a button. There are online demos available for the new customers to start using Internet banking. We can discuss the following services and products being offered on the internet banking channel now a days.

1. Mini/ detailed statement- A customer can easily get the details statement online for a particular date or even a month. No transaction is missed by this method and he can keep a track on all of his financial happenings.
2. E-statement generation is also very easy as a customer just need to select the time duration and give a print command.
3. Fund transfer related all transactions can be completed while handling internet banking application. These fund transfer can be interbank or intra bank fund transfer.
4. All kinds of prepaid recharges is done by using internet banking applications such as prepaid mobile or dish TV recharges , Landlines or electricity bills, etc.
5. Payment of credit cards is easily done by using internet banking applications.
6. A customer can also schedule a transaction to be performed in future or at a designated time as per his convenience.
7. A customer can open a deposit account through e-banking usage. It can be a time deposit or a demand deposit.

8. Service request can be tracked and solved easily by way of internet banking logging.
9. Various schemes of Reward points and its benefits can be sought by participating in online promos and advertisements.
10. There is a facility of opening PPF accounts, all government scheme accounts online in simple steps.

Thus we can conclude by saying that these innovative technologies have made banking a great pleasure at a finger tip, it educates the customer, saves time, gives lot more information and certainly it is the best use of technology in all financial organizations.

Challenges before E-banking can be discussed as follow:-

There are certain limitations to E-banking as well. The transactions have become faster no doubt but it brings with it a matter of security of the data stored online.

1. When you access your bank accounts online, you share all vital information there. This contains your account number, debit & credit card number, Validity of ATM cards, OTP, Grid values and CVV number etc. This information is very confidential and you cannot afford to share it with anybody. Accessing your account from a public computer is surely a big financial risk to you. Just like online portals ATM centres too have become places of cyber crimes as it has become risky to enter a lonely ATM or sometimes you leave transactions unfinished.
2. Whenever using your VISA/Master cards at POS an extra care is taken not to disclose the vital information publicly since there are evidences that these details are misused by other people to deceive card holders. An extra care needs to be taken while doing transactions on bank portals or a third party portal like online sites purchasing.
3. Some people are not technologically friendly so they purposefully avoid the use of Internet mediums to do transactions online over internet. Awareness plays a vital role in this regards as well as other technologically updated information on products & services is also important to know. Specialised computer training needs an important part to handle your account online. There is one way to come out as follows- learn, study, understand the techniques and follow security guidelines to have a safe banking pleasure of quick transactions.

Conclusion:

E-banking is simple if used & understood in a proper way. Probable dangers of online frauds can even be avoided with utmost care and precautions while handling your personal financial details online. It is surely an access to your banking details anytime, anywhere and anyhow to complete the transactions. There are certainly more advantages of internet banking when compared with the traditional banking techniques. If we minimise the cyber risk while handling accounts online, this fast & innovative banking can surely be a gateway to one of the most developed banking experiences in the entire world.

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OVERVIEW ON OSI REFERENCE MODEL:

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Abstract :

In computer networks, communication occurs between entities in different systems. An entity is anything capable of sending or receiving information. However, two entities cannot simply send bit streams to each other and expect to be understood. For communication to occur, the entities must agree on a protocol. A protocol is a set of rules that govern data communications. A protocol defines what is communicated, how it is communicated, and when it is communicated. The key elements of a protocol are syntax, semantics, and timing.

Keywords: OSI , Physical Layer , Data link Layer, Network Layer, Transport Layer, Session Layer, Presentation Layer, Application Layer

Introduction : This model is based on a proposal developed by the International Standards Organization (ISO) as a first step toward international standardization of the protocols used in the various layers (Day and Zimmermann, 1983). It was revised in 1995(Day, 1995). The model is called the ISO-OSI (Open Systems Interconnection) Reference Model because it deals with connecting open systems—that is, systems that are open for communication with other systems.

The OSI model has seven layers. The principles that were applied to arrive at the seven layers can be briefly summarized as follows:

1. A layer should be created where a different abstraction is needed.
2. Each layer should perform a well-defined function.
3. The function of each layer should be chosen with an eye toward defining internationally standardized protocols.
4. The layer boundaries should be chosen to minimize the information flow across the interfaces.
5. The number of layers should be large enough that distinct functions need not be thrown together in the same layer out of necessity and small enough that the architecture does not become unwieldy.

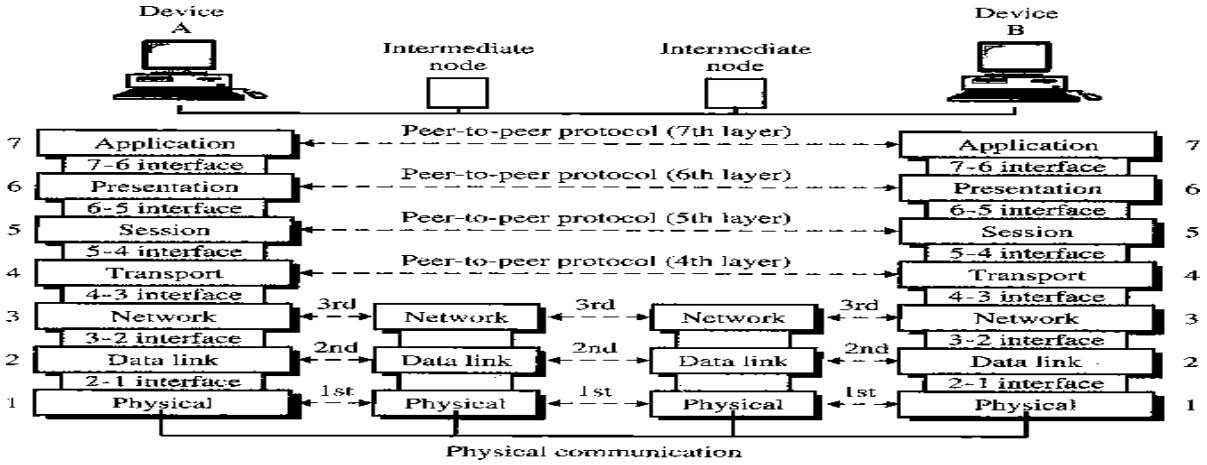

fig.: The OSI reference model

Types of Layers

The Physical Layer:

The physical layer is concerned with transmitting raw bits over a communication channel. The design issues have to do with making sure that when one side sends a 1 bit, it is received by the other side as a 1 bit, not as a 0 bit.

The Data Link Layer:

The main task of the data link layer is to transform a raw transmission facility into a line that appears free of undetected transmission errors to the network layer. It accomplishes this task by having the sender break up the input data into data frames (typically a few hundred or a few thousand bytes) and transmits the frames sequentially. If the service is reliable, the receiver

confirms correct receipt of each frame by sending back an acknowledgement frame.

Another issue that arises in the data link layer (and most of the higher layers as well) is how to keep a fast transmitter from drowning a slow receiver in data. Some traffic regulation mechanism is often needed to let the transmitter know how much buffer space the receiver has at the moment. Frequently, this flow regulation and the error handling are integrated.

The Network Layer: The network layer controls the operation of the subnet. A key design issue is determining how packets are routed from source to destination. Routes can be based on static tables that are "wired into" the network and rarely changed. They can also be determined at the start of each conversation, for example, a terminal session (e.g., a login to a remote machine). Finally, they can be highly dynamic, being determined anew for each packet, to reflect the current network load.

If too many packets are present in the subnet at the same time, they will get in one another's way, forming bottlenecks. The control of such congestion also belongs to the network layer. More generally, the quality of service provided (delay, transit time, jitter, etc.) is also a network layer issue.

When a packet has to travel from one network to another to get to its destination, many problems can arise. The addressing used by the second network may be different from the first one. The second one may not accept the packet at all because it is too large. The protocols may differ, and so on. It is up to the network layer to overcome all these problems to allow heterogeneous networks to be interconnected. In broadcast networks, the routing problem is simple, so the network layer is often thin or even nonexistent.

The Transport Layer:

The basic function of the transport layer is to accept data from above, split it up into smaller units if need be, pass these to the network layer, and ensure that the pieces all arrive correctly at the other end. Furthermore, all this must be done efficiently and in a way that isolates the upper layers from the inevitable changes in the hardware technology. The transport layer also determines what type of service to provide to the session layer, and, ultimately, to the users of the network. The most popular type of transport connection is an error-free point-to-point channel that delivers messages or bytes in the order in which they were sent. However, other possible kinds of transport service are the transporting of isolated messages, with no guarantee about the order of delivery, and the broadcasting of messages to multiple destinations. The type of service is determined when the connection is established.

The transport layer is a true end-to-end layer, all the way from the source to the destination. In other words, a program on the source machine carries on a conversation with a similar program on the destination machine, using the message headers and control messages. In the lower layers, 24 the protocols are between each machine and its immediate neighbors, and not between the ultimate source and destination machines, which may be separated by many routers.

The Session Layer:

The session layer allows users on different machines to establish sessions between them. Sessions offer various services, including dialog control (keeping track of whose turn it is to transmit), token management (preventing two parties from attempting the same critical operation at the same time), and synchronization (check pointing long transmissions to allow them to continue from where they were after a crash).

The Presentation Layer:

The presentation layer is concerned with the syntax and semantics of the information transmitted. In order to make it possible for computers with different data representations to communicate, the data structures to be exchanged can be defined in an abstract way, along with a standard encoding to be used "on the wire." The presentation layer manages these abstract data structures and allows higher-level data structures (e.g., banking records), to be defined and exchanged.

The Application Layer:

The application layer contains a variety of protocols that are commonly needed by users. One widely-used application protocol is HTTP (Hypertext Transfer Protocol), which is the basis for the World Wide Web. When a browser wants a Web page, it sends the name of the page it wants to the server using HTTP. The server then sends the page back. Other application protocols are used for file transfer, electronic mail, and network news.

Conclusion :

In conclusion, A network is any two or more entities -- be they people, organizations, machines, or whatever -- that:

- Need to share a resource (in computer geek speak referred to as *services*),
- Have a pathway for contacting one another (referred to as *transmission media*), and
- Have rules for using their common pathway to communicate about the sharing of resources (referred to as *protocols*).

Before a network can be effective, participants must have clearly established these three things.

In computer networking, fortunately, the services, transmission media, and protocols have long since been codified so that the uninitiated can quickly master the concepts.

Since 1977, the International Standards Organization (ISO) has promulgated the Open Systems Interconnection (OSI) Reference Model. The OSI seven-layer model, as it has come to be known, consists of (get this!) seven layers:

- Application (Layer 7)
- Presentation (Layer 6)
- Session (Layer 5)
- Transport (Layer 4)
- Network (Layer 3)
- Data Link (Layer 2)
- Physical (Layer 1)

The seven layers collectively are often referred to as a protocol stack, although in actuality only the transport and higher layers deal directly with protocols, per se.

Each layer is responsible for specific functions of network communications. It is important to note, however, that the model is theoretical; actual network operating systems (NOSs) handle the practical implementation of each of these theoretical functions in different ways. Nevertheless, the model does help clarify the relationships and define the interactions the multiple protocol stacks of the various NOSs have to and with one another.

In networking, each layer in a computer's protocol stack communicates with the corresponding layers in other computers' stacks. This works both horizontally and vertically:

- As data is passed from the Transport layer in one computer, it is received and interpreted by the Transport layer in other computers. However,
- To get to the corresponding layers in other computers, the data must pass down through the other layers of the originating computer and up through the lower layers of the receiving computers. As the data is handed down to lower layers, each layer adds instructions and other information (called a header) to the beginning of the data. Then, as the data arrives at each layer of the receiving computer, the corresponding headers are stripped off and any instructions are carried out before the data is handed up to the next layer.

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THE ETHICAL IMPLEMENTATION OF WEB ACCESSIBILITY ISSUES AND CHALLENGES FOR DISABLED USER

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Abstract

This paper will discuss how to developed website using web accessibility tools which help disabled. An accessible web site is one which can be used by all its intended visitors. Inaccessible web sites can pose significant barriers to people with disabilities. The challenge of developing web content accessible by everyone has motivated the evolvement of a number of techniques to address web accessibility issues. Unfortunately, web developers often lack sufficient knowledge about these guidelines and techniques to develop accessible web sites.

Keywords - Screen reader, JAWS, Dyslexia

1. Introduction

Currently, the World Wide Web (the Web) is present in all areas of our lives. The Web has firmly entered in our everyday life and has changed our way of making shopping, managing business, accessing to e-government services, having education, enjoying entertainment, and so on. Making websites accessible currently, the World Wide Web (the Web) is present in all areas of our lives. The Web has firmly entered in our everyday life and has changed our way of making shopping, managing business, accessing to e-government for all disabled people is critical. The Web has a huge potential to transform their lives, allowing them independent access to information and services for the first time. But, if websites are badly designed and badly supported, this potential is lost and the web becomes just another arena of exclusion.

Web accessibility means that people with disabilities can use the Web. It therefore makes sense to find out whether a website really is accessible by testing it with actual users with disabilities. Accessible websites benefit everyone.

Many disabled people use additional devices (and strategies) to help them use the Web:

- Screen reader

The W3C, WAI, and WCAG are helping developers understand what they should be doing to make their websites accessible.

2. Review of Literature:

Terry Thompson Sheryl in his paper "International Research on Web Accessibility for Persons with Disabilities" identifies countries that may employ promising practices. Given the performance of the "Top Ten" countries relative to other countries, a deeper exploration of each of these countries is a logical next step, although even these countries' results show considerable room for improvement.

Kanchi V. and Patil H. "E-participation of Visually Challenged – A Case Study"

David A. Bradbard in his paper "Web Accessibility Theory and Practice: An Introduction for University Faculty"

3. Objectives

- To explore new areas of career for visually challenged people.
- To explore new possibilities and fields where visually challenged people can make their career and work efficiently as well as independently.
- To improve the lives of people with disabilities (human-centered motivations)
- To capitalize on the a wider audience or consumer base (marketing or economic-centered motivations)
- To avoid lawsuits and/or bad press (public relations and punishment-centered motivations)

4. Web Accessibility Issues for disabled:

For those unfamiliar with accessibility issues pertaining to Web page design, consider that many users may be operating in contexts very different from your own:

- They may not be able to see, hear, move, or may not be able to process some types of information easily or at all.
- They may have difficulty reading or comprehending text.
- They may not have or be able to use a keyboard or mouse.
- They may have a text-only screen, a small screen, or a slow Internet connection.
- They may not speak or understand fluently the language in which the document is written.
- They may be in a situation where their eyes, ears, or hands are busy or interfered with (e.g., driving to work, working in a loud environment, etc.).
- They may have an early version of a browser, a different browser entirely, a voice browser, or a different operating system.

5. Web Accessibility Tools

Many web designers, developers, and evaluators are introduced to web access through accessibility tools. All accessibility tools perform automated checks of web pages for accessibility issues and all generally have additional features, but each tool targets different audiences. In order to help web designers, developers, and evaluators choose an appropriate tool for their purposes.

However, web accessibility requires more than just accessibility tools; it requires human judgment. It is important to remember that accessibility tools can only partially check accessibility through automation. The real key is to learn and understand the web accessibility standards rather than relying on a tool to determine if a page is accessible or not.

Screen reader

Screen readers are applications that visually-impaired users employ to assist them in navigating websites and applications. These applications read out text and navigation items using a synthesized voice. To truly understand the experience you need to install a reader such as JAWS, and attempt to navigate your application with your monitor turned off.

Using JAWS to Evaluate Web Accessibility:

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that allows blind and visually impaired users to read the screen either with a text-to-speech.

While working in JAWS, keep the following guidelines in mind:

- While JAWS can be used for accessing Windows and most Windows applications, we will be focusing on accessing web content only.
- Make sure that NumLock is off.
- You will probably want to test JAWS in Internet Explorer, even if it is not your primary browser.
- Maximize the browser window.
- Remember that screen reader users typically do not use a mouse. As you become more comfortable with JAWS, try using only the keyboard.
- Keep in mind that most IE shortcut keys will work when using JAWS.
- The page may not scroll while you read, so you may hear content being read by JAWS that isn't visible on the screen.

6. Commitmentand accountability of Web Accessibility

Awareness: The foundation of any kind of commitment to web accessibility is awareness of the issues. Most web developers are not opposed to the concept of making the internet accessible to people with disabilities. Most accessibility errors on web sites are the result of lack of awareness, rather than malice or apathy.

Leadership: Understanding the issues is an important first step, but it does not solve the problem, especially in large organizations. If the leadership of an organization does not express commitment to web accessibility, chances are low that the organization's web content will be accessible. Oftentimes, a handful of developers make their own content accessible while the majority doesn't bother to, since it is not expected of them.

Policies and Procedures: Even when leaders express their commitment to an idea, if the idea is not backed up by policy, the idea tends to get lost among the day-to-day routines. The best approach for a large organization is to create an internal policy that outlines specific standards, procedures, and methods for monitoring compliance.

7. Laws and standards

Applicable laws include ADA, IDEA, and the Rehabilitation Act of 1973 (Sections 504 and Section 508). Many international laws also address accessibility.

The Web Content Accessibility Guidelines provide an international set of guidelines. They are developed by the Worldwide Web Consortium (W3C), the governing body of the web. These guidelines are the basis of most web accessibility law in the world. Version 2.0 of these guidelines, published in December 2008, is based on four principles:

- **Perceivable:** Available to the senses (vision and hearing primarily) either through the browser or through assistive technologies (e.g. screen readers, screen enlargers, etc.)
- **Operable:** Users can interact with all controls and interactive elements using the mouse, keyboard, or an assistive device.
- **Understandable:** Content is clear and limits confusion and ambiguity.
- **Robust:** A wide range of technologies (including old and new user agents and assistive technologies) can access the content.

The disabilities that are most likely to affect your users fall into four major categories and present their own challenges for developers:

8. Visual Impairment

Visual impairment includes tunnel vision, color blindness, and, of course, being legally blind. Visually impaired users are often the most affected when it comes to accessibility issues, since everything done on a computer is to some extent visual. These users rely heavily on the keyboard for input and control, and tend to avoid using a mouse. A screen magnifier or screen reader provides a lot of assistance, as do audio events and cues. Some use a Braille display to "read" the text on screen with their fingertips.

9. Dyslexia

Dyslexic users are likely to have great difficulty reading a web page or dealing with large amounts of textual controls. In some cases this can extend to difficulty with data entry too, such as using a search function. Strategies such as logical page or screen structure can help, as well as developers adopting design philosophies that make an application as self-explanatory as possible. Dyslexic users may also use screen readers to aid with their comprehension.

10. Motor Disabilities

Motor disabilities can range from hand or arm tremors, a loss of limbs, or a lack of control and movement of body parts. In these cases input devices need to be considered,

bearing in mind that users may be entirely unable to operate a mouse. Even if the user is unable to type, other assistive technologies exist to help them. Full keyboard navigation and control is essential for these users.

11. Cognitive Disabilities

This group is probably the farthest reaching. Disabilities may include faculty impairment such as memory recall, comprehension, and interpretation. In some cases these can be temporary situations; in others they're permanent and there's no easy solution to cater for them all. This group is best served by a combination of techniques used for the other three groups, tied to an overall design philosophy aware that more and more people on the Web are not geeks or programmers, and so approach software differently from the way we expect.

12. Key principles of accessible design

Most accessibility principles can be implemented very easily and will not impact the overall "look and feel" of your web site.

- Provide appropriate alternative text
- Alternative text is a textual alternative to non-text content, usually images in web pages.
- Make sure that content is well structured and clearly written
- Write clearly, use clear fonts, and use headings and lists appropriately.
- Organize your content using true headings (heading 1, heading 2, etc.).
- Help users skip to relevant content
- In a web page, provide a link that allows the user to skip from navigation to the main content in the page.
- Provide a table of contents with links to each sub-section
- Provide headers for data tables
- Tables that are used to organize tabular data should have appropriate table headers. Data cells should be associated with their appropriate headers.
- Ensure users can complete and submit all forms
- Ensure that every form element (text field, checkbox, dropdown list, etc.) has a label and make sure that label is associated to the correct form element using the <label> tag. Also make sure the user can submit the form and recover from any errors, such as the failure to fill in all required fields
- Ensure links make sense out of context
- Every link should make sense if the link text is read by itself. Certain phrases like "click here" and "more" must be avoided
- Caption and/or provide transcripts for media
- Videos and live audio must have captions and a transcript. With archived audio, a transcription may be sufficient.
- Do not rely on color alone to convey meaning
- The use of color can enhance comprehension, but do not use color alone to convey information. Make sure that color contrast is strong.
- Design to standards
- HTML compliant and accessible pages are more robust and provide better search engine optimization. Cascading Style Sheets (CSS) allow you to separate content from presentation. This provides more flexibility and accessibility of your content.

13. Accessible design

The college website is accessible according to access guidelines by W3C. Each web page is developed in order to be read by all users, including those with disabilities. Readers with disabilities may be using adaptive software (like JAWS) to access site. The college website is the gateway for receiving information on various courses and programs offered by the college.

With respect to enhancing website accessibility for people with various degrees of visual impairments inclusion of website accessibility features such as the following are being identified and implemented. Some of the most common eye disorders such as Retinopathy, Glaucoma, Cataract and Retinitis Pigmentosa in which the strength of the vision gradually deteriorates, the contrast sensitivity of the eye is greatly affected causing insensitivity to different levels of brightness and similar shades. To help such persons with low vision, a second version of the college website with greater contrast is being considered for design.

The webpage's are being recorded with semantically meaningful HTML so that the visually challenged can have easier maneuverability and navigability across the webpage's using the text to speech software. The measures include providing textual description for images, easy to understand descriptions to links, etc. Keeping the webpage viewers with low vision in mind, the facility to scale the images and view them enlarged is also being incorporated. The webpage's are being redesigned using alternate style sheets with regular and larger font sizes, ensuring the layout of the pages is not compromised when text-only zoom is enabled in the browser. In case of webpage's where a lot of description is present, text only versions are also being offered so that such text can be manipulated suiting the requirement of the user. For people with color vision deficiency, use of red and green colors is minimized as far as possible. A lot of standard keyboard shortcuts are also incorporated into the webpage's ensuring easier navigation with keyboard and reducing the use of mouse cursor.

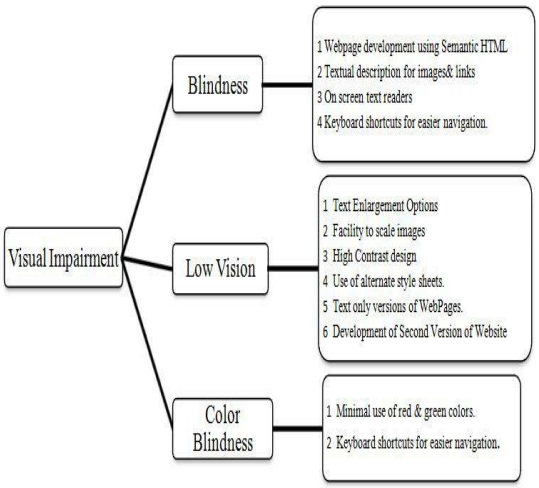
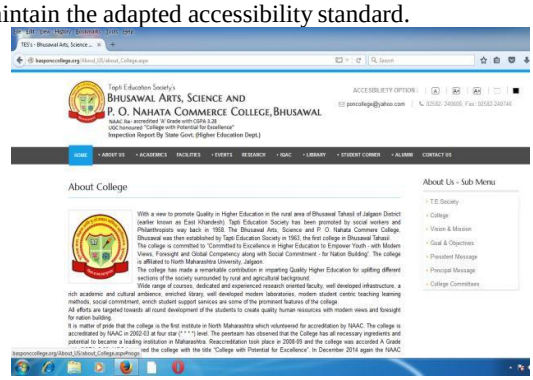


Figure 2: Different Kinds of Visual Impairments and Web Accessibility Options Incorporated

Web accessibility evaluation is performed by Freedom access team, Pune with the objective to enhance the accessibility of government of Maharashtra official portal and maintain the adapted accessibility standard.



14. Conclusion

The web offers so many opportunities to people with disabilities that are unavailable through any other medium. It offers independence and freedom. However, if a web site is not created with web accessibility in mind, it may exclude a segment of the population that stands to gain the most from the internet. Most people do not intend to exclude people with disabilities. As organizations and designers become aware of and implement accessibility, they will ensure that their content can be accessed by a broader population.

This conclusion can be drawn from the review of literature where several groups within academe, that should be aware of accessibility issues, maintained Web sites with low levels of accessibility.

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- http://webaim.org/articles
- https://validator.w3.org/

http://ncdae.org/tools/factsheets/principles.cfm

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DESIGNING DIGITAL CONTENT READING AND MULTIMEDIA LEARNING AMONG THE STUDENTS

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Abstract:

This paper will discuss the innovative educational technology tools and the development of digital learning resource and multimedia resources (DLR). First, key elements of the traditional teaching style are discussed. Secondly, the design of multimedia learning objects for the course is explained.

Demographically the students of the college belong to lower and middle economic and social strata with a strong inclination toward learning resources published in Marathi, their mother tongue and exhibit mediocre technical skills. With the intention of habituating the students to use digital content that keeps the learners abreast with the latest developments of their subject and also offer effective learning experiences in multiple formats such as audios and videos, the college has established a Virtual Class Room and Network Resource Center in the college at Comp. Science department, an electronic reading room facility providing access to e-content.

Keywords - E-content; Digital resources; E-books; Audios and videos.

Introduction:

Education at all levels primary, secondary, and higher education has been challenged to develop digital resources for the enhancement of teaching and learning. Teaching and learning can be facilitated by multimedia resources. Those resources can provide motivation and interest in the study for students.

A digital learning resource is both an artifact and a semiotic tool with a bigger potential than traditional textbooks. Digitally stored content allows the user to view and navigate through the information non-sequentially in much the way that humans think – by association rather than linear sequence apart from offering multimedia experience. As the Digital learning resources can be multi-modal, which means that the communication can be made both visually and auditory.

DLR - Architecture and Topology

The DLR is set up in client server environment with 20 computer nodes serving as clients and a dedicated Internet Information Service (IIS) server. The computer nodes are connected to each other using mesh topology with a fast Ethernet Switch. The Switch receives the internet connection from the college's main server which distributes the internet connectivity among the nodes. A database consisting of 1500 e-books, 350 videos and about 100 audios pertaining to the topics of interests to the students has been developed.

The collection has been classified subject-wise and, with the help of web pages with links to the collection have been created. Each computer terminal is installed with dictionaries, encyclopedias and other ready reference material so that the student has direct access to these resources. The browsers in all the terminals are configured to open the DLR homepage with index of documents as the default page. Further, the index page also is provided with other useful links that are of great significance to the students of higher education.

For example http://www.nptel.iitm.ac.in links to a large collection of video recordings of lectures by eminent Indian Institute of Technology professors. http://shodganga.inflibnet.ac.in provides the research dissertations and theses submitted by the research scholars to various Indian universities.

Question papers of previous year examinations of all the subjects offered by the college have been scanned and uploaded on the DLR server. The server also hosts personality development and etiquette related videos including spoken English programs. Thus the DLR is designed to host all that a student can get benefit out of.

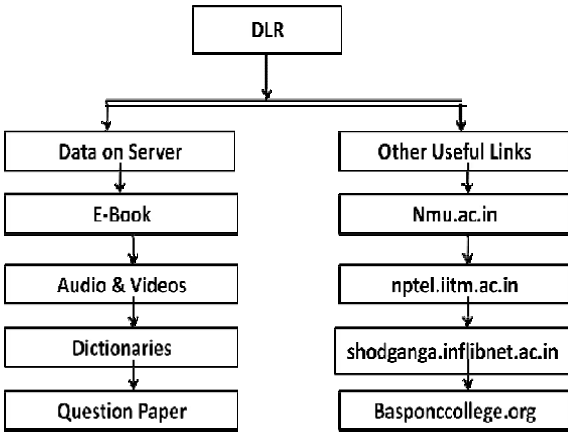
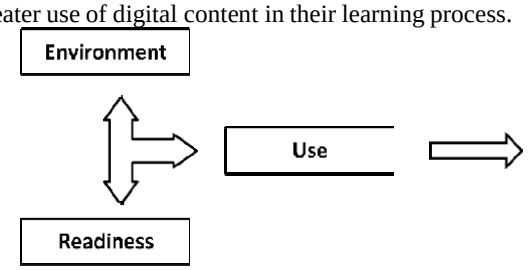


Fig. 1. DLR: A schematic representation

Measuring the Effectiveness of DLR:

Establishing a facilitation centre like Virtual Class Room and Network Resource Center in the college for

accessing digital content is only successful when the content is actually put to use by the students in their learning process. Use studies are conducted by the college to study whether the centre is successful in meeting the objective of facilitating easy access to digital learning resources, for the students and encouraging greater use of digital content in their learning process.



Under Environment it identifies two criteria: how easy it is to access DLR and how many DLR are available to the users. User readiness is the propensity of users to use DLR which is linked to the level of ICT related skills and competence shown by the students. According to the draft the technological environment and the level of readiness combine to facilitate the actual use of DLR. Accordingly, use is defined as the actual application of DLR in teaching and learning activities as well as the type of DLR used and for what purpose. And finally, any kind of measurable effect of the use of DLR either in the quality or in the output of the teaching and learning process is said to be the impact of using DLR. It is also argued by the draft report that intensive use of DLR and ICT at large can result also in the learning of competences and skills not accounted for in traditional educational settings. With these benchmarks as the basis the effectiveness of NRC and Virtual Calss Room are evaluated.

Infometrics and Use Statistics:

The Center is kept open for the students on all working days from 9.00 am to 5:00 pm. A student on an average sits for about an hour browsing the resources that includes web surfing. To check whether the students spends time merely surfing the web or seriously makes use of the resources, the internet access has been highly restricted. Yet, since inception, there has been steady growth in the student visits to center.

The first month registered 200 student visits and by the mid Jun-15, at the time this paper is prepared, there were already 100 student visits to the Centre. As regards to the number of DLRs made available to the students, the DLR server itself hosts over 1500 e-books, 350 videos and about 100 audios. For enhancing the resource handling skills a facilitator is made available in the center throughout the day.

The college library is in the process of preparing a questionnaire to assess the usefulness of the DLRs. The computer science department is observed that the DLR facility is chiefly used by the students to complete their project reports, prepare power-point presentations and search for reference material for their research reports.

The effect of the center is surmised by the steady increase in the number of visitors to the centre over a period of seven and half months which is graphically depicted hereunder:

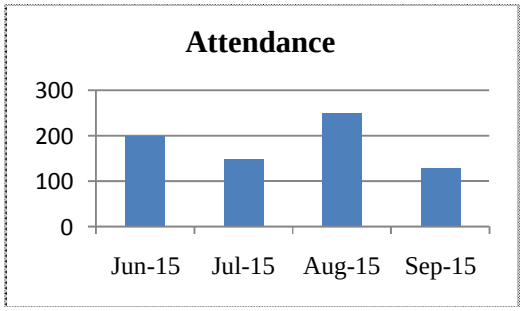


Fig. 2. Use statistics of Center

Survey of Users:

A survey of the users on their purpose of visit to center and the content they access is conducted through a questionnaire. The survey revealed that undergraduate students visited the center to search for information on World Wide Web using Google followed by accessing scanned question papers of previous year examinations while postgraduate students showed interest on the video library and research dissertations and Ph.D. theses available on http://shodganga.inflibnet.ac.in. Postgraduate students also showed interest in the online video lectures of eminent professors available on NPTEL portal. Attempts are also being made to analyze the use statistics more elaborately to elicit the expectation of the students, problems faced by them in the access and use of digital content, which is underway.

Conclusion:

Changing the reading habits of the students from conventional methods and habituating the reading of digital content is the immediate challenge in front of academic libraries, especially in case of rurally located ones in the developing countries. The present ongoing research vouches for the success of the centre. While the fact that most e-books are available in English language only is the chief discouraging factor for the students hailing from rural backgrounds to prefer digital content over printed books, video lectures, simulations, power point presentation and previous year question papers etc., generally prove points of attraction to the students.

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REMOVAL OF NOISE FOR GRAY-SCALE AND COLOR IMAGES USING DIFFERENT FILTERS

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Abstract

Noise is an important factor that influences image quality , which is mainly produced in the processes of image acquirement and transmission. Noise reduction is necessary for us to do image processing and image interpretation so as to acquire useful information that we want. In general the results of the noise removal have a strong influence on the quality of the image processing technique.Several techniques for noise removal are well established in color image processing. This paper illustrates the nature of the noise removal problem depends on the type of the noise corrupting the image. In the field of image noise reduction several linear and non linear filtering methods have been proposed.Then, MSE and PSNR are calculated to evaluate the processed image. Results suggest that the methods used in this paper are suitable in processing of different types of noise.

Introduction

Digital images are prone to a variety of types of noise.Image noise is random variation of brightness or color information in images. The original meaning of "noise" was and remains "unwanted signal". Noise is the result of errors in the image acquisition process that result in pixel values that do not reflect the true intensities of the real scene. There are several ways that noise can be introduced into an image, depending on how the image is created. For example:

- If the image is scanned from a photograph made on film, the film grain is a source of noise. Noise can also be the result of damage to the film, or be introduced by the scanner itself.
- If the image is acquired directly in a digital format, the mechanism for gathering the data (such as a CCD detector) can introduce noise.
- Electronic transmission of image data can introduce noise.

The magnitude of image noise can range from almost unrecognizable small dot on a digital photograph taken in good light, to optical and radioastronomical images that are almost entirely noise, from which a small amount of information can be derived by sophisticated processing.

Gaussian noise(Amplifier Noise)

Principal sources of Gaussian noise in digital images arise during acquisition e.g. sensor noise caused by poor illumination and/or high temperature, and/or transmission e.g. electronic circuit noise. In telecommunications and computer networking, communication channels can be affected by wideband Gaussian noise coming from many natural sources, such as the thermal vibrations of atoms in conductors black body radiation from the earth and other warm objects, and from celestial sources such as the Sun. A special case is *white Gaussian noise*, in which the values at any pair of times are identically distributed and statistically independent (and hence uncorrelated). In communication channel testing and modeling , Gaussian noise is used as additive white noise to generate additive white Gaussian noise.

Salt-and-pepper noise(Impulse Noise)

Image with salt and pepper noise "impulsive" noise is sometimes called salt-and-pepper noise or spike noise. An image containing salt-and-pepper noise will have dark pixels in bright regions and bright pixels in dark regions. This type of noise can be caused by analog-to-digital converter errors, bit errors in transmission, etc. It can be mostly eliminated by using median filtering and interpolating around dark/bright pixels. Noise impulses can be negative or positive. Negative impulses appears as black(pepper) points in an image, and positive impulses appears as white(salt) points.

Poisson Noise (Shot Noise)

The dominant noise in the lighter parts of an image from an image sensor is typically that caused by statistical quantum fluctuations, that is, variation in the number of photons sensed at a given exposure level; this noise is known as photon shot noise. Shot noise has a root-mean-square value proportional to the square root of the image intensity, and the noises at different pixels are independent of one another. Shot noise follows a Poisson distribution, which is usually not very different from Gaussian. In addition to photon shot noise, there can be additional shot noise from the dark leakage current in the image sensor; this noise is otherwise known as "dark shot noise" or "dark-current shot noise".

Speckle Noise (Multiplicative Noise)

While Gaussian noise can be modeled by random values added to an image, speckle noise can be modeled by random values multiplied by pixel values hence it is also called multiplicative noise. Speckle noise is a major problem in some radar applications.

Gray-scale images currupted by different type of noises:

Gaussian noise

salt & pepper noise

Poisson noise

speckle noise

Removing Noise From Images By Filtering

Image noise is an unavoidable side-effect occurring as a result of image capture, more simply understood as inaudible, yet inevitable fluctuations. In a digital camera, if the light which enters the lens misaligns with the sensors, it will create image noise. Even if noise is not so obviously visible in a picture, some kind of image noise is bound to exist. Every type of electronic device receives and transmits some noise and sends it on to what it is creating. When the images are transmitted over channels, they are corrupted with impulse noise(salt & pappers noise) due to noisy channels. Also,Gaussian type of noise affects the image.

Thus, filters are required for removing noises before processing. There are lots of filters in the paper to remove noise. They are of many kinds as linear filter, median filter, wiener filter.For removing noise from RGB images can be done with help of medfilt2() by filtering each channel separately.

Remove Noise By Linear Filtering

Linear filter used to remove certain types of noise. Averaging or Gaussian filters are appropriate for this purpose. Linear filters also tend to blur sharp edges, destroy lines and other fine image details,and perform poorly in the presence of signal-dependent noise. Because each pixel gets set to the average of the pixels in its neighborhood, local variations caused by grain are reduced.

Adaptive Filtering

The wiener function applies a Wiener filter (a type of linear filter) to an image adaptively, adapting requirements & specifications to current needs itself to the local image variance. If the variance is large, wiener performs little smoothing. If it is is small,wiener performs more smoothing. This approach often produces better results than linear filtering. The adaptive filter is more selective than a comparable linear filter, preserving edges and other high-frequency parts of an image. In addition, there are no design tasks; the wiener2 function handles all preliminary computations and implements the filter for an input image. wiener2, however, does require more computation time than linear filtering. Wiener works best when the noise is constant-power ("white") additive noise, such as Gaussian noise. Another method for removing noise is to evolve the image under a smoothing partial differential equation similar to the heat equation which is called anisotropic diffusion.

Applying adaptive filter on Gray-scale images:

Gaussian noise

Salt & pepper noise

Poisson noise

speckle noise

Remove Noise By Non-Linear Filtering

The simplest nonlinear filter to consider is the median or rank-order filter. In the median filter, filter output depends on the ordering of input values, usually ranked from smallest to largest or vice versa. A filter support range with an odd number of values is used, making it easy to select the output. In recent years, a variety of nonlinear median type filters such as weighted median, rank conditioned rank selection,and relaxed median have been developed to overcome this shortcoming.

Median Filter

A median filter is an example of a non-linear filter and, if properly designed, is very good at preserving image detail. To run a median filter:

1. consider each pixel in the image
2. sort the neighboring pixels into order based upon their intensities
3. replace the original value of the pixel with the median value from the list

A median filter is a rank-selection (RS) filter, a particularly harsh member of the family of rank-conditioned rank-selection (RCRS) filters; a much milder member of that family, for example one that selects the closest of the neighboring values when a pixel's value is external in its neighborhood, and leaves it unchanged

otherwise, is sometimes preferred, especially in photographic applications.Median and other RCRS filters are good at removing salt and pepper noise from an image, and also cause relatively little blurring of edges,and hence are often used in computer vision applications. Median filtering is similar to using an averaging filter, in that each output pixel is set to an average of the pixel values in the neighborhood of the corresponding input pixel. However, with median filtering, the value of an output pixel is determined by the *median* of the neighborhood pixels, rather than the mean. The median is much less sensitive than the mean to extreme values (called outliers*).* Median filtering is therefore better able to remove these outliers without reducing the sharpness of the image.

Applying median filter on Gray-scale images:


Gaussian noise **Salt & pepper noise**


Poisson noise speckle noise

Removing noise in RGB image

The filter we used to remove the "salt & pepper" type noise was **medfilt2()**. However, as the "2" in the name indicates it's for 2-D array, it won't work for RGB image unless we decomposed each RGB channel and filter each channel separately.Then reconstruct image from filtered R,G,B channels.

RGB Images corrupted by different noises


Gaussian noise Salt & pepper noise


Poisson noise Speckle noise

Applying adaptive filter on RGB Images:


Gaussian noise Salt & pepper noise


Poisson noise Speckle noise

Applying median filter on RGB Images:


Gaussian noise Salt & pepper noise


Poisson noise Speckle noise

Image Quality Assessment Metrics

The image quality assessment measures are helpful in detecting the quality of the processed image in comparison with the original image. In our work, we concentrate on objective quality measurement like Mean Square Error (MSE), Peak Signal to Noise Ratio (PSNR)

and Structural Similarity Measure (MSSIM) to evaluate the quality of the processed image.

Mean Square Error:

The most frequently used image quality measures are deviations between the original and processed images of which the mean square error (MSE) or signal to noise ratio (SNR) are the most common measures. The effectiveness of the algorithm stands in minimizing the mean square error. If F(X, Y) is the original clean image, G(X, Y) is the corrupted image and I(X, Y) is the denoised image then MSE is given by

$$MSE = 1/MN \sum_{x=1}^{M} \sum_{y=1}^{N} (f(x,y) - I(x,y))^2$$

Peak Signal to Noise Ratio:

Larger PSNR indicate a smaller difference between the original uncorrupted image and the denoised image. This is the most widely used objective image quality/distortion measure [1]. The main advantage of this measure is ease of computation. PSNR is calculated using,

$$PSNR=20\log_{10}(F_{max}/\sqrt{MSE})$$

where Fmax=255 for an 8-bit image.

Results

TABLE 1. PSNR in dB

	Salt & pepper	Gaussian	Poisson	Speckle
Adaptive Filtering	35.7046	28.5627	31.5228	28.9518
Median	35.8916	28.5492	31.0068	29.2760

TABLE 2. MSE

	Salt & pepper	Gaussian	Poisson	Speckle
Adaptive Filtering	17.62	98.94	46.15	83.43
Median	16.88	91.53	51.97	87.72

TABLE 3. PSNR in dB for RGB image

	Salt & pepper	Gaussian	Poisson	Speckle
Adaptive Filtering	35.2161	28.9048	31.4548	28.9491
Median	35.3193	28.5846	30.9298	28.8554

TABLE 4. MSE for RGB image

	Salt & pepper	Gaussian	Poisson	Speckle
Adaptive Filtering	19.91	84.34	47.22	84.58
Median	19.84	90.79	53.04	85.56

Conclusion

In this paper discussed; several ways that different type of noises such as Gaussian,Salt & pepper,Poisson,speckle can be introduced into an image.In second section;filtering techniques such as adaptive and median filters for removing above noises in gray-scale as well as color image. Furthermore, we presented and compared experimental results,for these filtering techniques.In case of gray-scale images adaptive filter effectively removes poisson and speckle noise by maintaining higher PSNR,whereas median filter performs best to maintain higher PSNR to remove salt & pepper noise.Adaptive filter effectively removes gaussian and poisson noise from color images to maintain higher PSNR, whereas median filter performs best to remove salt & pepper noise.

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HADOOP A POPULAR OPEN SOURCE FRAMEWORK FOR MASSIVE CLUSTER BASED STORAGE

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Abstract:

The increasing use of computing resources in our daily lives leads to data generation at an astonishing rate. The computing industry is being repeatedly questioned for its ability to accommodate the unpredictable growth rate of data. It has encouraged the development of cluster based storage systems. Hadoop is a popular open source framework known for its massive cluster based storage. Hadoop is widely used in the computer industry because of its scalability, reliability and low cost of implementation. The data storage of the Hadoop cluster is managed by a user level distributed file system.

In this work, we analyze the limitations of Hadoop such as single point of access of the file system and fault tolerance of the cluster. The entire namespace of the Hadoop cluster is stored on a single centralized server which restricts the growth and data storage capacity. The efficiency and scalability of the cluster depends heavily on the performance of the Single Name Node.

1. INTRODUCTION

1.1 What Is Hadoop?

Hadoop was derived from Google's MapReduce and Google File System (GFS) papers. Hadoop was named after a child's toy. Apache Hadoop is an open-source software framework that supports data-intensive distributed applications, licensed under the Apache v2 license. It supports the running of applications on large clusters of commodity hardware.

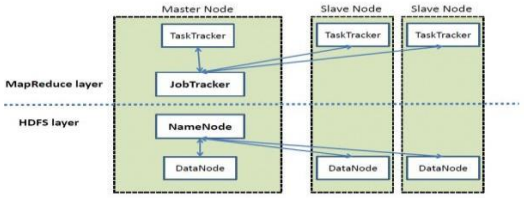
The Hadoop framework transparently provides both reliability and data motion to applications. Hadoop implements a computational paradigm named MapReduce,where the application is divided into many small fragments of work, each of which may be executed or re-executed on any node in the cluster. In addition, it provides a distributed file system that stores data on the compute nodes, providing very high aggregate bandwidth across the cluster. Both map/reduce and the distributed file system are designed so that node failures are automatically handled by the framework. It enables applications to work with thousands of computation-independent computers and petabytes of data. The entire Apache Hadoop "platform" is now commonly considered to consist of the Hadoop kernel, Map Reduce and Hadoop Distributed File System (HDFS), as well as a number of related projects – including Apache Hive, Apache HBase, and others[1].

Hadoop is written in the Java programming language and is a top-level Apache project being built and used by a global community of contributors. Hadoop and its related projects (Hive, HBase, Zookeeper, and soon) have many contributors from across the ecosystem. Though Java code is most common, any programming language can be used with "streaming" to implement the "map" and "reduce" parts of the system.

History of Hadoop

Hadoop was created by Doug Cutting, the creator of Apache Lucene, the widely usedtext search library. Hadoop has its origins in Apache Nutch, an open source web search engine, itself a part of the Lucene project. The Origin of the Name "Hadoop" The name Hadoop is not an acronym; it's a made-up name.

4. ARCHITECTURE OF HADOOP



Hadoop consists of the Hadoop Common which provides access to the file systems supported by Hadoop.The Hadoop Common package contains the necessary Java ARchive (JAR) files and scripts needed to startHadoop. The package also provides source code, documentation and a contribution section that includes projects from the Hadoop Community.

For effective scheduling of work, every Hadoop compatible file system should provide location awareness:the name of the rack (more precisely, of the network switch) where a worker node is. Hadoop application scan use this information to run work on the node where the data is, and, failing that, on the same rack/switch, reducing backbone traffic. The Hadoop Distributed File System (HDFS) uses this method when replicating data to try to keep different copies of the data on different racks. The goal is to reduce the impact of a rack power outage or switch failure, so that even if these events occur, the data may still be readable.

A small Hadoop cluster will include a single master and multiple worker nodes. The master node consists of aJobTracker, TaskTracker, NameNode and DataNode. Aslave or worker node acts as both a

DataNode and TaskTracker, though it is possible to have data-only worker nodes, and compute-only worker nodes. These are normally used only in non standard applications.

Hadoop requires Java RuntimeEnvironment (JRE) 1.6 or higher. The standard start-upand shutdown scripts require Secure Shell (ssh) to be setup between nodes in the cluster.In a larger cluster, the HDFS is managed through adedicated NameNode server to host the file system index and a secondary NameNode that can generate snapshots of the name node's memory structures, thus preventing file-system corruption and reducing loss of data.Similarly, a standalone JobTracker server can manage job scheduling. In clusters where the Hadoop MapReduce engine is deployed against an alternate file system, the NameNode, secondary NameNode and DataNode architecture of HDFS .

5. WHY HADOOP?

5.1 Hardware Failure

Hardware failure is the norm rather than the exception. An HDFS instance may consist ofhundreds or thousands of server machines, each storing part of the file system's data. Thefact that there are a huge number of components and that each component has a non-trivialprobability of failure means that some component of HDFS is always non-functional.Therefore, detection of faults and quick, automatic recovery from them is a core architecturalgoal of HDFS.

5.2 Streaming Data Access

Applications that run on HDFS need streaming access to their data sets. They are not general purpose applications that typically run on general purpose file systems. HDFS is designed more for batch processing rather than interactive use by users. The emphasis is on high throughput of data access rather than low latency of data access. POSIX imposes many hard requirements that are not needed for applications that are targeted for HDFS. POSIX semantics in a few key areas has been traded to increase data throughput rates.

5.3 Large Data Sets

Applications that run on HDFS have large data sets. A typical file in HDFS is gigabytes to terabytes in size. Thus, HDFS is tuned to support large files. It should provide high aggregate data bandwidth and scale to hundreds of nodes in a single cluster. It should support tens of millions of files in a single instance.

5.4 Simple Coherency Model

HDFS applications need a write-once-read-many access model for files. A file once created,written, and closed need not be changed. This assumption simplifies data coherency issuesand enables high throughput data access. A Map/Reduce application or a web crawler application fits perfectly with this model. There is a plan to support appending-writes to filesin the future.

5.5 "Moving Computation is Cheaper than Moving Data"

A computation requested by an application is much more efficient if it is executed near the data it operates on. This is especially true when the size of the data set is huge. This minimizes network congestion and increases the overall throughput of the system. The assumption is that it is often better to migrate the computation closer to where the data isolated rather than moving the data to where the application is running. HDFS provides interfaces for applications to move themselves closer to where the data is located.

5.6 Portability Across Heterogeneous Hardware and Software Platforms

HDFS has been designed to be easily portable from one platform to another. This facilitates widespread adoption of HDFS as a platform of choice for a large set of applications.

Concept of Map Reduce

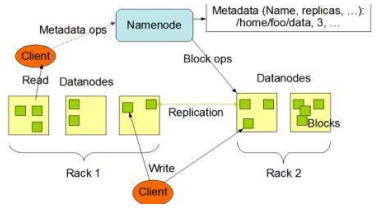
Based on the MapReduce design, records are processed in isolation via tasks called Mappers. The output from the Mapper tasks is further processed by a second set of tasks, the Reducers, where the results from the different Mapper tasks are mergedtogether. Individual nodes in a Hadoop cluster still communicate with each other, just to a lesser extend compared to more conventional distributed systems where application developers explicitly assemble node to node byte streams via sockets or some form of message passing interface (MPI). Hadoop node communication is performed implicitly, as chunks of data can be tagged with key names that inform Hadoop how to send related bits of information to a common destination node. Hadoop internally manages all the data transfer and cluster topology issues. By restricting the communication among nodes, Hadoop improves the reliability potential of the distributed system environment.

7. HADOOP DISTRIBUTED FILE SYSTEM

7.1Concept of HDFS

HDFS is a distributed, scalable, and portable file system written in Java for the Hadoop framework. Each node in a Hadoop instancetypically has a single namenode, a cluster of datanodes form the HDFS cluster.The situation is typical because each node does not require a datanode to be present. Each datanode serves up blocks of data over the network using a block protocol specific to HDFS. The file system uses the TCP/IP layer for communication. Clients use Remote procedure call (RPC) to communicate between each other. HDFS stores large files (an ideal file size is a multiple of 64 MB), across multiple machines. It achieves reliability by replicating the data across multiple hosts, and hence does not require RAID storage on hosts.

HDFS Architecture



Concept of Bigtable

Bigtable is a distributed storage system for managing structured data that is designed to scale to a very large size: petabytes of data across thousands of

commodity servers. Many projects at Google store data in Bigtable,including web indexing, Google Earth, and Google Fi-nance. These applications place very different demand on Bigtable, both in terms of data size (from URLs to web pages to satellite imagery) and latency requirements (frombackend bulk processing to real-time data serving).Despite these varied demands, Bigtable has successfully provided a exible, high-performance solution for all ofthese Google products.

Concept of HBase

Hbase is an Apache open source project and aims to provide a storage system similar to Bigtable in the Hadoop distributed computing environment. Hadoop Distributed File System (HDFS) is a distributed file system structure for operating on common hardware structures (commodity computers) characterized by low cost implementation. Through HDFS, applications can rapidly access data in the context of applications that handle large volumes of data. An HDFS instance may consist of hundreds or thousands of machines, each keeping parts of data files. In case of failure, it can be restored automatically. HDFS supports even millions of files in one instance, agregating a scalable multitude of nodes in the same cluster. The simple consistency model implemented is write-once-read-many. Processing in an application with large amounts of data is more efficient if executed near where data are stored. This minimizes network congestion and increases the system performance.

NON SQL DATABASE - HBASE

Implementing a secure distributed storage system for large amounts of data must meet some important requirements:

• Data placement algorithms;

• Cache management policies to ensure rapid access to data;

• Ensure a high degree of reliability in the context of data distributed over hundreds or thousands of nodes;

• Scalability and adequate security measures.

HIVE

Hive structures data into the well-understood database concepts like tables, columns, rows, and partitions. It supports all the major primitive types – integers, floats, doubles and strings – as well as complex types such as maps, lists and structs. The latter can be nested arbitrarily to construct more complex types. In addition, Hive allows users to extend the system with their own types and functions. The query language is very similar to SQL and therefore can be easily understood by anyone familiar with SQL. There are some nuances in the data model, type system and HiveQL that are different from traditional databases and that have been motivated by the experiences gained at Facebook.

PIG

Pig is high level platform for creating mapreduce program used with hadoop. Pig Latin abstracts the programming from the java MapReduce idiom into a notation which makes MapReduce programming high level, similar to that of SOL for RDMS systems. Pig Latin can be extended using UDF (User Defined Functions) which the user can write in Java, python, ruby, javascript and then call directly from the language.

Pig started as a research project within Yahoo! in the summer of 2006. The original prototype quickly became very popular with users. It was clear that a higher level language than raw map-reduce was needed to quickly rollout prototypes as well as to build production quality applications. Early adopters within Yahoo! have reported substantial increases in productivity when they migrated from raw map-reduce to Pig

Pig Latin is procedural and fits very naturally in the pipeline paradigm while SQL is instead declarative. In SQL users can specify that data from two tables must be joined, but not what join implementation to use. Pig Latin allows users to specify an implementation or aspects of an implementation to be used in executing a script in several ways. In effect, Pig Latin programming is similar to specifying a query execution plan, making it easier for programmers to explicitly control the flow of their data processing task.

Advantages

- Distribute data and computation.The computation local to data prevents thenetwork overload.
- Tasks are independent The task are independent so,
- We can easy to handle partial failure. Here the entire nodes can fail and restart.
- It avoids crawling horrors of failure and tolerant synchronous distributedsystem.
- Linear scaling in the ideal case.It used to design for cheap, commodity hardware,
- Simple programming model.The end-user programmer only writes map-reduce tasks.
- Flat scalability:-This is the one advantages of using Hadoop contrast to other distributed systems is its flatscalability curve.
- HDFS store large amount of information
- HDFS is simple and robust coherency model
- That is it should store data reliably.
- HDFS is scalable and fast access to this information and it also possible to serve s large numberof clients by simply adding more machines to the cluster.
- HDFS should integrate well with Hadoop MapReduce, allowing data tobe read and computed upon locally when possible.
- HDFS provide streaming read performance.
- Data will be written to the HDFS once and then read several times.
- The overhead of cashing is helps the data should simply be re-read from HDFS source.
- Fault tolerance by detecting faults and applying quick, automatic recovery
- Processing logic close to the data, rather than the data close to the processing logicPortability across heterogeneous commodity hardware and operating systems
- Economy by distributing data and processing across clusters of commodity personal computers
- Efficiency by distributing data and logic to process it

in parallel on nodes where data is located

- Reliability by automatically maintaining multiple copies of data and automatically redeployingprocessing logic in the event of failures
- HDFS is a block structured file system: – Each file is broken into blocks of a fixed size and theseblocks are stored across a cluster of one or more machines.

13. CONCLUSION

This paper focus on Hadoop Distributed File Syste .The Hadoop and data science communities have matured to the point now that common design patterns across domains are beginning to emerge. Hadoop is maturing and momentum is gaining in the user base, the experienced users can start documenting design patterns that can be shared .Hadoop can also be used in compute farms and high-performance computing environments. Hadoop is used for scalability ,cope fault tolerance & streaming performance. HDFS was originally designed to be a file system to support offline Map Reduce application HDFS as a general-purpose low-latency file system. Hadoop is used for store large scale of data in petabyte.

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PROTECTING DATA IN LOCAL NETWORKS USING DISTRIBUTED FIREWALLS - A REVIEW

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Abstract:

Today, computer and networking are inseparable. A number of confidential transactions occur very second and today computers are used mostly for transmission rather than processing of data. So Network Security is needed to prevent hacking of data and to provide authenticated data transfer. Network Security can be achieved by Firewall. Conventional firewalls rely on the notions of restricted topology and controlled entry points to function. Restricting the network topology, difficulty in filtering of certain protocols,
End-to-End encryption problems and few more problems lead to the evolution of Distributed Firewalls. Distributed firewalls secure the network by protecting critical network endpoints, exactly where hackers want to penetrate. It filters traffic from both the Internet and the internal network because the most destructive and costly hacking attacks still originate from within the organization. They provide virtually unlimited scalability. In addition, they overcome the single point-of-failure problem presented by the perimeter firewall.

This paper is a literature review paper, dealing with the general concepts such distributed firewall concept, its evolution, its components and the policies. A distributed firewall gives complete security to the network, With the vast internet connections, the network security gained the attention of researcher and developers. Network Security is important for providing the authenticated data transfer.

1. Introduction

Internet Connectivity is no longer optional for a person or any organization. All the necessary information in daily life is available on the internet. And now computers are mostly use for transmission of data rather than the processing of data. So, Network Security is needed to provide authenticated data transfer and to prevent hacking of data[4].Network Security can be achieved by Firewalls.

A Firewall is a collection of components, which are situated between two networks that filters traffic between them by means of some security policies. A Firewall can be an effective means of protecting a local system or network systems from network based security threats while at the same time affording access to the outside world through wide area networks and the Internet.

Traditional firewalls are devices often placed on the edge of the network that act as a bouncer allowing only certain types of traffic in and out of the network. Often called perimeter firewalls. They divide the network into two parts- trusted on one side and untrusted on the other. For this reason they depend heavily on the topology of the network. Moreover, firewalls are a mechanism for policy control. Distributed firewalls allow enforcement of security policies on a network without restricting its topology on an inside or outside point of view. Use of a policy language and centralized delegating its semantics to all members of the networks domain support application of firewall technology for organizations, which network devices communicate over insecure channels and still allow a logical separation of hosts in- and outside the trusted domain. Distribute firewall solves these problems and protecting critical network end points where hackers want to penetrate. It filters the traffic from both the internal network and Internet because most destructive and costly hacking attacks still originate within organization[1].

2. Literature Review

The various papers over the distributed firewall was searched as follows and literature review is given as:

Bellovin, S.M. and W.R. Cheswick,(**1994**) "Firewalls and Internet Security: Repelling the Wily Hacker", Addison-Wesley. In this paper he suggested that the distributed firewall design is based on the idea of enforcing the policy rules at the endpoints rather than a single entry point to network.

William R. Cheswick and Steven M. Bellovin. (**1994**)Firewalls and Internet Security: Repelling the Wily Hacker. Addison-Wesley, Reading, MA, first edition.

Steven M. Bellovin,(**1999)** "Distributed Firewalls", November 1999 issue of; login: pp. 37-39. Suggested advantages of distributed firewalls over standard firewall

Ioannidis, S. and Keromytis, A.D., and Bellovin, S.M. and J.M. Smith,(**2000**) "Implementing a Distributed Firewall", Proceedings of Computer and Communications Security (CCS), pp. 190-199, November 2000, Athens,Greece.

2003: Cheswick, W.R., Bellovin, S.M., Rubin, A.D.: Firewalls and Internet Security, Repelling the Wily Hacker, 2nd edn. AddisonWesley.

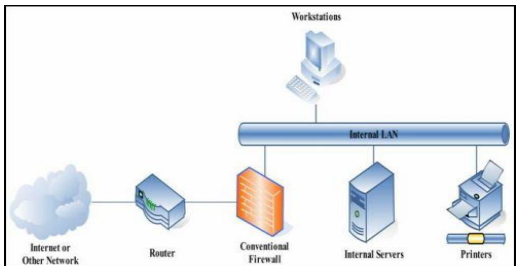
HiralB.Patel, Ravi S.Patel, JayeshA.Patel, (**2011**) "Approach of Data Security in Local Network using Distributed Firewalls", International Journal of P2P Network Trends and Technology-Volume1Issue3-2011

First, their protection is too coarse. This leaves the firewall helpless against the malicious in-sider, who operates freely within the firewall's security perimeter.

3. Issues of Conventional Firewall

Figure:Conventional Firewall→

Second, it is costly to extend their protections to mobile users, because the firewall's security perimeter is determined somewhat artificially by the firewall's location in the network topology[2].



A standard firewall has certain policies to protect the data from outsiders.

But not all the data or information can be protected internally from insiders of the network. Some problems with standard firewalls which lead to implement Distributed Firewalls are as follows

1) Depends on the topology of the network.
2) Do not protect networks from the internal attacks.
3) Unable to handle protocols like FTP and RealAudio.
4) Has single entry point and the failure of this leads to problems.
5) Unable to stop "spoofed" transmissions (i.e., using false source addresses).
6) Unable to log all of the network's activity and unable to dynamically open and close their networking ports.[3][7]

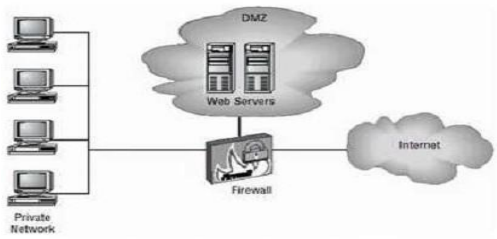


Figure-1 : A conventional firewall

To solve these problems of the traditional firewall, the evolution of the distributed firewall comes into picture.

4. Distributed Firewall:-

Steven M. Bellovin of AT&T Research is credited with the idea of distributed firewalls. Unlike traditional firewalls, distributed firewalls are not placed in one location. As the name implies, the distributed firewall is installed throughout the network to all endpoints[6].

Bellovin [1] argued that distributed firewall provides the fine-grained protection that is needed. In this solution, a firewall is placed at each host in the network, and all fire-walls are managed as a single entity. That is, centralized management is coupled with distributed enforcement. Distributed firewalls contain the malicious insider because the security perimeter is drawn around each host. Because the perimeter is no longer defined by network topology, the distributed firewall is an ideal solution for mobile users, telecommuters and business-to-business extranets. Also, since distributed firewall policy is expressed in terms of net-work endpoints, changes to network topology have little ifany impact on policy management [2].Distributed firewalls secure thenetworkby protecting critical network endpoints, exactly where hackers want to penetrate. It filters trafficfrom both the Internet and the internal network because the most destructive and costly hackingattacks still originate from within the organization[3].

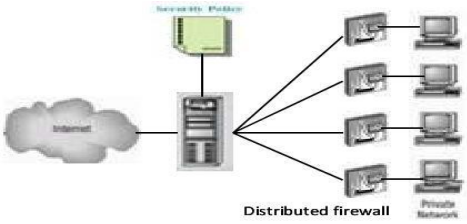


Figure-2 : distributed firewall

5. Components of Distributed Firewall

There are three Components of Distributed Firewall

- A central management system.
- Policy distribution.
- Host end implementation.

5.1 Central Management System

Central Management Servers main work is designing the policies. It is a component of distributed firewalls which makes it practical to secure organizational systems It maximize network security by enabling policies which are centrally configured[4][5].

5.2 Policy Distribution Scheme

The policy distribution scheme should guarantee the reliability of the policy during transfer. With the implementation, distribution of the policy can be different and varies. It can be either directly pushed to end systems, or pulled when required[4].

5.3 Host-end Implementation

The security policy transmitted from the central management server has to be implemented by the end host [4].

6. Policies of Distributed Firewall

Policy is one of the most often used terms in case of network security and in particular distributed firewall. A

"security policy" defines the security criteria of a system. The security policy is defined for whom transmission is allowed or denies.Simple example for a firewall is:

n Deny all connections to the web server.

n Allow all other access.

With the implementation of the distributed firewalls the policy can be varies. It can be pulled to end host or pushed whenever necessary.

6.1 Pull Technique

The end host checks whether the central management server is up and active by sending some ping, it registers the central management server and requests for the policies which it shouldimplement. In reply thecentral management server i.e. distributed firewall controller provides the host security policies [4], [5],[7]

6.2 Push Technique

When policies are updated at the central management side by the network administrator the push technology is applied. The push technology is confirm that the end host always have updated policies [4], [5],[7]

7. Advantages

Sr. No.	Parameter	Conventional Firewall	Distributed Firewall
1	Topology	Depends upon topology of network	Does not depend on topology of network.
2	Internal Threads	Do not protect from internal threads	Protect from internal threads.
3	Handling protocol	Unable to handle protocols like FTP and Real Audio	Able to handle protocol like FTP and Real Audio
4	Entry points	Have only single secure entry point	May have multiple secure entry points
5	Bottleneck and Congestion	Occurs because of single secure entry points	Do not occurs because multiple secure entry points.

[4].

8. Disadvantages

If the Central Management System or a Firewall Command Center is compromised, due to attack or mistake by the administrator, this situation is very risky for security of the entire network.It is not so easy to implement an intrusion detection system in a distributed firewall environment because complete network traffic is not on the single point[3],[4].

9. Related work

A lot of work has been done over the previous years in the area of firewalls. It describes the host resident approach of firewall, similarly as we have discussed in this paper.

One of the first conversations of distributed firewalls was given by Bellovin, which described a distributed system of firewalls with a security policy, but the security policy is centrally managed [4],[10].

Ehab Al-Shaer, HazemHamed, RaoufBoutaba, and MasumHasan presented a set of algorithms and techniques to automatically discover rule anomalies in centralized and
distributed firewalls [4].

YunusErdogan gives discussion about Development of a Distributed Firewall Administration tool [10].

Ongoing development and research in the field of firewall technology have shown a continuous addition of features and services to conventional firewall systems as well as applying the concept of distributed firewalls in new products [4].

10. Conclusion

With the increasing speed of data transmission over the network the conventional firewall is not enough for providing authenticated data. So, the term Distributed firewall is come and it provides, Complete protection to the network. Protects all the clients of the networks from the internal and external attacks. Can allow or deny the traffic meant for a particular system based on the policy it has to follow. All remote end-user machines can be secured so they can't be used as entry points into the enterprise network.

Because the firewall is distributed across an entire network, the load of processing is further distributed as the network grows, so performance remains high

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FACE RECOGNITION SYSTEM USING IMAGE PROCESSING AND NEURAL NETWORK: A REVIEW

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Abstract

This paper describes Face Recognition Technologies. For face recognition, presents a new technique for human face recognition. This technique uses an image base approach towards artificial intelligence by removing redundant data from face images through image compression using the two-dimensional discrete cosign transform(2D-DCT).The DCT extracts features from face images based on skin color. A self –Organizing map (SOM) to measure image similarity. It is used to classify DCT-based feature vectors into groups to identify if the input image is "present" or "not present" in the database of images.

Keywords-*Face recognition, discrete cosine transform, self-organizing map, challenges in face recognition, neural network.*

I. Introduction

Face recognition analyzes the characteristics of a person's face images input. It measures the overall facial structure including distance between eyes, nose, mouth, and jaw egdes.Face recognition has become a very active area of research in recent years mainly due to increasing security demands and its potential commercial and low enforcement applications.[1] Face recognition is to calculate similarities a query facial image. Face Recognition System (FRS) can be subdivided into two main parts. The first part is image processing and second part is recognition techniques. The image processing part consist of face images acquisition through Scanning, image enhancement, image clipping ,filtering, edge detection and feature extraction. The second part consists of the artifial intelligence which is composed by Genetic Algorithm and there are many approaches for face recognition. [2]

Since skin color in humans varies by individual, research has revealed that intensity rather than chrominance is the main distinguishing characteristics. The recognition stage typically uses an intensity (grayscale) representation of the image compressed by the 2D-DCT for processing. This grayscale version contains intensity values for skin pixels. [1]

In the first stage, the 2D-DCT for each image is computed, from the (DCT). The second stage uses a self –organizing map (SOM) with an unsupervised learning technique to classify vectors into groups to recognize if the input image is present or not in the image database. If the subject is classified as present, the best match image found in the training database is displayed as the result, else the result displays that the subject is not found in the image database.[1]

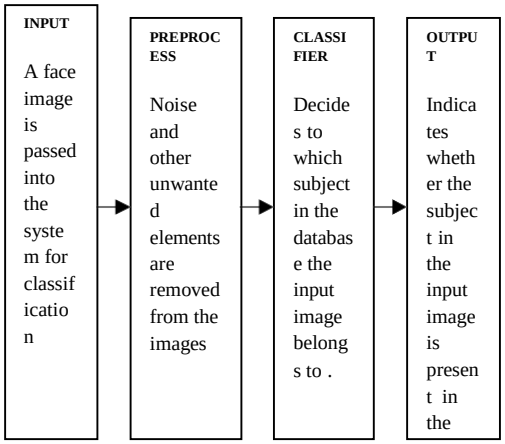


Fig. (1) Generic representation of a face recognition system.

The rest of this paper is organized as follows section –II discuss DCT computation on face images. Section-III describes the design and architecture of SOM neural network. Section-IV describes the challenges in face recognition .Section-V why use image processing for face recognition? Section VI Present concluding remarks. [1]

II. Discrete Cosine Transform Overview

The discrete cosine transform is an algorithm widely used in different applications. The most popular use of the DCT is for data compression, as it forms the basis for the international standard loss image compression algorithm known as JPEG. The DCT has the property that, for a typical image, most of the visually significant information about the image is concentrated in a few coefficients. The DCT transforms images from the spatial domain to the frequency domain. Since lower frequencies are more visually significant in an image than higher frequencies, the DCT discards high-frequency

coefficients and quantizes the remaining coefficients. This reduces data volume without sacrificing too much image quality. [1]

Algorithms

The discrete cosine transform (DCT) is closely related to the discrete Fourier transform. It is a separable linear transformation; that is, the two-dimensional transform is equivalent to a one-dimensional DCT performed along a single dimension followed by a one-dimensional DCT in the other dimension. The definition of the two-dimensional DCT for an input image A and output image B is

$$B_{pq} = \alpha_p \alpha_q \sum_{m=0}^{M-1} \sum_{n=0}^{N-1} A_{mn} \cos\frac{\pi(2m+1)p}{2M} \cos\frac{\pi(2n+1)q}{2N}, \quad \begin{matrix} 0 \le p \le M-1 \\ 0 \le q \le N-1 \end{matrix}$$

Bpq=αpαq∑m=0M−1∑n=0N−1Amncosπ(2m+1)p2Mcos π(2n+1)q2N, 0≤p≤M−10≤q≤N−1
where

$$\alpha_p = \begin{cases} \frac{1}{\sqrt{M}}, & p = 0 \\ \sqrt{\frac{2}{M}}, & 1 \le p \le M-1 \end{cases}$$

αp={1M, p=0 2M, 1≤p≤M-1

and

$$\alpha_q = \begin{cases} \frac{1}{\sqrt{N}}, & q = 0 \\ \sqrt{\frac{2}{N}}, & 1 \le q \le N-1 \end{cases}$$

αq={1N, q=0 2N, 1≤q≤N-1

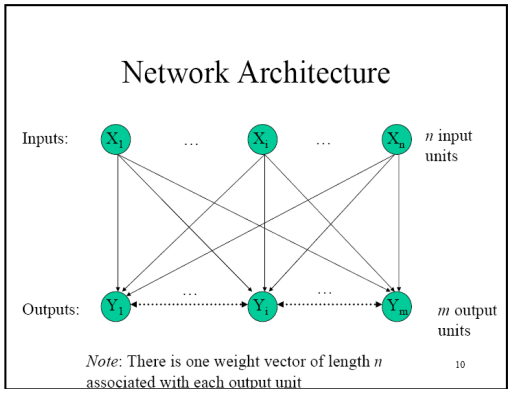
M and *N* are the row and column size of A, respectively. If you apply the DCT to real data, the result is also real. The DCT tends to concentrate information, making it useful for image compression applications.[5]

III. Self-organizing map(SOM)

Overview

A self-organizing map (SOM) is a type of artificial neural network (ANN) is an unsupervised learning process which learns the distribution of a set of patterns without any class information. There is a competition among the neurons to be activated. The result is that only one neuron that wins the competition is fired and is called the winner.

The Self-Organizing Map was developed by professor Kohonen. The SOM has been proven useful in many applications One of the most popular neural network models. It belongs to the category of competitive learning networks. Based on unsupervised learning, which means that no human intervention is needed during the learning and those little needs to be known about the characteristics of the input data. Use the SOM for clustering data without knowing the class memberships of the input data. The SOM can be used to detect features inherent to the problem and thus has also been called SOFM, the Self-Organizing Feature Map.[7]



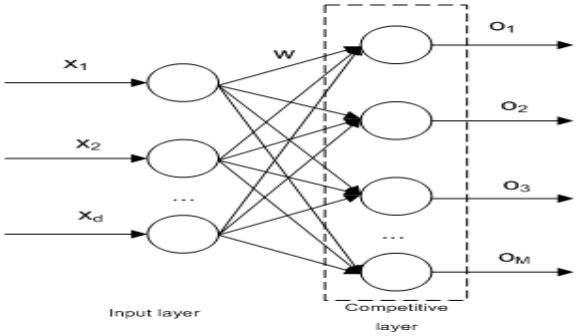
SOMs operates in two modes –training and mappin. Training builds the map using input and because of this it is useful in recognition applications. Hence in this system a SOM is employed to classify DCT-based vectors into groups to identify if the subject in the input image is present or not in the image database.[4]

SOMs can be one-dimentional,two dimentional or multidimentional maps. The number of input connections in a SOM network depends on the number of attributes to be used in the classification.[1] The self-organizing map describes a mapping from a higher-dimensional input space to a lower-dimensional map space.

Neural Network

The most common application of neural networks incomputing today is to perform one of these "easy-for-a-human", "difficult-for-a-machine" tasks. Applications range from optical character recognition to facial recognition.

A neural network is a "connectionist" computational system. The computational systems write are procedural. A program starts at first line code, executes if, and goes on to the next in a linear fashion.



A linear fashion. A true neural network does not follow a linear path, information is processed collectively, in parallel through a network of neurons. The individual elements of the network the neurons are simple. They read an input, process it and generate an output. One of the key elements of a neural network is its ability to learn. A neural network is not just a complex system, but a complex adaptive system,

meaning it can change its internal structure based on the information flowing through it.[8]

IV. Challenges in Face Recognition

Pose illumination, facial expression, image condition, face size. Classification of Face Recognition. Face Recognition can be classified into two types Face Verification (or authentication) and face identification (or recognition).

i. Face verification

It is a one-to-one match that compares a query face image against a template face image whose identify is being claimed. To evaluate the verification performance, the verificate rate vs. false accepts rate is plotted.

ii. Face identification

It is a one-to-many matching process that compares a query face image against all the template images in a face database to determine the identity of query face. The identification of the test image is done by locating the image in the database that has the highest similarity with the test images. [2]

All identification or authentication technologies operate using the following four stages:

Capture: A physical or behavioural sample is captured by the system during Enrollment and also in identification or verification process.

Extraction: Unique data is extracted from the sample and a template is created.

Comparison: The template is them compared with a new sample.

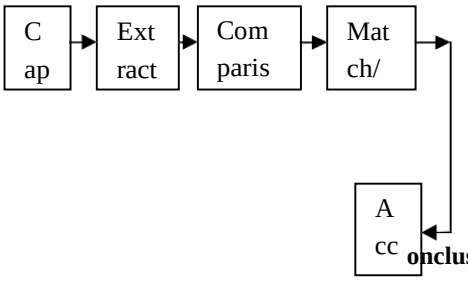
Match/non Match: The system decides if the features extracted from the new Samples are a match or a non match.[10]

V. Why use image processing for face recognition?

Image processing is the use of computer algorithms to perform image processing on digital images. Digital image processing has the same advantages over analog image processing. It allows a much wider range of algorithms to be applied to the input data and can avoid problems such as the build-up of noise. The most common kind of image processing is digital image editing.

Face recognition is rapidly growing field today for is many uses in the fields of biometric authentication, security and many other areas. There are many problems that exist due to the many factors that can affect the photos. When processing images one must take into account the variations in light, image quality, the persons pose and facial expressions along with others. In order to successfully be able to identify individuals correctly.[9]

Images are cropped such as that they avoid facial image remains, and color images are normally converted to black and white in order to facilitate initial comparisons based on grayscale characteristics. First the presence of faces or face in a scene must be detected.[10]



VI. Conclusion

Face recognition is both challenging and important recognition technique. Among all the biometric techniques, face recognition approach possesses one great advantage, which is its user-friendliness. In this paper, we have given an introductory survey for the face recognition technology. This paper covered issues such as the genetic framework for face recognition. I hope this paper can provide the readers a better understanding about face recognition, & encourage the readers who are interested in this topic to go to the references for more detailed study.

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RESEARCH REVIEW ON MODELING ISSUES OF DIGITAL IMAGE PROCESSING

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Abstract

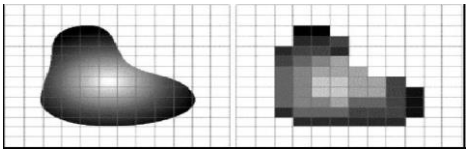
An image is a subset of a signal. A signal is a function that conveys information generally about the behavior of a physical system or attributes of some phenomenon. simple example is the traffic signal that uses three universal color codes (red, yellow, and green) signaling the moment to stop, drive, or walk. Although signals can be represented in many ways, in all cases the information is contained in a pattern of variations of some form, and with that information is typically transmitted and received over a medium. Electrical quantities such as current and voltage are called electrical signals, which are often used in radio, radar, sonar, telephone, television and many other areas. An acoustic wave signal can convey speech or music information, in which people often speak of a strong or weak signal when the sound's referred to its clarity and audibility. A thermocouple can convey temperature, and apH meter can convey the acidity of a solution. A signal may take a form of time variations or a spatially varying pattern. Mathematically speaking, signals are represented as functions of one or more independent variables that can be either continuous or discrete. Continuous-time signals are defined at a continuum of the time variable. Discrete-time signals are defined at discrete instants of time. Digital signals are those for which both time and amplitude are discrete. The continuous-time and continuous-amplitude signals are called analog signals. Analog signals that have been converted to digital forms can be processed by a computer or other digital devices change to term in digital image processing. This research review paper highlight all essential terms for digital image processing modeling.

Keywords: *digital image processing, wavelet function, Z-transformation, Fourier transformation, digital image processing and object recognition technique.*

Hitory

Images are produced by a variety of physical devices, including still and video cameras, scanners, X-ray devices, electron microscopes, radar, and ultrasound and are used for a variety of purposes, including entertainment, medical, business, industrial, military, civil, security, and scientific. The interests in digital image processing stem from the improvement of pictorial information for human interpretation and the processing of scene data for autonomous machine perception.

Webster's Dictionary defines an image as: "An image is a representation, likeness, or imitation of an object or thing, a vivid or graphic description, something introduced to represent something else." The word "picture" is a restricted type of image. Webster's Dictionary defines a picture as: "A representation made by painting, drawing, or photography; a vivid, graphic, accurate description of an object or thing soaps to suggest a mental image or give an accurate idea of the thing itself." In image processing, the word "picture" is sometimes equivalent to "image."Digital image processing starts with one image and produces a modified version of that image .Webster's Dictionary defines digital as: "The calculation by numerical methods or discrete units," defines a digital image as: "A numerical representation of an object," defines processing as: "The act of subjecting something to a process," and defines a process as: "A series of actions or operations leading to a desired result." An example of a process is car wash that changes an automobile from dirty to clean.Digital image analysis is a process that converts a digital image into somethingother than a digital image, such as a set of measurement data or a decision. Image digitization is a process that converts a pictorial form to numerical data. A digitalimage is an image f(x, y) that has been discretized in both spatial coordinates andbrightness (intensity). The image is divided into small regions called picture elementsor pixels as shown in figure.



What is Image and digital image?

"Image may be defined as a two dimensional function *f(x, y)*, where *x* and *y* spatial co-ordinates. The amplitude of '*f* 'at any pair of co-ordinate

(x, y) is called an intensity 'or' gray level of the image at that point".

When *(x, y)* and amplitude values of *'f'* are all finite, discrete quantities, we call the image the digital image.

Digital Image Processing:

Digital image processing is used to improve pictorial information for better clarity by human interpretation and to automatic processing of scene data for interpretation by machine/non-human

A digital image is a representation of a two-dimensional image as a digital value called pixels. Digital image processing is the technology of applying a number of computer algorithms to process digital image. The outcomes of this process can be either images or a set of representative characteristics of the original images.

Howitworks.

In the above figure, an image has been captured by a camera and has been sent to a digital system to remove all the other details, and just focus on the water drop by zooming it in such a way that the quality of the image remains the same.

Fundamental StepsInDigital Image Processing

Digital image processing is very broad. To study the digital image processing, the complete process is divided in to some fundamental steps as shown in above figure. The descriptions of these steps are given in the following subsections

1.1 Image Acquisition

This is first step of digital image processing. Definitely first step of digital image processing should be sensing of an image. So in an image acquisition, image is sensed by 'illumination' from source and 'reflection' from sensor. Example of image acquisition is to take an image by camera.

To sense the image, we use sensor according to the nature of illumination. The process of image sense is called image acquisition.An image must be converted to numerical form before processing.

Images acquisition can be done by using sensors. By the sensor, basically illumination energy is transformed in to digital image. The idea is that incoming illumination energy is transformed into voltage by the combination of input electrical energy and sensor digital material that is responsible to the particular type of energy being detected. The output waveform is the response of sensor and this response is digitalizes to obtain digital image.

1.2 **Image Enhancement**

After taking an image, it is some time required to highlight certain features of image. So image enhancement is simply to highlight certain features of image.

To process image so that result should be more suitable and clear than original image for a specific application. It sharpens image features such as edges and boundaries or contrast to make graphics display should be clear and easy to analyze. The enhancement should not increase the inherent information content of data, but it increase the dynamic range of the chosen features so that they can be detected easily.

Image enhancement is simply to increase the contrast of image so that it looks better. Image enhancement is applied in every field where images are ought to be understood and analyzed. For example, medical image analysis, analysis of images from satellites etc.

1.3 Image Restoration

Restoration means to restore an image that is not looking good due to some noise or distortion or blur that is to improving the image quality.Due to imperfections in the imaging and capturing process, however, the recorded image invariably represents a degradedversion of the original scene. The undoing of these imperfections is crucial to many of thesubsequent image processing tasks. There exists a wide range of different degradations thatneed to be taken into account, covering for instance noise, geometrical degradations (pincushion distortion), illumination and color imperfections (under/over-exposure, saturation),and blur.

Blurring is a form of bandwidth reduction of an ideal image owing to the imperfect image formation process. It can be caused by relative motion between the camera and the originalscene, or by an optical system that is out of focus. When aerial photographs are produced for remote sensing purposes, blurs are introduced by atmospheric turbulence, aberrations in theoptical system, and relative motion between the camera and the ground.

There are some overlaps in image enhancement and image restoration. Image enhancement is largely subjective while image restoration is objective process. Restoration attempts to recover an image that has been degraded by using a priori knowledge about degradation process. Restoration techniques involve modeling of degradation and apply the inverse process in order to recover the image.

1.4 Color Image Processing

Colors are powerful descriptor that often simplifies object identification and extraction from scene.In color image processing techniques generally we have two categories of color image processing. One is called pseudo color image processing or this is also known as false colorprocessing and the other category is known as full color image processing.

The human visual system can distinguish hundreds of thousands of different color shades and intensities, but only around 100 shades of grey. Therefore, in an image, a great deal of extra information may be contained in the color, and this extra information

can then be used to simplify image analysis, e.g. object identification and extraction based on color.

Visible colors occur between about 400nm (violet) and 700nm (red) on the electromagnetic spectrum, as shown in figure below:

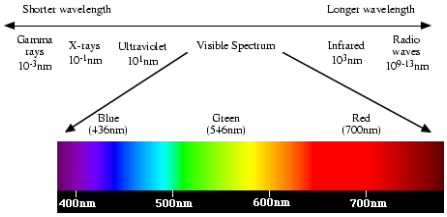


Figure: The visible spectrum.

1.5 Wavelets and Multi Resolution Processing

Unlike the Fourier transform, which decomposes a signal to a sum of sinusoids, the wavelet transform decomposes a signal (image) to small waves of varying frequency and limited duration. The advantage is that we also know when (where) the frequency appears. Many applications in image compression, transmission, and analysis we will examine wavelets from a multire solution point of view and begin with an overview of imaging techniques involved in multire solution theory. Small objects are viewed at high resolutions. Large objects require only a coarse resolution. Images have locally varying statistics resulting in combinations of edges, abrupt features and homogeneous regions.

In Multi-resolution Analysis (MRA), a Scaling Function is used to create a series of approximations of a function or image, each differing by a factor 2 from its nearest neighboring approximations. Additional functions, called Wavelet, are used to encode the difference in information between adjacent approximations.

1.6 Compression

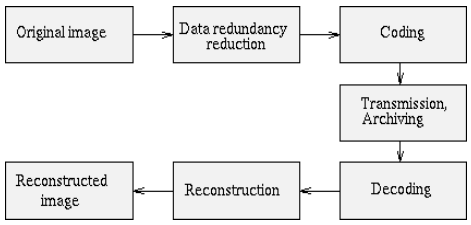
Compression is a technique that is used for reducing that is used for reducing the storage space for saving an image and reducing the bandwidth required for transmission of image.

Large amount of data can be used to represent an image. Technology permits ever-increasing image resolution increasing number of spectral bands and there is a consequent need to limit the resulting data volume.Compression is the main goal of the algorithm so that an image is represented using a lower number of bits per pixel without losing the ability to reconstruct the image.It is necessary to find statistical properties of the image to design an appropriate compression transformation of the image; the more correlated the image data are, the more data items can be removed.

Data compression methods can be divided into two principal groups first is information preserving compression permit error-free data reconstruction (lossless compression) and second is compression methods with loss of information do not preserve the information completely lossy compression).

1.7Morphological Processing

Morphological image processing (or morphology) describesa range of image processing techniques that deal with the shape (or morphology) of features in an image Morphological Operations are typically applied to remove imperfections introduced during segmentation or we can say that morphology is a branch of biology that deals with the forms and the structure of animals and plants.



We use the same word here in the context of mathematical morphology as a tool of extracting image components theatre useful in the representation and description of region shape such as boundaries, skeletons etc. goal of morphological operations are simplify image data, preserve essential shape characteristics and eliminate noise.

It's basically deals with tools for extracting image components that are useful for image components that are useful for representation and description of shapes.

1.8 Segmentation

Segmentation is a process in which image is converted in to small segments so that we can extract more accurate image attributes. If the segments are more accurate properly autonomous (means two segments of an image should not have any identical information) then representation and description of image will be occurred and if we are taking rugged segmentation, the result will not be accurate.

Segmentation partitions an image into distinct regions containing each pixel with similar attributes. To be meaningful and useful for image analysis and interpretation, the regions should strongly relate to depicted objects or features of interest. Meaningful segmentation is the first step from low-level image processing transforming a grey scale or color image into one or more other images to high-level image description in terms of features, objects, and scenes. The success of image analysis depends on reliability of segmentation, but an accurate partitioning of an image is generally a very challenging problem.

Segmentation techniques are either *contextual* or *non-contextual*. The latter take no account of spatial relationships between features in an image and group pixels together on the basis of some global attribute, e.g. grey level or color. Contextual techniques additionally exploit these relationships, e.g. group together pixels with similar grey levels and close spatial locations.

1.9 Representation And Description

It has been well recognized that solid modeling is the foundation for CAD/CAMintegration. The ultimate goal of planning for the automated manufacturing inspections

and robotic assembly is to be able to generate a complete process plan automatically, starting from a CAD representation of the mechanical components. The representation must not only possess the nominal (or ideal) geometric shapes but also reason the geometric inaccuracies (or tolerances) into the locations and shapes of solid objects. Most of the existing solid modeling systems (in the market) have the very efficient graphical interactive input front end. Unfortunately ,they are not satisfactory for such a fully integrated environment in the following two aspects:

1. Information sufficiency problem: The existing solid models do not support sufficient information for design and manufacturing, which require the specification of dimension, tolerance, surface finishing, data structure, and machining features.
2. Input data redundancy problem: The input data of the existing solid models areinadequate or more than the data required specifying a part.

1.10 Object Recognition

An object recognition system finds objects in the real world from an image of the world, using *object models* which are known a priori. This task is surprisingly difficult. Humans perform object recognition effortlessly and instantaneously. Algorithmic description of this task for implementation on machines has been very difficult. The object recognition problem can be defined as a labeling problem based on models of known objects. Formally, given an image containing one or more objects of interest (and background) and a set of labels corresponding to a set of models *known* to the system, the system should assign correct labels to regions, or a set of regions, inthe image. The object recognition problem is closely tied to the segmentation problem: without at least a partial recognition of objects, segmentation cannot be done, and without segmentation, object recognition is not possible.

1.11 Knowledge Base

Knowledge base can be defined as software that may help to user proper image enhancement, restoration or compression technique. It may help user in segmentation of an image.

Conclusion:

It should be remembered that most digital images represent continuous natural images. Exceptions are artificial digital images such as test patterns that are numerically created in the computer and images constructed bytomographic systems. Thus, it is important to understand the "physics" of image formation by sensors and optical systems including human visual perception. Another important consideration is the measurement of light in order quantitatively to describe images. Finally, it is useful to establish spatial and temporal characteristics of continuous image fields which provide the basis for the interrelationship of digital image samples.

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GRAPHICAL PASSWORD AUTHENTICATION: A REVIEW PAPER

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ABSTRACT

Information Security is now key issue in the world. Gradually end users of Internet improved. General uses of Internet are searching, e-mail, social networking, e-banking, e-governance etc. Universally security and Authentication are key issues. User Authentication is the process of determining whether user should be authorized to access information or not. Alphanumeric or text passwords are mostly used mechanism for authentication. But these are vulnerable to dictionary, brute force and guessing attacks. Which create serious issues? Resolution is to use Graphical Password, is more secured, reliable technique for authentication.

KEYWORDS: Phishing, bots, OCR, PIN

I. INTRODUCTION:

Now a day's web application like email, social networking sites, blogs, e-governance sites etc. has become everybody's need. With the rapid growth of Internet, Security is also becoming a critical issue. Information security plays an important role in World Wide Web. Security has three important goals - confidentiality, integrity and availability. Confidentiality refers to providing access to only authorized users, integrity refers to preventing from unauthorized changes and availability refers to providing access to authorized users at any time [30, 47].Authentication is the first level of security to provide access only to the legal users.

There are different techniques for Authentication – Knowledge based, Token based and Biometric based. [22, 26, 40]. Knowledge based technique is well known technique used for authentication and uses something for the user knows. Token based authentication technique uses something user has eg.smart card, token should always be carried for accessing the service and there is a possibility of losing the token or the token being stolen by someone. To avoid the usage of stolen tokens, uses PIN (Personal Identification Number) in addition to tokens for authentication. Biometric authentication technique uses unique measurable characteristic of human being e.g. Iris, face, figure print etc. [17, 19], is not yet adopted for all applications because of the expenditure involved for maintaining the special devices required for biometric authentication.

These three techniques can be used for different types of applications based on the security requirements. Now days, every user has to maintain number of user accounts either for office work or for personal work. Biometrics or Tokens can be used for applications with high security requirements .Knowledge based authentication can be used for other applications. The traditional method used for knowledge based authentication is textual passwords. Important Characteristics of the password are – memorability, usability and security. Parameters for memorability - Passwords should be easily remembered by the user for a long time and should be able to properly recall the passwords for authentication. The parameters that can be used for measuring *usability* are time required to create the password, the time required to login and the error rate (number of mistakes users make while entering the Password). Security of passwords can be specified in terms of resistance to various types of attacks. Attack is an attempt to exploit vulnerabilities in the passwords[3].

Textual password is the conservative method used for user authentication. It is very simple and inexpensive compared to other techniques and easy to implement [14,27].Users have a tendency to select simple and short passwords to remember easily. It is very easy to break these simple passwords. Random and lengthy passwords are hard to remember. The main problem with traditional textual method is that passwords selected for many applications are either weak and memorable or secure but difficult to remember [28, 46]. Some users even use the name of the system as password [43]. The lengthy passwords provide more security but, it is difficult to remember several such long passwords. It is a tendency that users use the same password for many accounts to reduce the load on the memory which makes intruder's job easy [1, 16].There is a possibility of changing the password many times [1, 40]. These frequent password changes increase the burden on

human memory and may lead to the writing of passwords somewhere by users [1, 37]. So the textual passwords are vulnerable to dictionary, guessing and capturing attacks. To address the problems of textual passwords, Graphical passwords are introduced.

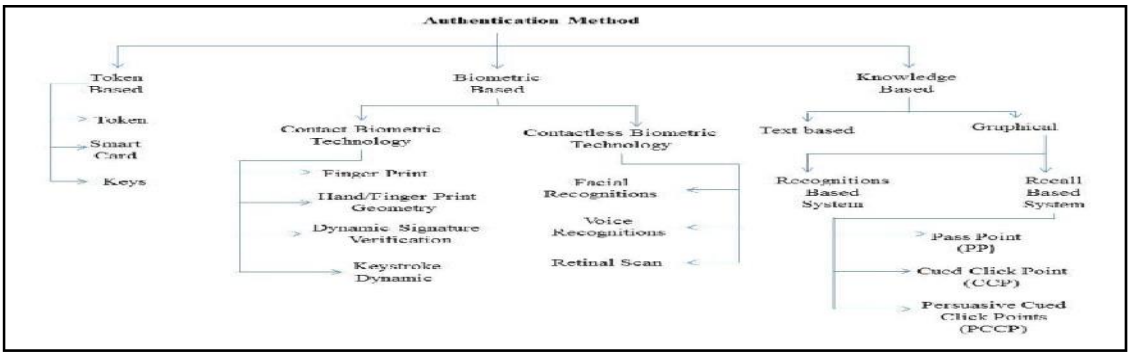
This review paper presents existing Graphical Password Techniques and their comparative study.

II. LITERATURE SURVEY:

Graphical passwords can be categorized into three methods recognition based; recall based and cued recall based on the cognitive load on the user in retrieving the passwords from the memory [22, 26, and 40].

1. Recognition based techniques:

In recognition based systems, users generally select a set of images during password registration and he has to recognize these images during login time. The studies of cognitive scientists say that humans have unlimited memory for pictures and they can remember and recall pictures easily than text [5, 24, 31]. Hence, the accurate recall of textual passwords is replaced by recognizing images to reduce the cognitive load on the user.



a. Déjà vu Dhamija and perrig [9] designed a graphical system known as Deja Vu using recognition based authentication. In this technique, from a set of sample images, user selects a fixed number of images to form an image portfolio. During login time, a challenge set with number of images will be displayed on the user's system. The challenge set contains a few images from the user's portfolio and the rest of the images from the remaining image samples which are called as decoy images. For authentication user must recognize the images from his portfolio which are part of the challenge set. Guessing attacks is easy using photographs than random art images.

b. Passfaces

Real User Corporation developed the technique Passfaces [45]. Many researchers worked on finding the effect of pictures than text on human brain. They reported that humans are good in recognizing pictures or images than text. In this technique, user selects a set of human faces during password creation. During login, a panel of human faces will be displayed in a grid in multiple rounds and the user must recognize the face that belongs to his portfolio in each round. The face should be correctly recognized in all rounds for authentication.

c. Faces / Story

Davis et al [8] proposed two authentication systems - Faces (based on Passfaces) and Story (based on order of images). In faces scheme, during password creation, user selects a set of faces, each face from a different class of faces. There were 12 classes of faces like typical Asian male and female, typical black male and female etc. In Story system, during password creation, user selects a sequence of images and makes a story with the images to remember the sequence. The images for Story are taken from different types of images like animals, children, sports, male and female models which are used in a day to day life. During login, user has to identify the images in the same sequence.

Dumphy et al [10] tested the Passfaces authentication system against social engineering attack. They found that the success of the attack can be reduced by choosing decoy images carefully.

2. Recall based techniques:

The (pure) recall based passwords are same as traditional passwords as they require the user to remember and recall the passwords during login time. In recall based systems, users draw their password either on a blank canvas or on a grid. There are no cues to help the user to recall the passwords. The cognitive load on the user is more and it is harder than all other techniques [7].

I. DAS (Draw-A-Secret)

Jermyn et al [18] proposed a graphical password technique which is more secure than textual passwords. In this technique, user draws a secret (picture) on a grid using stylus during password registration. The password is an ordered sequence of coordinate pairs of grid cells touched during the password drawing by the user. The drawing may contain one or more pen strokes separated by pen up events. For authentication, during login time, user has to draw the picture touching the grid cells in the same

sequence. Considering the size of memorable graphical passwords with the size of the dictionary of usual textual passwords, DAS was claimed as more secure than traditional system. The complexity of passwords in DAS depends on the size of the grid, length of the password and number of strokes in the password. For a 5x5 grid, the theoretical password space for password of length less than or equal to 12 is 58 bits. This technique is vulnerable to shoulder surfing. The intruder can capture the password in a single observation. It is vulnerable to malware and phishing attacks and other forms of social engineering were not possible unless the user draws the secret on a paper. For each cell, in the neighbor set, diagonal elements were not considered in drawing a picture. During drawing, if the user draws a stroke too close to a grid-line then wrong sequence may be considered as password entered by the user.

Nali and Thorpe [23] conducted a user study on paper. Users were requested to draw the passwords on a paper to measure the predictable features in passwords selected by the users. They reported some symmetry and no predictions about start and end points of strokes. They showed that 45% of the passwords were symmetric, 80% of the passwords contain 1-3 strokes and 86% were centered or approximately centered within the grid. According to their report, 29% of the passwords drawn were invalid because users draw the strokes too close to a grid line.

II. Passdoodle

Passdoodle allows users to create hand written drawings as passwords with a stylus on a touch screen without a visible grid. Goldberg et al [11] conducted user study on a paper using Passdoodle and found that users were able to remember their passwords but failed in recalling the order or direction of the pen strokes. For password registration, the technique requires training to recognize the password. The success depends on the user's ability to recall and reproduce their doodles. This technique is vulnerable to shoulder surfing, one login may be sufficient to observe the password. No further study was done on this technique.

Syukri et al [39] proposed a technique for authentication in which user draws a signature using mouse at the time of registration. The system extracts the signature area. During verification, the system takes user's signature normalizes it and the extracts the parameters of the signature for comparison. Drawing the signature with a mouse is a difficult task.

III. Pass-Go

Tao and Adams [41] designed a new scheme Pass-go based on Chinese board game Go. User draws password on the grid using intersections of the grid cells. For each intersection, sensitive areas are defined and touching any point inside a sensitive area is equal to touching the intersecting point. The grid of size (G+1) x (G+1) in DAS is equal to GxG grid in Pass-go. An ordered sequence of intersecting points with pen up events forms the password. Colors can be used to create strong passwords. They conducted user study and reported that Pass-go keeps most of the advantages of DAS scheme and offers more security and better usability. In Pass-go, dot and line indicators are used to display the password. By using an encoding scheme, the password can be inputted using keyboard. They conducted user study with 158 participants over a period of three months. They reported the success rate as 78% and the weekly success rate varied from 68% to 95%. Pass-go has more password space than DAS. For a password of length n, for pass-go-9 the password space is 77 bits. The technique is vulnerable to shoulder surfing. Two solutions were suggested for shoulder surfing problem. First solution is not to show the indicators. By observing the mouse pointer, it is difficult for the user to create passwords. Second solution is to use disguising indicators. For every input by the user, one or more disguising indicators may be displayed at random points. But, it confuses the user. Sensitive areas around intersection points play an important role in usability. If the sensitive area is too small, it is difficult for the user to select or touch it. If it is too large, there may be overlapping of sensitive areas which may lead to wrong point selection. Drawing the password in Pass-go is difficult than DAS, and remembering the sequence of dots or lines is also a difficult job.

IV. Pass-Shapes

De Luca et al [2] evaluated different authentication techniques for ATM usage and found that many users depend on the shapes in order to remember the PIN. In an online survey, 86 members participated and 40% of them expressed that they use geometric shapes to remember the password. A shape password may contain many shapes like square followed by rectangle. Instead of remembering the PIN, they remember the shape on the key pad and enter the digits in the shape as password.

Weiss and De Luca proposed Pass-Shapes [44] for authentication. Users select simple geometric shapes for authentication. A Pass Shape may contain several strokes. Pass-Shapes can be represented by a string for internal representation. During registration, he selects a shape and for authentication he has to produce the same shape using touch pad or touch screen. In this technique, shape is important and size and location are not considered, only the order of the strokes is considered. Pass-Shapes are drawn by hand which helps the user to remember the shapes. They conducted user study with 52 participants to evaluate memorability of Pass-Shapes. They divided the participants into three groups- five digit PINs, seven stroke Pass-shapes with no strategy and Pass-Shapes with repeated drawing. PINs and pass-Shapes were created using random generators. The third group

participants (Pass-Shapes with repeated drawing) were requested to repeat their pass-Shape 24 times. Three tests were conducted for memorability evaluation. First test was taken immediately after the learning phase and the other two tests were conducted after 5 days and after 10 days. This technique is vulnerable to shoulder surfing, phishing and malware attacks. Nogrid is required to draw a password. The password space depends on the number of strokes.

3. Cued-recall techniques

Cued-recall is an easier task than pure recall because cues help the users to recall the password. In cued-recall systems, generally users select specific locations on a single image. Instead of remembering the entire image, user has to remember few locations on the image.

- Pass Points

G.E. Blonder [4] designed the first graphical authentication technique. In this technique, user selects certain locations on an image as password. During login time, user has to reselect the same locations in the same order for authentication. No user study was done.

Weidenbeck et al [45] designed Pass points extending Blonder's design by increasing clickable areas. In this technique, user can click anywhere on the image to create a password. User clicks on a set of points on the image using a mouse. The sequence of point's clicked during registration forms the password. During login, user has to click on the same points of the image in the same order within a specified tolerance. They conducted user study in the laboratory and reported password registration time as 64 seconds on average and training time as 171 seconds. Login success rate was reported as 55% to 90% at different login periods. The tolerance area should be at least 14x14 pixels for acceptable usability. The Pass Points technique is vulnerable to hotspots and simple geometric patterns within images.

Viskey [29] is the commercial product of Pass points designed for mobile devices for screen unlocking. User taps locations on the image using a stylus or finger. The major problem is input tolerance. It is tough to tap exact locations on the image during login, the tolerance areas should be properly defined.

- Cued click points

Chiasson et al [6] proposed cued click points and persuasive cued click points. In Cued click points, user clicks on one point on an image to go to next round. Another image will be displayed in that round and the user has to click a point in that image. This process will be repeated five times making a password of five click points for five images. During login user has to click the same points in the same sequence. If the user clicks a wrong point, an unknown image will be displayed which gives an implicit feed back to the user. Then, the user restarts the process. Implicit feedback is not useful in the case of intruder because he knows nothing about images. They conducted user study and reported password registration time as 25 seconds, login time as 7 seconds and login success rate as 96%. They analyzed the user choice in click points and found that passwords are predictable because most of the click points fall within known hotspots.

Chiasson et al proposed persuasion to influence user choice in click-based graphical passwords, encouraging users to select more random, and hence more difficult to guess, click-points. Persuasive technology motivates and influence people to behave in a desired manner.

- Inkblot authentication

Stubblefield and Simon [38] proposed Inkblot authentication. During password registration, user watches an inkblot, assumes a word that describes the inkblot and enters first and last letters of word as part of the password. This will be repeated for number of inkblots to generate a long password. During login, the inkblots will be displayed in the same order and the user has to enter first or last character of the words assumed for those inkblots. They conducted user study in the laboratory with 25 users using 10 inkblots and reported 80% login success rate after one day and 72 % success rate after one week. They showed that the passwords formed by Inkblot authentication are relatively strong as they have no meaning. The inkblots should be selected in such a way that the intruder should not guess the word, otherwise passwords are predictable.

- Passlogix V-GO

V-GO [25] is the authentication technique designed by Passlogix Company. In this technique, the user clicks/drags number of background objects for password creation. The sequence of activities like preparing a meal by choosing required items and cooking is a password. The password creation depends on the environment selected for password. During login, user has to repeat the same process. This is fun to use but the passwords are predictable because of the limited objects in the environments.

4. Shoulder surfing resistant techniques

Graphical passwords are more vulnerable to shoulder surfing attacks than conventional textual passwords. The intruder captures the password either by direct observation or by using hidden cameras. Many shoulder surfing resistant techniques have been proposed and each technique has its own way in providing security against shoulder surfing attack.

1. S3PAS

Zhao and Li [48] proposed a shoulder surfing resistant authentication system S3PAS. During registration user selects a password and the characters in the password are known as original pass characters. The login image of S3PAS consists of randomly scattered 94 printable characters. For authentication, user has to find the positions of original pass

characters and assumes invisible triangles known as pass triangles for every three pass characters in sequence. The user has to click inside the pass triangle following some rules. The clicks in sequence generate a session password. The login image will be changed every time and in turn the session password changes. The changing login image makes S3PAS protected to the brute-force search towards the session passwords. The system might be broken once by chance with a small probability using brute-force attacks towards session password like any password system, but it is hard to get actual original password to login every time.

2. Convex Hull click

Sobrado and birget [32] developed shoulder surfing resistant graphical authentication technique. During registration, user selects pass objects from a set of objects. The login involves several rounds. For authentication, user recognizes pass objects and clicks within the convex hull of 3 pass objects. It is impossible to clearly identify pass objects on the login interface if 1000 objects are used as specified by the authors. The login time with 5 challenge was 72 seconds. The time required to rearrange the icons between the challenges was 17 seconds and total login time was 89 seconds.

3. Fake Pointer

Takada [42] designed an authentication system which is resistant to shoulder surfing and hidden cameras. User has to register two things a PIN and answer indicator which contains different shapes. The user interface of the fake pointer contains two layers the first layer contains digits and second layer contains shapes. The digits on the first layer can be rotated using key operations. Each digit of the pin should come on top of the corresponding answer indicator by key operations. The intruder may not understand the PIN even after capturing both PIN entered and login interface number of times. The major problem of this technique is user has to remember the PIN as well as answer indicator which is a difficult task.

4. CDAS (Come from DAS and Story)

Haichang et al [13] designed a shoulder surfing resistant graphical password scheme for PDAs based on the concept of DAS drawing and sequence retrieval in Story. In this technique, user selects number of images known as pass images in sequence during registration. During login, degraded images are randomly placed on the screen. The user has to draw a curve across their pass images in the same sequence without lifting the stylus from the drawing surface including the pass images and the decoy images. The user can make a story connecting the pass images to remember the sequence. The randomly placed degraded images on the interface makes the technique strong against shoulder surfing. They conducted user study for CDAS and Story techniques in the laboratory with 20 students and five images as pass images. A recall test was conducted one week after the initial session. They reported the average password creation time as 49.5 seconds for CDS and 42.9 seconds for story scheme and average login time as 19.8 seconds for CDS and 23.1 seconds for story after one week.

5 GrIDsure

GrIDsure [12] is a pattern based authentication. Humans remember patterns much better than PINs, and this helps to create session PINs using dynamic grid. They enter PIN based on the pattern selected by him during registration. During login, a grid is displayed with randomly placed digits. User follows his pattern and enters the digits in pattern as PIN. This technique is strong against shoulder surfing when the intruder captures password only. If the intruder captures both login grid and the password, it is easy to get the password.

5. Other techniques:

Man et al [20] proposed a technique which is resistant to shoulder surfing. During registration user selects number of pass objects. Each pass object has several variants and each variant is assigned a unique code. During login time, the login interface contains number of pass objects along with decoy objects. User recognizes the pass objects and enters the code assigned to them and the relative location of the pass objects with respect to a pair of eyes. User has to face several such interfaces for authentication.

Hong et al [15] extended the technique proposed by man et al. It permits to assign codes to the pass objects variants by the users. When the codes are assigned by users, they are able to remember the codes better than the codes assigned by the system. User has to remember many codes for these two techniques.

Macheal et al [21] proposed a haptic based authentication technique. In this technique haptic device is used to measure the pen pressure applied by the user while drawing the secret which is not visible to the intruder. The user study conducted to evaluate the usability reported that users apply very little pen pressure and hardly lifted the pen while drawing.

Sreelatha and Shashi [33] proposed a technique to provide confidentiality to the data being transmitted. They used shape based technique to send data from a sender to receiver. In a 5x5 grid, the data to be transmitted is placed in the cells that form the shape of the character and remaining part is filled with random data by the sender and the grid data is transmitted to the receiver. The receiver follows the same process and extracts the actual data transmitted.

Sreelatha et al [36] proposed color coding instead of bits to increase the amount of data being transmitted.

Sreelatha et al [34] proposed two authentication schemes - color and image signature scheme and coded color authentication scheme. These techniques

generate session passwords and are resistant to shoulder surfing attack and hidden cameras.

Sreelatha et al [35] proposed image based authentication techniques for PDAs. Pair based image authentication technique uses recognition based approach in which user has to recognize his pairs. Text based image authentication uses both recognition and recall based approaches where user has to recognize his images and recall the characters assigned to them.

III. CONCLUSION:

The three types of techniques - recognition based, recall based and cued recall was studied and drawbacks of those techniques were given.

Recognition based techniques are good in memorability, users are able to remember and recognize the passwords successfully. The server has to maintain large number of images or faces and for every round of authentication server has to prepare the challenge set for every user. Due to the limited number of images in the challenge set and few rounds used for authentication, the password space is less in recognition based techniques and in turn these are vulnerable to password guessing attacks. The Password capturing attacks require multiple logins to get the complete portfolio of the user. The password creation time and login times are more, compared to recall based techniques.

Recall based techniques have large password space and are secure against password guessing attacks. There is no need to maintain large number of images or faces by the server and no requirement of forming the challenge set. The Password creation and login times are less than the other two techniques. The recall based techniques are vulnerable to password capturing attacks because in a single session or by single observation the intruder may get the password. The password complexity depends on the number and the length of the strokes in password. But it is difficult to remember the order of the multiple strokes in random shape passwords. Drawing a password with mouse is inconvenient.

Cued recall systems are good in memorability. Cues help the users to retrieve the passwords from memory without writing anywhere. The security of passwords in cued recall system depends on the image selected for authentication. Generally, images will be having limited number of clickable points for password selection which reduces the password space and in turn, passwords are vulnerable to password guessing attacks. These are vulnerable to password capturing attacks because entire password or user's portfolio will be displayed for every login which can be observed by the intruders. Password creation and login times are more compared to recall systems.

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DATA MIGRATION METHODOLOGY USING LEGACY SYSTEM: A REVIEW

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Abstract:

The Legacy System typically from the backbone of the information flow within organization. The Legacy Information systems are normally an approach to mission-critical legacy system migration: the Butterfly methodology, its data migration engine. Data migration is the primary focus of the Butterfly methodology; however, it is placed in the overall context of a complete legacy system migration. The fundamental of the Butterfly methodology is the need for parallel operation of the legacy and target systems during migration. Much of the complexity of the current migration methodologies is eliminated by removing this interoperation assumption.

Keywords*-Legacy system, migration methodologies, data migration.*

Introduction-

Legacy Systems are developed especially for an organisation has a long lifetime. Many of these systems were developed years ago using obsolete technologies. They are likely to be business critical systems required for normal operation of a business. Legacy System is used for outdated technology and equipment that is still being used by an organization. Legacy implies that the system is out of date or in need of replacement, however it may be in good working order so the business does not want to upgrade or update the equipment. Legacy Information System is the backbone of the information flow within an organization and consolidating information about the business. These system stops working the business will generally grind to a halt. The legacy Information Systems have problems to their host organizations for years. The Worst Ones beings:

- These system runs on obsolete hardware. It is very expensive to maintain and reduce productivity due to its low speed.
- Software maintenance is also expensive; tracing failures is costly and time consuming due to the lack of documentation and understanding of internal working.
- Integration efforts are hampered by the absence of clean interface.
- Legacy system provides new functionality to the organization.

Working for Legacy System-

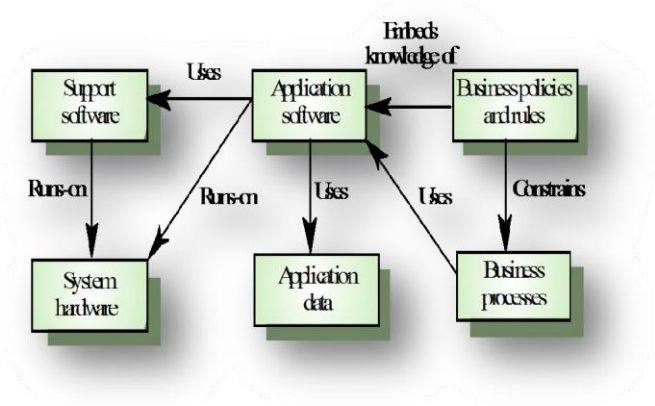


Figure 1.Legacy system components

In the above figure show that-

1. **System hardware** –

In much case the legacy system has been written mainframe hardware. This hardware are no longer available and expensive to the maintain. It may not be compatible with current organizational IT purchasing policies

2. **Support software-**

Legacy system may replay on a range of different support software from the operating system and utility provided by the hardware Manufacturer through to the compilers used for system development. These may be obsolete and no longer supported by their original providers.

3. **Application software-**

Application system provides the business services. It is usually composed of a number of separate programs. Sometimes legacy system means this application software system rather than the entire system.

4. **Application data** –

These are the data which are processed by the application System. In many legacy systems, an immense volume of data has accumulated over the lifetime of the system. This data may be inconsistent and may be duplicated in different files.

5. **Business processes-**

These processes are used in the business to achieve some business objective. An example of a business process in an insurance company would be issuing an insurance policy. In a manufacturing company, a business process would be accepting an order for products and setting up the associated manufacturing process.

6. **Business policies and rules -**

These are definitions of how the business should be carried out and constraints on the business. Use of the legacy application system may be embedded in these policies and rules.

2. Migration Issues-

In the Legacy System the data held is important in business resource. It represents mission-critical business knowledge which cannot be easily replaced ([3], [6]). The Gateway Approach is used for migration in the business area. The gateway provides interoperability between the migrating legacy system and its destination system. They give rise to difficult problems such as maintaining the consistency of the data between the two systems. A gateway-free approach to migrating legacy information systems is presented: the Butterfly Methodology

Legacy Information System linked the processes to determine which systems have data and business logic of value in the new target environment. A set of process are selected and associated legacy system are analysed.All the data required for these processes are extracted and transaction databases constructed that accessed by new applications.

The Database *First* (Forward Migration) method [1] involves the initial migration of legacy data to a modem, probably relational, Database Management System and then migrating the legacy application and interfaces. While legacy applications and interfaces are being redeveloped, the legacy system interoperates with its target system through a Forward Gateway.

In this way the legacy applications to access the database environment in the target side of the migration process. This gateway translates and redirects these calls forward to the new database service. Result is returned by the legacy application.

The Database Last (Reverse Migration) Method [1] legacy applications are gradually migrated to the target platform until the legacy database remains on the original platform. The migration is in final step then a Reverse Gateway enables target applications to access the legacy data management environment. The Reverse Gateway will be responsible for mapping the target database schema to the legacy database. This mapping can be complex and slow which will affect the new applications..For both Forward and Reverse migration method, migration take a significant amount of time during which the legacy system will be inaccessible. The mission-critical information may be unaccepted.

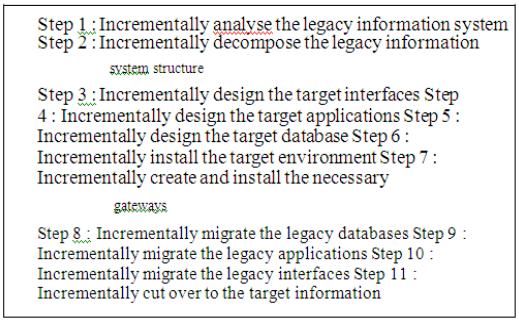


Figure 1 Chicken Little Migration Approach

In their Chicken *Little* methodology propose an 11 step generic migration strategy employing complex gateways, shown in Figure 1. In this method, the legacy and target information systems operate in parallel throughout the migration.

Using *Chicken Little*, data is stored in both the migrating legacy and the target systems. Gateway co-ordinates [3] have to be introduced to maintain data consistency."In heterogeneous information systems is a much more complex technical problem with no general solution yet advised, and it is still an open research challenge" [3]. Thus it looks that to apply *Chicken Little* approach would be a big challenge to any migration engineer.

Chicken Little methodology offers the most mature approach. The migration process adds greatly to the complexity of an already complex process and is also a considerable technical challenge. Thus a need exists for a simple, safe, gateway-free approach to legacy system migration.

3. The Butterfly methodology-

Butterfly methodology provides a migration methodology and a generic supporting tool-kit for the methodology to aid migration engineers in the process of migrating legacy information systems to target systems. In Butterfly methodology is to migrate a mission-critical legacy system to a target system in a simple, fast and safe way. This methodology eliminates, during the migration, the need to simultaneously access both the legacy and target systems, and therefore, avoids the complexity of maintaining the consistency between these two (heterogeneous) information systems. It is very important to bear in mind that, using Butterfly methodology, the target system will not be in production while the legacy system is being migrated. The legacy system will remain in full production during the whole migration process. There will never be a case where live data is stored, at the same time, in both the legacy and target systems.

Figure 2: Six Phases of the Butterfly Methodology

First, Butterfly methodology purposely stores live data at the legacy system side during migration, and the target system will not be in production before the full migration process finishes. This is different from gateway-based migration approaches where live data is distributed at both legacy and target systems during migration. This is a great technical challenge to maintain data consistency, for which no general solution is available currently.

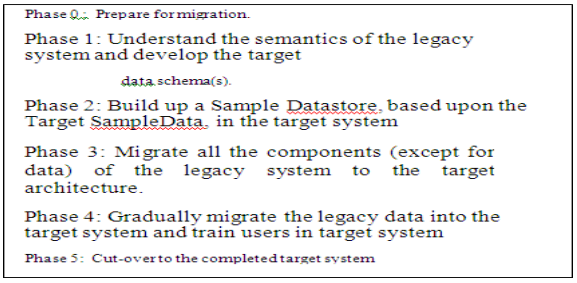
Second, Butterfly methodology proposes a legacy data migration engine, suitable for mission-critical system migration, so that the legacy system need only be shut down for a minimal amount of time. This differs from the so called *Big-Bang, Forward and Reverse Migration* [1] approaches where the legacy system must be shut down for a considerable time to facilitate data migration before the target system is made available.

4. The data migration engine

Principles for data migration using the Butterfly methodology-

The legacy data store is "frozen". It is read-only data. Manipulations of legacy data are redirected by the *Data-Access-Allocator* (DAA), and the results stored to a series of auxiliary datastores named TempStore(s) (TS). When legacy applications access data, DAA retrieves data from the correct source, e.g. the legacy data or the correct TempStore.

To be more specific, Butterfly methodology does not use gateways and introduces several new concepts for the data migration:



- Sample DataStore, Legacy SampleData and Target SampleData;
- TempStore;
- Data-Access-Allocator;
- Data-Transformer;
- Termination-Condition and Threshold Value.

A *Sample DataStore* stores the *Target SampleData* are based on the target system data model. The *Target SampleData* is transformed from the *Legacy SampleData*, in the legacy data store[3]. The *Sample DataStore* is employed to support the initial development and testing of all components of the target system.

Butterfly methodology employs a series of auxiliary datastores: *TempStores* (*TS*).These TempStores records the result of manipulations on the legacy data during the course of the migration. Migration is complited then all data redirect by the *Data-Access-Allocator* (*DAA*). The *DAA* effectively stores the results of manipulations in the latest TempStore and retrieves required data from the correct TempStore.

Butterfly methodology employs a *Data-Transformer*, named *Chrysaliser*, to migrate data as well as in the TempStores to the target system. The *Chrysaliser* is responsible for transforming the data from its legacy format to the data model format of the target system.

Butterfly methodology introduces a *Termination-Condition*, and a *Threshold Value* (represented by *7*).This is determined if the migration has reached the final stage.

5. Advantages of Legacy System:-

In the world of business legacy information system the new black. The basic processes information systems structure of many enterprises is managed via legacy software, a mixed blessing as most managers would put it. Based on technology that has long since passed the modern stage, legacy software can be quite a challenge to deal with.

The benefits of legacy system integration have led to a significant rise in organization. Though system could possibly cost the organization millions of dollars, in the current environment. To ensure that you get the most out of your legacy system integration, there are a few check-points show below

1. Legacy system integration –In this system, old software is not working properly then new software is generated. Next, examine the costs involved and whether the cost-benefit-analysis lies in favor of legacy system integration or not.
2. Determine what level of integration your business requires – There are a variety of legacy system integration all at different cost and different operational capacity. E.g. There are those models that integrate data as soon as it becomes available, this is the most expensive and complex legacy system integration model.
3. Ensure that your data is clean – This basically means that your term definitions should be clear and congruent and that your data should free of redundant records. This will ensure the legacy system integration works efficiently.
4. Monitor for systems overlaps – Sometimes new applications will have the same functionality as that of the legacy system. In such a situation an executive decision needs to be made as to which one to use for the issue at hand.

6. Challenges:

Migrating largest software applications needs automation. The need to migrate mainframe software is often motivated by a mixture of motives, including:

1. The high cost of operating the mainframe
2. Shrinking pool of IT personnel that understand the mainframe system languages and structure

3. Need for faster application evolution in response to changing requirements by use of more modern software engineering methods
4. The need to integrate the application and its data more effectively with the balance of the organization.

7. Uses of Legacy System-

1. The system works satisfactorily, and the owner sees no reason to change it.
2. Retraining on a new system would be costly in lost time and money, compared to the anticipated appreciable benefits of replacing it.
3. The system requires near-constant availability, so it cannot be taken out of service, and the cost of designing a new system with a similar availability level is high. Examples include systems to handle customers' accounts in banks, computer reservation system, air traffic control, energy distribution (power grids), nuclear power plants, military defense installations, and systems.
4. The user expects that the system can easily be replaced when this becomes necessary.
5. The costs of redesigning or replacing the system are prohibitive because it is large, and/or complex.
6. The way that the system works is not well understood. Such a situation can occur when the designers of the system have left the organization and the system has either not been fully documented or documentation has been lost.

8. Conclusion:-

Legacy Information Systems Migration is currently the focus of much attention from both business and research communities. The problems posed by legacy systems legacy system migration have been presented: the Butterfly methodology. The migration process as a whole is a very complex procedure encompassing many different fields of research.

Legacy systems are in danger of reducing their host organization's competitiveness. This paper has presented an overview of the problems posed by legacy system and the challenges that possible solutions must address to overcome them. The most significant proposed approaches to legacy migration have been discussed. It has been concluded that actual methodologies are either too general to be applied in practice or too specific to guide a complete migration project and are supported by few practical results.

Legacy data migration is more difficult than it initially appears and getting it wrong is expensive and painful. Don't let the mechanics of how legacy data will be transformed overshadow the need to manage the process. Give careful and objective scrutiny to the checklist in section two of this document and, if you have any doubt about your approach, be prepared to pause. It is far cheaper and easier to fill a gap up-front than to dig your way out of trouble later in the project.

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A COMPARATIVE STUDY : TRADITIONAL AND MODERN SOFTWARE TESTING

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Abstract:-

There are two or more types of everything in the world, like traditional as well as modern. Similarly testing has also passed a traditional as well as a modern era where various organizations still make use of traditional testing techniques. We will view the differences between both in this article.

Keywords: Rational Unified Process (RUP) ,V-model, CMM, Waterfall model, Unit Testing.

Introduction :

Software engineering is a field of Computer science, for designing and writing programs for computers or other electronic devices. A **software engineer**, or programmer, writes **software** (or changes existing **software**) and compiles **software** using methods that make it better quality. There are different software testing methods to test the functionality of software. This is article describe the comparative study of traditional software testing and Modern software testing. Traditional Software testing has suffers some issues as Lack of reusability, Lack of standardized component interface between components, Lack of Customization, Lack of Component Interoperability: In Today's Modern software testing include the concept of Grass root level testing which cleans and delivers the complex errors . Thus the traditional and modern ways of software testing have been explained.

Traditional Software Testing

We all know the SDLC where the testing phase comes at the end. The old traditional way of software testing normally comes after the build and execution stage.

- Requirement
- Design
- Code and Build
- Testing
- Maintenance

This is the great problem with the traditional approach where the testing phase occurs at the last where we find the bug at the final stage that becomes very expensive and time consuming. If we could have found them earlier then this would save everything. The bug determined at the maintenance phase is N times more expensive than finding it earlier. Only so the modern way of software testing has emerged.

Modern Software Testing

This is mainly introduced with the consequences of traditional software testing.

- Requirement: Testing
- Design: Testing
- Code and Build: Testing
- Test: Testing
- Maintenance: Testing

Here comes the earlier testing where a testing process starts happening from the beginning. If there are any flaws in the requirements then we can easily determine that at the earlier stage and cut it off. The developers understand the client's requirements clearly, we can test it out.

During the design phase we can verify with the design documents whether this satisfies the client's requirement as well covered all scenarios. We are also able to suggest ideas to the architecture designed.

During the third phase we can create a set of functional test data and even unit testing with what has been built. And finally in the test phase we can test as with all the scenarios we have noted from the beginning that will be very easy to test.

Maintenance is easy since we will understand the application end to end since we have travelled through all the phases. Testing in maintenance is very easy.

Traditional Software Testing Models are RUP, V-model, Waterfall Model, CMM

Rational Unified Process (RUP)

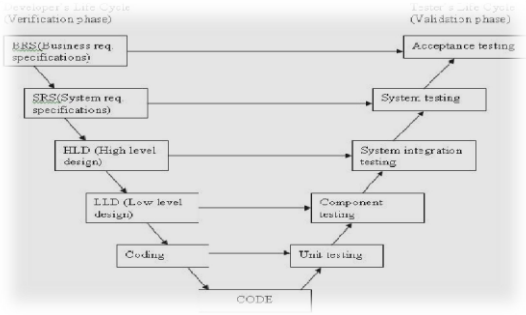
The RUP methodology is also similar to the spiral model, in the sense that the entire testing procedure is broken up into multiple cycles or processes. Each cycle consists of four phases - inception, elaboration, construction, and transition. At the end of each cycle, the product/output is reviewed, and a further cycle (made up of the same four phases) follows if necessary. Today, you will find certain organizations and companies adopting a slightly modified version of the RUP, which goes by the name Enterprise Unified Process (EUP).

With applications of information technology growing with every passing day, the importance of proper software testing has grown manifold. Many firms have dedicated teams for this purpose, and the scope for software testers is at par with that of developers.

V- Model:-

V- model means Verification and Validation model. Just like the waterfall model, the V-Shaped life cycle is a sequential path of execution of processes. Each phase must be completed before the next phase begins. Testing of the product is planned in parallel with a corresponding phase of development.

Diagram of V-model:



The various phases of the V-model are as follows:

Requirements like BRS and SRS begin the life cycle model just like the waterfall model. But, in this model before development is started, a system test plan is created. The test plan focuses on meeting the functionality specified in the requirements gathering.

The high-level design (HLD) phase focuses on system architecture and design. It provide overview of solution, platform, system, product and service/process. An integration test plan is created in this phase as well in order to test the pieces of the software systems ability to work together.

The low-level design (LLD) phase is where the actual software components are designed. It defines the actual logic for each and every component of the system. Class diagram with all the methods and relation between classes comes under LLD. Component tests are created in this phase as well.

The implementation phase is, again, where all coding takes place. Once coding is complete, the path of execution continues up the right side of the V where the test plans developed earlier are now put to use.

Coding: This is at the bottom of the V-Shape model. Module design is converted into code by developers.

Advantages of V-model:

- Simple and easy to use.
- Testing activities like planning, test designing happens well before coding. This saves a lot of time. Hence higher chance of success over the waterfall model.
- Proactive defect tracking – that is defects are found at early stage.
- Avoids the downward flow of the defects.
- Works well for small projects where requirements are easily understood.

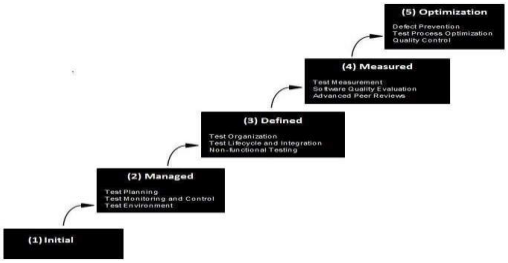
Disadvantages of V-model:

- Very rigid and least flexible.
- Software is developed during the implementation phase, so no early prototypes of the software are produced.
- If any changes happen in midway, then the test documents along with requirement documents has to be updated.

Capability Maturity Model (CMM)

The Capability Maturity Model (CMM) specifies an increasing series of levels of a software development organization. The higher the level, the better the software development process, hence reaching each level is an expensive and time-consuming process.

Levels of CMM



- **Level One :Initial** - The software process is characterized as inconsistent, and occasionally even chaotic. Defined processes and standard practices that exist are abandoned during a crisis. Success of the organization majorly depends on an individual effort, talent, and heroics. The heroes eventually move on to other organizations taking their wealth of knowledge or lessons learnt with them.
- **Level Two: Repeatable** - This level of Software Development Organization has a basic and consistent project management processes to track cost, schedule, and functionality. The process is in place to repeat the earlier successes on projects with similar applications. Program management is a key characteristic of a level two organization.
- **Level Three: Defined** - The software process for both management and engineering activities are documented, standardized, and integrated into a standard software process for the entire organization and all projects across the organization use an approved, tailored version of the organization's standard software process for developing,testing and maintaining the application.
- **Level Four: Managed** - Management can effectively control the software development effort using precise measurements. At this level, organization set a quantitative quality goal for both software process and software maintenance. At this maturity level, the performance of processes is controlled using statistical and other quantitative techniques, and is quantitatively predictable.
- **Level Five: Optimizing** - The Key characteristic of this level is focusing on continually improving process performance through both incremental and innovative technological improvements. At this level, changes to the process are to improve the process performance and at the same time maintaining statistical probability to achieve the established quantitative process-improvement objectives.

Waterfall model:

The Waterfall Model was first Process Model to be introduced. It is also referred to as a **linear-sequential life cycle model**. It is very simple to understand and use. In a waterfall model, each phase must be completed fully before the next phase can begin. This type of model is basically used for the for the project which is small and there are no uncertain requirements. At the end of each phase, a review takes place to determine if the project is on the right path and whether or not to continue or discard the project. In this model the testing starts only after the development is complete. In **waterfall model phases** do not overlap.

Advantages of waterfall model:

- This model is simple and easy to understand and use.
- It is easy to manage due to the rigidity of the model – each phase has specific deliverables and a review process.
- In this model phases are processed and completed one at a time. Phases do not overlap.
- Waterfall model works well for smaller projects where requirements are very well understood.

Disadvantages of waterfall model:

- Once an application is in the testing stage, it is very difficult to go back and change something that was not well-thought out in the concept stage.
- No working software is produced until late during the life cycle.
- High amounts of risk and uncertainty.
- Not a good model for complex and object-oriented projects.
- Poor model for long and ongoing projects.
- Not suitable for the projects where requirements are at a moderate to high risk of changing.

Modern software Testing

There are different types of techniques and methodologies involved in this testing.

Testing Methodology

The commonly used testing methodologies are unit testing, integration testing, acceptance testing, and system testing. A software is subjected to these tests in a particular order.

Unit Testing –

Unit testing is a software development process in which the smallest testable parts of an application, called units, are individually and independently scrutinized for proper operation. Unit testing is often automated but it can also be done manually. This testing mode is a component of Extreme Programming (XP), a pragmatic method of software development that takes a meticulous approach to building a product by means of continual testing and revision.

Unit testing must be done with an awareness that it may not be possible to test a unit for every input scenario that will occur when the program is run in a real-world environment.

Integration Testing - Individual modules that are already subjected to unit testing are integrated with one another, and are tested for faults. Such a type of testing highlights interfacing errors. A 'top-down' approach of integration testing follows the architectural structure of the system. Another approach taken is the 'bottom-up' approach, which is conducted from the bottom of the control flow.

System Testing - In this testing, the entire system is tested for errors and bugs. This test is carried out by interfacing hardware and software components of the entire system, and then testing it. This testing is listed under the black-box testing method, where the software is checked for user-expected working conditions.

Acceptance Testing - This is the last test that is conducted before the software is handed over to the client. It is carried out to ensure that the software that has been developed meets all customer requirements. There are two types of acceptance testing - one that is carried out by the members of the development team, known as internal acceptance testing (Alpha testing), and the other that is carried out by the customer, known as external acceptance testing. If the testing is carried by the intended customers, it is termed as customer acceptance testing. In case the test is performed by the end users of the software, it is known as user acceptance testing (Beta testing).

The Basic Ones There are a few basic testing methods that form a part of the software testing regime. These tests are generally considered to be self-sufficient in finding out errors and bugs in the entire system.

Black-box Testing - Black-box testing is carried out without any knowledge of the internal working of the system. The tester will stimulate the software to user environment by providing different inputs and testing the generated outputs. This test is also known as closed-box testing or functional testing.

White-box Testing - White-box testing, unlike the black-box one, takes into account the internal functioning and logic of the code. To carry out this test, the tester should have knowledge of the code, so as to find out the exact part of the code that is having errors. This test is also known as open-box testing or glass testing.

Gray-box Testing - The testing where part knowledge of the code is necessary to carry out the test is called gray-box testing. This testing is done by referring to system documents and data flow diagrams. The testing is conducted by the end users, or users who pose as end users.

Non-Functional Tests

Security Testing - An application's security is one of the main concerns of the developer. Security testing tests the software for confidentiality, integrity, authentication, availability, and non-repudiation. Individual tests are conducted to prevent any unauthorized access to the software code.

Stress Testing - Software stress testing is a method where the software is subjected to conditions that are beyond the software's normal working conditions. Once the break-point is reached, the results obtained are tested. This test determines the stability of the entire system.

Compatibility Testing - The software is tested for its compatibility with an external interface, like operating systems, hardware platforms, web browsers, etc. The non-functional compatibility test checks whether the

product is built to suit any software platform.

Efficiency Testing - As the name suggests, this testing technique checks the amount of code or resources that are used by the software while performing a single operation. It is tested in terms of number of test cases that are executed in a given time frame.

Usability Testing - This testing looks at the usability aspect of the software. The ease with which a user can access the product forms the main testing point. Usability testing looks at five aspects of testing, - learn ability, efficiency, satisfaction, memorability, and errors.

In the above testing methods there are all types of test cases may be created. As per the survey of software development process general software developers are using following process models. All these models are more supportive to apply modern tests. Here both customer and developer reaches to WIN-WIN situation .

Tests in Software Development Processes

Agile Model - This methodology follows neither a purely sequential approach nor a purely iterative approach. It is a selective mix of both approaches, in addition to quite a few and new developmental methods. Fast and incremental development is one of the key principles of this methodology. The focus is on obtaining quick, practical, and visible outputs, rather than merely following the theoretical processes. Continuous customer interaction and participation is an integral part of the entire development process.

Rapid Application Development (RAD) - The name says it all. In this case, the methodology adopts a rapid developmental approach, by using the principle of component-based construction. After understanding the different requirements of the given project, a rapid prototype is prepared, and is then compared with the expected set of output conditions and standards. Necessary changes and modifications are made following joint discussions with the customer or development team (in the context of software testing). Though this approach does have its share of advantages, it can be unsuitable if the project is large, complex, and happens to be extremely dynamic in nature, wherein requirements change constantly.

Spiral Model - As the name implies, the spiral model follows an approach in which there are a number of cycles (or spirals) of all the sequential steps of the waterfall model. Once the initial cycle gets completed, a thorough analysis and review of the achieved product or output is performed. If it is not as per the specified requirements or expected standards, a second cycle follows, and so on. This methodology follows an iterative approach, and is generally suited for large projects, having complex and constantly changing requirements.

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ROLE OF DIGITAL ADVERTISING IN INDIA

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Abstract:-

In India the web is now established as a mass market media channel for the wealthy. The Indian online advertising market, including classifieds, will grow by a huge 54% in the next 12 months, according to new data. The research, from the Internet and Mobile Association of India (IAMAI) and IMRB, found that as of March 2012, the industry was worth Rs 2,851 crores in annual revenue. The trade body went on to forecast that this will further grow to Rs 4,391 crores by March 2013. The main changes in internet access have happened in the last five years and the internet has become an essential part of office life, and plays a key role in many homes. This paper deals withconsept of digital advertisings tools and channels ,types of digital advertising , advantages and disadvantages and why digital advertising is important.

Keywords:-**Digital advertising,**Infographics ,Reddit Ads, AdWords Ads, **Pay Per Click.**

Introduction:-

Digital marketing is an umbrella term for the targeted, measurable, and interactive **marketing** of products or services using **digital** technologies to reach and convert leads into customers.The key objective is to promote brands, build preference and increase sales through various**digital marketing** techniques.

Digital advertising, also called **online marketing, Online advertising** or **Internet advertising**, is a form of marketing and advertising which uses the Internet to deliver promotional marketing messages to consumers.It includes email marketing, search engine marketing (SEM), social media marketing, many types of display advertising (including web banner advertising), and mobile advertising. Like other advertising media, online advertising frequently involves both a publisher, who integrates advertisements into its online content, and an advertiser, who provides the advertisements to be displayed on the publisher's content

The term online advertising is simply a term that relates to advertising online, or advertising over the Internet. In practice online advertising is about getting your website in front of the people who are interested in your product or service. All you have to do is find the best terms and phrases that people search for who would like to purchase exactly your goods and services. If you can do this then your online advertising will be successful, however, if you select the terms and phrases that do not relate to the goods you are selling then your keyword based online advertising efforts will likely fail. It really is as simple as that.

Review of Literature:-

Prof. Pashmeen Kaur Anand, IMPACT OF ONLINE ADVERTISING ON CONSUMERS, The extent and variety of online advertisement is growing dramatically, and play a major role in Indian advertising industry. In the present generation, advertisers are looking for major break to go beyond traditional offline advertisements as a result of

which the goal of advertisers is to make their ads more involving.

2.D. K. Gangeshwer,E-Commerce or Internet Marketing: A Business Review from Indian Context,paper deals the conceptual knowledge of search engine marketing (SEM) or e-commerce, literature review, current and future aspects of e-commerce in Indian context. This paper discussed about the top motivator factors of shopping online.

3. SaikatGuha&Bin Cheng, Paul Francis,Challenges in Measuring Online Advertising Systems, This paper takes a first principled look at measurement methodologies for ad networks. It proposes new metrics that are robust to the high levels of noise inherent in ad distribution, identifies measurement pitfalls and artifacts, and provides mitigation strategies. It also presents an analysis of how three different classes of advertising — search, contextual, and socialnetworks, use user profile information today.

Research Methodology:-

The data and information has been collected from secondary sources like research articles ,text book, website ,reports ,journals etc.

The Importance of Digital Marketing:-There's no denying it, the world is rapidly shifting from analogue to digital. People are consuming more and more digital content on a daily basis – on mobile phones, laptops, desktop computers at work, and more – and companies that have not yet recognised this in their marketing strategies need to adapt fast.

Why is digital marketing so important? Because it is not only a rapidly growing force in the current marketing playing field, it is set to be the future of marketing, and it seems likely that digital media will soon replace more traditional forms altogether.

While older generations will no doubt lament the demise of paper-based newspapers, books, communication methods and traditional TV and radio broadcasts, those who have grown up with the internet and mobile phones as a God-given right are already embracing the brave new world of digital consumption.

The facts are that digital methods of communication and marketing are faster, more versatile, practical and streamlined, so it is perhaps unsurprising that once the technology became available we began quickly moving into the digital age. The good news is that digital offers just as much potential to marketers as it does to consumers.

Digital marketing is infinitely more affordable than traditional offline marketing methods. An email or social media campaign, for example, can transmit a marketing message to consumers for the merest fraction of the cost of a TV ad or print campaign, and potentially reach a wider audience.

But one of the main benefits of conducting your marketing digitally is the ease with which results can be tracked and monitored. Rather than conducting expensive customer research, you can quickly view customer response rates and measure the success of your marketing campaign in real-time, enabling you to plan more effectively for the next one.

Advantages & Disadvantages:-

Advertising is the branch of marketing that deals with communicating to customers about products, brands, services and companies. The Internet, as a global communications medium, provides advertisers with unique and often cost-effective ways of reaching advertising audiences. As with all media, however, advertising on the Internet has unique advantages and disadvantages.

Advantages:-1. **Audience Targeting**:-When you advertise on the internet, there are several ways you can help reach your target audience faster and more effectively. Algorithms on sites like Google and Facebook can take a look at a potential customer's search history, then tailor the ads that they see to the last search made. This means that if you sell office furniture, and a customer has been browsing for this, your ad will show up on the feeds and websites that customer visits. Now you're reaching the right audience far more consistently and effectively than you would be by blanketing a neighborhood with direct mail flyers. This not only will get you more potential customers, it will also mean your advertising dollars are being spent with the biggest possibility of return.

2. **Local or National Advertising**:-The same algorithms that let you target your product directly to the people who may want to buy it, will also let you target your product to specific areas of the country. Emails, Facebook, and some local news sites will all make a note of your location, which will let you target your product to specific customers. For example, if you want to drum up business for a local company that doesn't have an online store, a welltargeted ad will direct only local people to your site. On the other hand, if you have a product that can be sold nationally, you can reach people anywhere, without having to worry about paying advertising costs in various markets.

3. **Interactive Marketing**:-The internet allows people to connect with one another all over the world, so it only stands to reason that it also lets you connect directly with your customer group. Never underestimate the power of good customer service as an advertising method. Solving a dispute on Twitter or leaving a comment on a blog post can give people a good feeling about your brand, which may make them more likely to connect with it on a regular basis.

4. **Controllable Expenses:-**Advertising is an expense that even big companies need to set aside resources for. One of the many advantages of advertising on the internet is the ability to secure fairly low-cost ads. There are numerous ways you can advertise on the web. Some methods cost you nothing but time, such as using social media to engage your audience, while others can be customized to allow you to pay for impressions or follow throughs.

5. **Varying Ad Types:-**Advertising on the internet is so multifaceted, that you'll have no trouble varying your ad campaign to find the one that works for you. In addition to social media advertising, and side-bar text ads on search pages and Facebook, you also have the option to advertise in other ways, including:-Banner ads on popular websites,Advertising on popular blogs,Having your product reviewed on popular blogs,Giveaways on Facebook, Twitter, and blogs.

6. **Informative Commercials**:-Just because it's the internet rather than television doesn't mean you need to discount the power of video. The difference is that by utilizing a platform like YouTube to do your advertising, you can create relevant, fun ads that can take on a life of their own. This can be appealing in an age where television commercials can be edited out of a show by using digital recording methods. Involving your fan and customer base in the advertising method through contests and giveaways can also help spread your word for a lot less money than it would cost you to have the same reach on TV.

7. **Innovative New Ideas:-**The internet and digital media are constantly changing, so while print and TV ads haven't changed much over the years, internet ads are going to continue to diversify. This means you can try a variety of methods to advertise your business, without over saturating your market. This is particularly helpful if you need to change your image, or your company has been around for a while and people have stopped "seeing" your ads.

Disadvantages:-Since many consumers spend time shopping online for everything from groceries and clothing to electronics and cleaning supplies, many businesses include online advertising in their marketing strategies. While the benefits of advertising online include the potential to reach a large market and the ability to measure results, online advertising also presents some disadvantages.

1. **Customers Ignore Ads:-**Consumers are so used to seeing advertising on television, hearing radio commercials and flipping through advertisements in magazines, they've developed an aversion to all forms of advertising. This is also the case with online advertising, where consumers can avoid clicking banner advertisements, bypass ads in online videos they watch and close pop-up advertisements as soon as they come up on their screens. Customers are in control of which advertising messages they want to click and respond to.

2. **Viewing Problems:-**Website downtime, lags in website or video loading and browser complications can reduce the number of times consumers see online advertisements and how well they see them. When technical issues occur, companies lose the opportunity to broadcast advertisements for their products and services and may lose potential sales. Viewing problems can occur because of problems with a website or if a consumer is using a smart phone or other mobile device to view a website, has a slow connection speed or does not have the correct applications and programs installed on his computers for proper viewing.

3. **Expensive Ad Prices**:-Pricing for advertising online can range from inexpensive -- $20-a-month placements on local parenting blogs -- to thousands of dollars on popular sites such as the New York Times. The cost for banner, text and video ads vary depending on the amount of traffic and the type of readership a website or blog receives. Online advertising through pay-per-click campaigns and social media sites can also wreak havoc on a company's marketing budget, potentially yielding little to no return on investment.

4. **Consumers Get Distracted**:-When customers visit a website, they typically have a goal in mind, whether it's to catch up on the latest celebrity gossip, read the news, chat with friends, download music or shop for a specific item. Websites present customers with various options that can easily distract them and pull their attention from your online advertisements.

5. **Too Many Options**:-The Internet offers a wide range of websites on which companies can place advertisements. This can be overwhelming, especially for small business owners. With so many options, it's difficult to narrow down the choices to the websites that will attract the most potential customers and sales. Once a company selects a website, it is then presented with a variety of ways it can advertise its products or services on the site, such as through banner advertisements, video marketing or by sponsoring a post. Companies have to determine which type of advertisement yields the best response from their target markets

Digital Marketing Tools:-In today's wired world, it's impossible to overstate the importance of digital marketing to the success of your business. Strong, successful companies are carving out virtual space to respond to customers, to create connections with industry leaders, and to tell the story of their brand in a creative, genuine, and visually-engaging way. Digital marketing offers the invaluable opportunity to assess which elements of your strategy are working - or bombing - in real time. Simple new digital marketing techniques give every company - be it a four person startup or a multinational corporation - the chance to make an impact online. With that, here are some marketing tools and techniques to help to get started.

1. Infographics - Use when you want to explain something with visual aids. Label a map instead of taking 500 words to describe where all the countries are. Infographics are great to explain your competitive advantages, inform about what you do, how you do it and the benefit of your product/service. Plus it's easy to share as a sponsored ad/post/tweet in LinkedIn, Facebook or Twitter, good example is an infographic

2. Bing Search - Lots of people use Internet Explorer and Bing is the default search tool. Several verticals like financial services do well on the Bing Search network. The ads are very cheap (fewer businesses advertise). That means greater ROI if your campaign goals are clear. Internet Explorer is still widely used on most office and family machines. Bing ads also appear in Yahoo! Search. Use Bing Search if you promote/sell financial services or are looking for cheap traffic.

3. Streaming Services (Hulu, Pandora) - Both are meaningful substitutes to traditional TV and radio. Hulu and Pandora guarantee impressions in specific demographics, geography and interests. You can't skip their ads like you can on live TV, radio or YouTube. If you are already on local TV and radio then allocating a part of that budget for far more targeted, measurable and guaranteed impressions makes sense.

4. Google Search - Advertise on search results relevant to your product or service. Powerful and productive if you know what search terms (keywords) you want to focus on. A waste of money if you don't since Google Search ads are competitive. Instead of bidding on competitive keywords try focusing on specific phrases or geographies and bid aggressively. This won't show your ad often, but will show to the most meaningful searchers when it does. Resulting in more clicks. The riches are in the niches.

6. LinkedIn Ads and Social Selling - LinkedIn is the king of B2B sales. Use a Premium LinkedIn account and these tactics to reach decision makers at any company. Communicate with niche businesses by targeting that group with advertisements and relevant information. Use this tool if you are in the B2B realm, need to target specific industry verticals and communicate offers directly to decision makers.

7. Marketing Automation - These apps help develop a marketing strategy based in online tools. Setup a process map and these tools automate follow-ups and lead nurturing. Automatically email contacts updates, follow-up based on their responses and stay front of mind. You need to get contacts and email addresses before you start. Leverage the on-boarding support most marketing automation companies give you at signup. Evaluate the tool's value by getting the provider to immediately setup a campaign.

8. Facebook - Use Facebook to share interesting content to current/potential customers. Say you sell insurance. Share tips on how to negotiate deals and any current

offers. Facebook's paid options allow you to push your content to viewers outside of your influence. This helps expand your reach and generate interest. Facebook is ideal to build your contact database for marketing automation. Use free contests and promote giveaways to get names of people interested in your offer. The insurance agent can offer a free consultation to people that like their page. They now have a new lead and can feed that data into their marketing automation software.

9.Twitter Ads - Twitter's paid options are the new kid on the block. They represent another way for content to be shared. Twitter enables you to pay for retweets/shares of your content which will help people see your good content. You can also use Twitter to generate real time business like Papa Johns does in Dallas. They have keywords in Twitter tracked related to people in Dallas that are hungry for pizza, wings etc. Then, they respond to those tweets with a coupon code for 50 percent off their order. Naturally, those people may not reply, but since these are open Tweets anyone seeing the conversation can use the promo code.

10.ECommerce - Use eCommerce principles in all digital properties. Offer something online that people can say yes to - an appointment, consultation, seminar, webinar, ebook download etc even if you don't sell anything online. Setup an eCommerce website to move products online if you have products to sell. There is a lot of free and paid shopping cart software available (Shopify, Volusion) depending on your budget. Any will suffice. IntegrateGoogle Product Listing Ads to boost online sales from your site. Submit your site and products to Google and set a daily advertising budget. The product's picture, price and a link to your website appear in Google search results and on Google shopping if someone Google's a product you sell.

11.Google Display and YouTube Ads - Use these platforms to generate awareness for your product/service. The engagement of these ads is low -- 1 out 1000 people on average click on them. Getting Google Display and YouTube Ads to 'convert' into leads is difficult, but possible with compelling communication. You need to exaggerate what you want ad viewers to do -- sign up for your hopscotch contest, test drive a Vespa, download your Indian restaurant finder app etc. Use some form of targeting -- geography, interest or demographic to ensure the right people see your ad. You don't want your mixed martial arts ads showing on home and garden websites.

12.Remarketing Tools - Ever been car-shopping online and notice the next time you're on YouTube you see a commercial for cars? That's remarketing and it's done often (particularly in automotive digital marketing). Facebook, Google Display/YouTube Ads and Twitter allow you to market to people that have already visited your website or websites like it. Those platforms then show your creative or ads to those people when they come back to their sites. Use remarketing tactics if your product or service has a long buying cycle and it takes substantial effort to nurture leads. Large ticket items - cars, airline tickets, software etc; should leverage remarketing tools.

13. App Development - Build web and mobile apps for specific purposes only. These are great if you need to solve a particular business pain. If your business uses a system that is customized for you then you should extend its usage to an app (so that the database loads/renders quickly). For everything else responsive/mobile friendly pages will suffice.

14. Analytics - Lots of tools are available to analyze your digital marketing performance. Never start a campaign without mechanisms to track how many times the campaign results in new business opportunities. Most advertising mediums give you the ability to track conversions. Definitely take this further and see how those conversions (ie; ebook downloads) translate into sales meetings, closed deals and deal size to see if the campaign generated a return. Also use this data to refine your next campaign.

Different types of online advertising:-

Online ads have become a daily part of internet life. For new marketers, it can be confusing getting a grasp on the scope and variety of online ads available. We've compiled a thorough list to help catagorize and explain each form of online ads present on the web.

1. Google Search Ads:-Google search ads are online ads that appear alongside the search engine result page when users search a keyword query on Google. These ads are PPC, or pay-per-click ads, in which advertisers pay for each ad click. Google's PPC search ads are managed by Google's AdWords advertising platform, which allows advertisers to bid on keywords, craft ad text, set budgets, and more. To advertise on Google AdWords, you'll need to create a Google AdWords Account.

2.AdWords Ads:-AdWords ads are online advertisements created within Google's AdWords advertising platform, identical to Google search ads.

3.PPC Ads:-PPC ads, AKA pay-per-click ads, are advertisements in which the cost of advertising is determined by the number of clicks an ad receives. AdWords and Bing Ads both use a pay-per-click model.

4.Bing Ads:-Bing ads are similar to Google ads in that they work on a pay-per-click basis. Advertisers can manage their ads through the Bing Ads service, formerly known as Microsoft adCenter. You can get started with creating Bing Ads here once you have a Bing Ads Account.

6. Facebook Ads:-Facebook ads exist in many different forms, each offering unique pros and cons for advertisers looking to market on Facebook.Marketplace ads appear in the side columns of the Facebook website with a headline, copy, and an image.Promoted Posts are Facebook ads that let advertisers pay a flat rate to promote a single post on their Facebook business page. The promoted post reaches more fans and friends of fans than a regular post.Sponsored Stories show a user's interaction with an advertisers page or product to the user's friends and larger network. Sponsored Stories are also one form of Facebook ads that can appear in a user's newsfeed. FBX, or Facebook Exchange, are Facebook ads that implement remarketing. These ads take into account a user's web surfing history data, letting an

advertiser show an ad for a product a user was looking at earlier on the advertiser's website.

7. **Twitter Ads**:-Twitter ads refer to the paid boosts that brands on Twitter can use to extend the reach of their tweets, promote a chosen hashtag, or gain more followers.

Promoted Tweets lets advertisers' tweets reach more people's home feeds, and offer a healthy batch of targeting options. Twitter ads also include Promoted Accounts, letting advertisers show up more often in Twitter's Who to Follow recommendation feature. Promoted Trends gets your custom hashtag in the Trends bar, earning additional attention and notice from the Twitterverse. If you're looking to advertise on Twitter, be sure to measure social media roi.

8. **Tumblr Ads**:-Tumblr ads come in a few different formats – Tumblr Radar and Spotlight allow for "sponsors," aka advertisers, to be featured in areas where Tumblr highlights unique content and accounts. With 54 million users posting 70 million posts per day that get over half a billion page views each day, the Tumblr community is an active and lively one.

Tumblr also offers sponsored web post ads, which are pieces of Tumblr content crafted by advertisers that appear in users' main dashboard feed, integrated with normal, user-generated content. These Tumblr ads have small dollar signs to mark them as advertising content. In order to post your online ads onto the Tumblr platform, you'll have to become a Tumblr sponsor.

9. **Banner Ads**:-Banner ads are image-based advertisements that often appear in the side, top, and bottom sections of websites. They can range widely in terms of size, design, and function. You'll typically find them in all sorts of news-based websites, blogs, and specialized web communities. Many websites brokerage their ad space with ad exchanges such as Google's Display Network, or you can buy the ad space in the same manner you'd buy an ad on a newspaper.

10. **Google Display Ads**:-Google Display Ads are a form of contextual banner ads used in the Google Display Network, Google's collection of network sites that agree to host display ads. The Google Display Network also includes Google properties such as YouTube, Gmail, Blogger, etc. Google Display ads can be text, images, and even video based. To serve online ads on the Google Display Network, you need to start by using Google AdWords.

11. **Retargeting Ads:-**Retargeting ads entice a user to visit a site by taking into account the user's past web history. When a user visits a website, a retargetting campaign cookie is attached to the visitor, taking note of what pages and products the user visits while browsing the site.

Once the user leaves the advertiser's site and begins journeying to other websites, targetting ads can be made to appear in certain ad spaces, displaying ads that specifically call out what the user was looking at on the advertiser's site earlier.

Retargeting ads tend to perform drastically better than regular banner ads, with higher click-through rates and conversions. If you're already using Google AdWords, we have a step-by-step tutorial on creating your own Google AdWords remarketing ad.

12. **Flash Ads**:-Flash ads are banner ads that use Flash design, often featuring interactive elements to entice users. While flash is still used subtly in certain display ads, the playful, interactive, and somewhat hokey flash ads that were common in the millennial years are no longer considered a popular form of banner ad.

13. **Reddit Ads**:-Reddit ads are advertisements featuring a headline title, destination URL, and an optional photo. Reddit ads work on a bid-based system, in which advertisers can set campaign budgets and choose how long they want their campaign to run for. Reddit ads allow for some unique targeting options and are often fairly cheap, with low cost-per-impressions.Reddit ads unique are the comments and voting – users can upvote or downvote your ad, giving advertisers an easy read on if users like or dislike an ad. Each ad, like all other posts on Reddit, has a comment section. This can be useful for advertisers because it allows users to provide direct feedback that goes straight to the advertiser.

The best Reddit ads take their audience into consideration – Reddit is predominantly frequented by a young, tech-savvy audience, mostly males. On a whole, the Reddit community is very wary of blatant marketing, so posting a Reddit advertisement can be a bit like playing with fire. If done properly, Reddit ads can bring a lot of attention for low cost. You can advertise on Reddit through their website.

14. **Mobile Ads**:-Mobile ads are ads that appear on smartphones, tablets, and any other mobile device. Many social media platforms, websites, and apps offer their own unique mobile ad options. If you advertise on Google AdWords, you can advertise to mobile devices by taking advantage of Enhanced Campaigns.

16. **In-Game Ads**:-In-Game ads are advertisements that exist within computer or video games. One of the most common examples of in-game advertising is billboards appearing in sport games. In-game ads also might appear as brand-name products like guns, cars, or clothing that exist as gaming status symbols.

17. **AdMob Ads**:-AdMob Ads are advertisements that appear within mobile apps. AdMob itself is Google's mobile advertising platform, enabling app creators to make revenue off of free games by offering ad space, and allowing advertisers to get ad spots in the most popular mobile games and apps.

AdMob ads can appear as mobile-optimized text ads, image-based banner ads, or even interstitials ads, which use rich HTML5.

18. **Email Ads**:-Email ads are advertisements sent to users via web mail. Email ads can be used to notify subscribers of certain promotions, discounts, or new features, among other uses.

Most email advertisements feature a large image with minimal text; users will not waste large amounts of time reading email ads, so it's important to make your message as clear and concise as possible. Email ads also rely on a

compelling subject line to ensure that a user will open the email.

Email ads have specific rules – the CAN-SPAM Act of 2003, created to prevent email spam for users, authorizes a $16,000 penalty per violation for spamming individuals, which is why many email marketers in the US use an email service or software to make sure they are in compliance with the Act.

19. Gmail Ads:-Gmail ads in Google's online email service are contextual ads that are generated by an automated process that scans a user's emails to discover interests and topics that are relevant to the user. If a user is writing and receiving many emails about air conditioners, that user may see ads about air conditions appear within the Gmail client.While privacy advocates are wary of such practices, Gmail advertising is fully automated and Google asserts that no humans read user emails, only robots.

20. Video Ads:-Video ads are growing in popularity as better internet speed performance and online advancements make it fast and easy to watch videos on the web. The most successful video ads avoid blatant advertising, opting instead for educational, how-to video content that naturally appeals to users, with some (if any) product suggestions discreetly integrated. Humorous video ads also perform well, with some funnyvideo ad network campaigns finding enormous success, especially when an interactive element is added.

21. YouTube Ads:-YouTube ads are ads that appear on Google's video-sharing site. Since Google obtained ownership of YouTube, advertising on YouTube has become nearly as easy and customizable as advertising on AdWords.

YouTube ads provide a number of targeting options and several different ad formats. YouTube advertisements can appear as banner ads, in-video overlay ads, in-stream video ads (which are video ads that appear before or during another YouTube video), as well as several other setups.

22. Pinterest Ads:-Pinterest ads are simply pieces of content pinned by brands and advertisers. When marketing a specific product, marketers create Pinterest advertisements by adding a dollar sign before the price amount to the description. This tells Pinterest that this item is for sale at that specific price. Pinterest marketers can then link the pinned item to the official product page to drive retail traffic.

Some marketers also implement their own form of Pinterest advertising by hosting contests on Pinterest. While this doesn't result in direct sales, contests are a great way to drum up user attention, engagement, and boost site traffic, depending on how the contest is organized. Take note that while you do not have to pay Pinterest to create ads, you will have to spend significant time and effort to create beautiful online ads to attract lurking buyers on Pinterest. Pinterest ads work best on tangible B2C products.

23. Instagram Ads :-There are at the moment no "official" Instagram ads – just brands being creative and producing Instagram pics that can be shared right alongside user-crafted content.

23. Vine Ads :-Vine ads operate the same way Instagram ads do – there are no official Vine ads at the moment, but many brands and advertisers produceVine video ads that serve as natural content-based advertising, integrating with regular used-crafted content.

Good Vine ads take a clue from other successful Vines by creating 6-second content that stands out, often implementing stop-motion techniques.

Digital Marketing Channels**:-**There are a wide variety of digital marketing channels that are common today in 2010 .Broadly speaking, there are six main categories that can be used:

1. Affiliate Marketing
2. Display Advertising
3. Email marketing
4. Search Marketing
5. Social Media
6. Social Networking

If we were to drill in to each one there would be hundreds if not thousands of different "micro channels." In a area that is so vast and deep it is important to understand the basics before you dive in to the deep end

1. **Affiliate Marketing**:-A revenue sharing venture between a website owner & an online merchant

Website owner places advertisements on their sites to either help sell the merchant's products or to send potential customers to the merchant's website in exchange for a share of the profits.

There are three main ways an affiliate can earn money:

i.Pay Per Click (PPC):-Every time a potential customer leaves the affiliate website by "clicking" on the link leading to the merchant's website, a certain amount of money is deposited in the affiliate's account.

ii.Pay Per Sale:-Every time a sale is made as a result of advertising on the affiliate's website, a percentage, or commission, is deposited into the affiliate's account.

iii.Pay Per Lead:-Every time a potential client registers at the merchant's website as a result of the advertisement on the affiliate's account, a previously determined amount is deposited into the affiliate's account

2. **Display Advertising**:-A graphical advertisement that appears next to content on websites, instant messaging (IM) applications, emails & other digital format.The graphical advertisements are referred to as banners and can include:-Text,Images,Audio,AnimationsVideo, Interactive content.Think of display advertising as similar to advertising in printed media like a magazine. However, you can also target according to:-Demographic,Geographic location (to an extent),Behavioural targeting.

3. **Email Marketing**:-Email marketing is the advertisement of a product, service, or brand through electronic mail.Email marketing can be used to improve the relationship between a business and its customers or to gain new customers.

4. **Search Marketing:-**Search engine marketing is the use of search engines to drive relevant traffic to your site.

There are currently three main types of search marketing:-

- Pay Per Click (PPC)
- Natural Search leading to Search Engine Optimisation (SEO)
- Contextual Search

You can use search engines on two main formats: On a computer – A laptop, a desktop computer, net book or a gaming device like an xBox or Playstation On a mobile device – Mobile phones, multiple gaming devices and other portable gadgets.

5. **Social Media:-**According to Wikipedia, social media is "an umbrella term that defines the various activities that integrate technology, social interaction, and the construction of words, pictures, videos, and audio."It's also a way to describe the conversations/interactions that people are having online. Social media is best understood as a group of online media, which share most or all of the characteristics:- Participation,Openness,Conversation,Community,Connectedness.

The basic forms of online social media are-Social networks-MySpace, Facebook, Bebo, LinkedIn, Ning.Blogs-These are online journals: personal or corporate.Wikis-

"Open" encyclopaedia where users can add/edit content – Wikipedia.Microblogging-

Miniature blogs giving small updates – Twitter.Forums-Area for online discussion

Came about before the take off of social media.Content communities-Sites that share particular types of content – Flickr, del.icio.us, YouTube.Podcasts-Audio & video files available by subscription (e.g. iTunes, RSS) to download or stream online

6. **Social Networking:-**In the years from 2002 to 2010, Social Networking has been associated as a modern term that has brought about the lift in Social Media.Social networking is the collecting of individuals into specific groups. It is part of our lives from the moment we are born, therefore we are all experts in it.Social networking in the online/digital world of the 21st century is known as Social Media.

Recommendation:-In addition to advertising, the Web offers high-impact opportunities to leverage word-of-mouth marketing and generate buzz about your company. Product review websites and social media outlets, among other web communities, allow customers to praise or condemn your company based on their personal experiences. Thus, the Internet ties the customer service component directly to advertising.The Internet is likely to continue to play a large role in individuals' lives in the foreseeable future. Whether personal computers remain the dominant method of accessing the Internet, some form of global communication network will likely be a reality for many generations, creating effective avenues of sending advertising messages to consumers in the community and around the world.

Conclusion:-

Online advertising is an essential element of anyone's marketing mix. It provides you with numerous benefits, including lower costs, robust targeting, and valuable customer insights, that are not available through other advertising mediums. Your customers, competitors, and prospects are online - give them the attention they deserve, while getting more out of your budget.No doubt, online advertising offers potential benefits like target ability, tracking, deliverability, flexibility, interactivity, so it is in itsdeveloping phase in India. The fact in favour of India is that most of thewestern developed economies have become saturated with negligible

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APPLYING VARIOUS CLUSTERING METHODS FOR ANALYZING LARGE DATA SET: A SURVEY

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Abstract:

Now a day we are in the age of information age. Today's automation system, social networking sites, scientific applications, smart devices etc. produces tremendous amount of data. The problems associated with this big data are their storage, management retrieval and analysis.

Clustering is one of the major techniques to analyze large volume of data and helps in making quick decision. Clustering is widely used in variety of applications like text mining and information retrieval, spatial database application, scientific data exploration, market research, pattern recognition, biology, medicine, data analysis, image processing, insurance, surveillance, fraud detection and scientific discovery to extract useful information. This paper contains an overview of the various clustering methods with their classification, general working and also provides a comparison (from a theoretical perspective) among them. The paper presents the characteristics, advantages and drawbacks of the various clustering methods.

I. INTRODUCTION

Today large volumes of data sets are produced by the market researchers, social networking sites and different machines (cloud storage, meters, CC TV cameras etc). The problems associated with this voluminous amount of structured, semi-structured and unstructured data or big data are their storage, management, retrieval and analysis.

Data mining is the process of extracting hidden knowledge, useful trends and pattern from large dataset and transforms it into an understandable structure for future use. There are various data mining techniques like clustering, classification, prediction, outlier analysis and association rule mining. Also there is some data mining software for analyzing data. From many different angle and dimension data mining software analyze the data and the categories it also summarize the identified relationship. Among many fields from large relational databases, data mining finds correlation or patterns.

This paper is mainly related to the problem of analyzing such big data in a tolerable time. One way to overcome this problem is to have big data clustered in a compact format that will still be an informative version of the entire data. Cluster analysis or clustering plays an important role in data mining. Data clustering is an unsupervised technique, making a group of abstract objects into classes of similar objects. Cluster is a group of objects that belongs to same class. A clustering algorithm partitions a data set into several groups such that similar objects are grouped in one cluster and dissimilar objects are groped in another cluster. These algorithms are used extensively not only to organize and categorize data, but also for data compression and model construction. A good clustering algorithm is able to produce high quality clusters with high intra-class similarity and low inter-class similarity.

Thus clustering is a division of data into groups of similar objects. Clustering methods can be classified into following categories:

A. Partitioning Method
B. Hierarchical Method
C. Density-based Method
D. Grid-based Method
E. Model-based Method

All the clustering algorithms are compared according to dataset size, type of dataset means type of attribute (it can be numeric, categorical, binary, mixed etc.), shape of clusters, time and space complexity and outlier handling (outliners are the points do not naturally fall into any suitable or true cluster. Hence these solitary clusters should be properly handled or removed.)

II. CLUSTERING METHODS

A) Partitioning method

Partitioning method divides the data objects into a number of non-overlapping partitions called clusters. This Method partition the data objects such as a dissimilarity function based on distance so that objects within a cluster are similar to one another and dissimilar to objects in other clusters.

Most partitioning methods are distance based. To construct number of partitions, a partitioning method create initial portioning and then uses an iterative relocation technique that attempts to improve the partitioning by moving object from one group to another. In this method achieving global optimality is computation prohibitive and require exhaustive enumeration of all the possible partitions.

Instead most applications adopt popular heuristic methods, such as greedy approaches like the k-means and the k-medoids algorithms, which progressively improve the clustering quality and approach a local optimum. These heuristic clustering methods work well for finding spherical shaped clusters in small to medium size databases. To find clusters with complex shapes and for very large data sets, partitioning based methods need to be extended. The clusters in this method should satisfy following requirements –

1. Each group contains at least one object
2. Each object must belong to exactly one group

There are many methods of partitioning clusters such as, K-mean, Bisecting K means Method, Medoids Method partitioning Around Medoids (PAM), Clustering Large Applications (CLARA) and the probabilistic clustering.

1. K-mean

K-mean clustering method partition n objects into the k clusters where each cluster's center is represented by mean value of the objects in the cluster which is called cluster head or centroid. In this method user choose the number of cluster. K-means algorithm iteratively allocates points to the cluster with the closest centroid. The 'closeness' is measured by cosine similarity, Euclidean distance, correlation etc.

This algorithm iteratively improves the within cluster variations for each cluster it computes the new mean using the objects assigned to the cluster in the previous iteration. All the objects are them reassigned using the updated means as the new cluster centers. The Iterations continue until the cluster formed in the current round are the same as those formed in the previous round.

Algorithm: k-means [2]

Input:

1. K: the number of clusters,
2. D: a data set containing n objects.

Output: A set of k clusters.

Method:

1. Arbitrarily chose k objects for D as the initial cluster centers;
2. Repeat
3. (re)assign each object to the cluster to which the object is the most similar,
   Based on the mean value of the objects in the cluster;
4. Update the cluster means, that is, calculate the mean value of the objects for
   Each cluster;
5. Until no change;

Advantages

1. It is easy to understand and implement.
2. It can handle large dataset efficiently.
3. For large number of variables k-means algorithm may be faster than hierarchical clustering when k is small.
4. It produce more dense cluster than the hierarchical method is specially when clusters are spherical.

Drawbacks

1. It is limited to numeric data.
2. It is not suitable for non-spherical cluster.
3. User has to provide predetermined value of k.
4. It is poor at handling noisy data and outliers.
5. It has empty cluster generation and random initial cluster center problem

2) K-medoids

The K-medoids method [2] is a representative object based technique instead of taking the mean value of the objects in a cluster as a reference point this algorithm pick actual objects to represent the clusters using one representative object per cluster. Each remaining object is assigned to the cluster of most similar representative object. This partitioning method s performed on the basis of principle of minimizing the sum of the dissimilarities between each object its corresponding representative object.

There are two types of k-medoids clustering[5] are the PAM (Partitioning Around Medoids) and CLARA (Clustering Large Applications)

Algorithm: k-medoids. PAM, a k-medoids algorithm for partitioning based on medoid or central objects.

Input:

1. K: the number of clusters,
2. D; a data set containing n objects.

Output: A set of k clusters

Method:

1. Arbitrarily choose k objects in D as the initial representative objects or seeds;
2. Repeat
3. Assign each remaining object to the cluster with the nearest representative object;
4. Randomly select a non-representative object, O_{random};
5. Compute the total cost, S, of swapping representative object O_j, with O_{random};
6. If S<0 then swap O_j, with O_{random} to form the new set of k representative objects;
7. Until no change;

B) Hierarchical Method

Hierarchical method builds clusters in hierarchical order organized in the form of hierarchical tree known as a dendrogram. The dendrogram explains the merges or splits made at each successive stage of analysis. In a dendrogram each object is represented b a leaf node. It shows the similarity level at which groupings change. A cluster is obtained by cutting the dendrogram at the

desired similarity level. This method can classify on the basis of how the hierarchical decomposition is formed. There are two methods [3],

1. Agglomerative Method
   An agglomerative method is called bottom-up approach. It starts with each object forming a separate cluster. It successively merges the groups that are close to one another, until all the data objects are in same cluster.
2. Divisive Method
   A divisive method follows top-down approach. It starts with all the objects fall into single cluster. It successively distributes into smaller clusters, until each object is in one cluster.

The hierarchical clustering algorithms are: BIRCH [7], CURE [8] and CHAMELEON [6].

BIRCH [7], Balance Iterative Reducing Clustering Using Hierarchies is one of the most promising directions for improving quality of clustering results. This algorithm is also called as hybrid clustering which integrate hierarchical clustering with other clustering algorithm. It overcomes the difficulties of hierarchical methods: scalability and the inability to undo what was done in previous step. It can handle noise effectively.

CURE [8], Clustering Using Representative is capable of finding clusters of arbitrary shapes. In this method, each cluster is represented by multiple representative points and start the representative points towards the centroid helps in avoiding noise. It cannot be applied to large data sets.

CHAMELEON [6], uses dynamic modeling to determine the similarity between pairs of clusters. Chameleon uses a k-nearest-neighbor graph to construct sparse graph. Chameleon uses a graph partitioning algorithm to partition the k-nearest-neighbor graph into a large number of relatively small sub clusters. It then uses an agglomerative hierarchical clustering algorithm that repeatedly merges sub clusters based on their similarity.

Advantages-

1. It calculates a whole hierarchy of clusters.
2. It does not need the number of cluster to be specified.
3. It is more versatile
4. Less sensitive to noise and outliers.
5. Hierarchical clustering can give different partitioning depending on the level of resolution we are looking at.

Drawback-

1. It can be slow (has to make several merge or split decisions.)
2. If merge or split is performed it cannot be undone
3. It may not scale well.

C) Density based Method

Density-based clustering method is based on the concepts of density, connectivity and boundary. This method forms clusters based on the density of data points in a region and continue growing a given cluster as long as the density (number of objects or data points) in the neighborhood is exceeding some threshold. Therefore, each data instance in the cluster the neighborhood of a given radius has to contain at least a minimum number of objects. This method builds clusters of arbitrary shape since the cluster grows in any direction the density leads to. As this method forms clusters based on density of data points, it naturally eliminates the outliers or noisy data points. DBSCAN [9], OPTICS [10] and DENCLUE are examples of density based algorithms.

DBSCAN algorithm grows regions with sufficiently high density into clusters and discovers clusters of arbitrary shape in spatial databases with noise. It defines a cluster as a maximal set of density-connected points. This algorithm searches for clusters by checking ε-neighborhood of each point in the database. If the ε-neighborhood of any point contain more than MinPts, new cluster with as a core object is created. DBSCAN then iteratively collects directly density-reachable objects from these core objects, which involve the merge of a few density-reachable clusters. This process terminates when no new point can be added to any cluster. DENCLUE[11] is the another density based algorithm which produces good clustering result even a large amount of noise is present.

Advantages-

1. Resistant to outliers and noise.
2. Discover cluster of arbitrary shape with varying size.
3. Does not require the number of cluster to be prespecified.
4. In sensitive to ordering of data object.

Drawbacks-

1. Unsuitable for high-dimensional datasets due to the curse of dimensionality phenomenon.
2. High sensitivity to the setting of input parameters.
3. Poor cluster descriptor.

D) Grid Based Method [1]

The grid based clustering uses a multi resolution grid data structure. It is used for building clusters in a large multidimensional space wherein clusters are regarded as denser regions than their surroundings. This method partition the space into a finite number of cells that form a grid structure on which all of the operations for clustering are performed. It differs from the conventional clustering algorithms in that it is concerned not with the data points but with the value space that

surrounds the data points.The Grid based clustering method a multi resolution grid data structure. The main advantage of this method is fast processing time which is independent of data objects. It depends on only the number of cells in each dimension in the quantized spaced. Grid based method is useful for expressing data at varied level of detail which is based on all the selected diemensional attribute. This method represent cluster data inmore meaningful manner. A typical grid-based clustering algorithm consists of the following five basic steps:

1. Creating the grid structure, i.e., partitioning the data space into a finite number of cells.
2. Calculating the cell density for each cell.
3. Sorting of the cells according to their densities.
4. Identifying cluster centers.
5. Traversal of neighbor cells

STING (Statistical Information Grid based) [12] and Wave Cluster are examples of grid based clustering. The quality of clustering produced by this method is directly related to the granularity of the bottom most layers, approaching the result of DBSCAN as granularity reaches zero. It explores statistical information stored in grid cells. There are usually several levels of such rectangular cells corresponding to different levels of resolution, and these cells form a hierarchical structure: each cell at high level is partitioned to form a number of cells at the next lower level. Statistical information regarding the attributes in each grid cell is pre-computed and stored. CLIQUE was the first algorithm proposed for dimension –growth subspace clustering in high dimensional space. In wave cluster user has no need to give the number of clusters which are applicable to low dimensional space. The wavelet transformation transform the original feature space resulting in a transformed space where the natural cluster in the data become distinguishable.

Advantages-

1. Fast processing time.
2. Clustering is performed on summaries and not individual objects.
3. Easy to determine which cluster are neighboring.
4. Shapes are limited to union of grid cells.

Drawbacks-

1. Depends only on the number of cells in each dimension in the quantized spaced.

E) Model Based Method

Model based clustering method optimizes the fit between the given data and some (predefined) mathematical model. It assumes that the data were generated by a model or by a mixture of underlying probability distributions and tries to recover the original model from the data. The model that we recover from the data then defines clusters and assigns objects to clusters. It leads to a way of automatically determining the number of clusters based on standard statistics taking noise (outliers) into account and thus yielding a robust clustering method. MLE (maximum likelihood estimation) criterion is used in model-based clustering method to find the parameter inside the model. The two major approaches based on the model-

based clustering are: statistical and neural network approaches. EM (which uses a mixture density model), COBWEB (conceptual clustering) and neural network approaches (such as self-organizing feature maps) are examples of model based clustering methods.

1) EM (Expected Maximization)

EM finds the maximum-likelihood (ML) estimates for the parameters of the data model. The model parameters estimated by EM should be ML in the sense that they maximize the likelihood of all of the observed data. EM can decide how many clusters to generate. The EM iteration alternates between performing an expectation (E) step, which computes the expectation of the log likelihood evaluated using the current estimate for the parameters, and maximization (M) step, which computes parameters maximizing the expected log-likelihood found on the E step. These parameter-estimates are then used to determine the distribution of the latent variables in the next E step. EM assigns a probability distribution to each instance which indicates the probability of it belonging to each of the clusters.

2) SOM (Self-organizing map)

SOM constructs a single-layered network. The learning process takes place in a "winner-takes-all" fashion: The prototype neurons compete for the current instance. The winner is the neuron whose weight vector is closest to the instance currently presented. The winner and its neighbors learn by having their weights adjusted. It is useful for visualizing high-dimensional data in 2D or 3D space. However, it is sensitive to the initial selection of weight vector, as well as to its different parameters, such as the learning rate and neighborhood radius.

Advantages-

1. Robust to noisy data or outlier.
2. It automatically determines the number of cluster to generate based on standard statistic.
3. Fast processing speed.

Drawbacks-

1. Complex in nature

III) Problems occurs during clustering [4]

1. Outlier handling is difficult.
2. Interpreting the semantic meaning of each cluster may be difficult.

3. Dynamic data in the database implies that cluster membership may change over time.
4. The exact number of clusters required is not easy to determine. A domain expert is required.
5. In clustering there is no prior knowledge about what data should be used for clustering. To aid the clustering process no supervised learning.

IV) Perform effectively on large databases a clustering algorithm should [BFR98][13]

1. Require no more (preferably less) than one scan of the database.
2. ave the ability to provide status and "best" answer so far during the algorithm execution. This is sometimes referred to as the ability tobe online.
3. Be suspendable, stoppable, and resumable.
4. Be able to update the results incrementally as data are added or removed from the database.
5. Work with limited main memory.
6. Be capable of performing different techniques for scanning the database This may include sampling.
7. Process each tuple only on.

V) Methods and their Characteristics [2]

Method	Method
Partitioning Methods	• Find mutually exclusive clusters of spherical shape • Distance-based • May use mean or medoid (etc.) to represent cluster center • Effective for small- to medium-size data sets
Hierarchical Methods	• Clustering is a hierarchical decomposition (i.e. multiple levels) • Cannot correct erroneous merges or splitsMay incorporate other techniques like micro clustering or consider object "linkages"
Density Based Methods	• Can find arbitrarily shaped clusters • Clusters are dense regions of objects in space that are separated by low-density regions • Cluster density: Each point must have a minimum number of points within its "neighborhood" • May filter out outliers
Grid Based Methods	• Use a multiresolution grid data structure • Fast processing time (typically independent of the number of data objects, yet dependent on grid size)

VI) Comparison Chart

Method Name	Algorithm	Dataset Type	Cluster Shape	Complexity	Handle Outlier	Size of Dataset
Partitioning	K-means	Numeric	Spherical	Time: O(nkt) Space: O(n+k)	No	Large
	K-medoids	Categorical	Spherical	Time: $O(n^2t)$	Yes	Small
	K-prototype	Numeric & Categorical	Spherical	Time: O(n)	No	Small
	PAM	Numeric	Spherical	Time: $O(tk(n-k)^2)$ Space: $O(n^2)$	No	Small
	CLARA	Numeric	Spherical	Time: $O(k(40+k)^2 +k(n-k))$	No	Large
Hierarchical	BIRCH	Numeric	Spherical	Time: O(n)	Yes	Large
	CURE	Numeric	Arbitrary	Time: $O(n^2 \log n)$	Yes	Large
	CHAMELEON	All type of data	Arbitrary	Time: $O(n^2)$ Space: O(n)	Yes	Large
Density based	DBSCAN	Numeric	Arbitrary	Time: O(n log n)	Yes	Large
	OPTICS	Numeric	Arbitrary	Time: O(n log n)	Yes	Large
	DENCLUE	Numeric	Arbitrary	Time: O(n log n)	Yes	Large
Grid based	STRING	Special	Arbitrary	Time: O(n)	Yes	Large
	Wave Cluster	Special	Arbitrary	Time: O(n)	Yes	Large
	CLIQUE		Arbitrary	Time: O(n)	Yes	Large
Model based	EM	Special	Spherical	Time: O(n)	No	Large
	SOM	Multivariate	Spherical	Time: $O(n^2m)$	No	Small

n is the number of objects, k is the number of clusters and t is the number of iterations.

VII) Conlcusion

Clustering is important in data analysis and data mining applications. In this paper we studied various clustering methods. Each method has its advantages and drawbacks. Clustering can be done by different number of methods such as partitioning,

hierarchical, density based, grid based and model based method. Partitioning clustering is the centroid based clustering whereas hierarchical clustering is connectivity based clustering. Density based clustering uses the concept of density reachability and density connectivity. It is useful in finding non linear shapes structure based on the density. Grid based clustering is a graph based method in which object space is quantized into finite number of cells that form a grid structure. Model based clustering method is a robust clustering method which locates the clusters by clustering the density function. The use of appropriate clustering method depends on requirement of data being analyzed.

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A COMPARATIVE STUDY OF SELECTED FINANCIAL SECURITIES FIRMS IN INDIA

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ABSTRACT:

The present study is related to Financial Market of India. This study is useful to all the customers who want a comparative analysis of available different Securities firms. This study investigates various aspects of particular securities firms to answer questions raised by customers. This is an attempt to solved the queries raised by customers when they wants to enter in financial market.

KEYWORD: Internet, Sharekhan Ltd, Online Trading Software, Mobile Apps., Equity Market

INTRODUCTION:

A **security** is a tradable financial asset. It is commonly used to mean any form of financial instrument, but the legal definition of a "security" varies by legal and regulatory jurisdiction. In some jurisdictions the term specifically excludes financial instruments other than equities and fixed income instruments. In some jurisdictions it includes some instruments that are close to equities and fixed income, e.g. equity warrants. In some countries and/or languages the term "security" is commonly used in day-to-day parlance to mean any form of financial instrument, even though the underlying legal and regulatory regime may not have such a broad definition.

Selecting a Broker for Your Personal Finance Transactions

Discount and online brokerages have increased their customer service and added more servers so that customer trades are executed rapidly. Full-service brokers are increasing the capabilities of their Web sites and charging less for their services. The following are a few guidelines for selecting a broker that's right for you:

- **Full-service brokers:** Full-service brokers usually charge higher commissions and fees than discount brokers, but they also offer more services. Full-service brokerages offer expert advice and good ideas that are helpful when the stock market is gyrating.
- **Discount and online brokers:** If you know what you want, why not use a discount or online broker to purchase securities as inexpensively as you can? Full-service discount brokerages like Charles Schwab and TD Waterhouse have added a huge amount of advisory and account management services.
- **Account information:** You want information about your cash balances, your order status, and your portfolio's value.
- **Analytical and research tools:** When offered by your online broker, real-time quotes, reports on insider trading, economic forecasts, company profiles, breaking news, and earnings forecasts are real timesavers and often cost savers, especially when your broker automatically sends end-of-the-day prices to you.
- **Fees:** Commission structures change radically from one broker to the next. One reason for the wide range is that some online brokerages include special or additional features for your cash account.
- **Securities traded:** Ascertain which types of investments the broker enables you to trade, for example: stocks (foreign and domestic), options, bonds (corporate and agency), Treasury securities, zero-coupon bonds, certificates of deposit, precious metals, mutual funds, and unit investment trusts.

The Stock Broker's Role in Investment

- **Institutional stockbrokers** make money from institutions and companies through investment banking and securities placement fees (such as initial public offerings and secondary offerings), advisory services, and other broker services.
- **Providing advisory services:** Investors pay brokers a fee for investment advice. Customers also get access to the firm's research.
- **Offering limited banking services:** Brokers can offer features such as interest-bearing accounts, check-writing, electronic deposits and withdrawals, and credit/debit cards.
- **Brokering other securities:** In addition to stocks, brokers can buy bonds, mutual funds, options, exchange-traded funds (ETFs), and other investments on your behalf.

In the United Kingdom, the national competent authority for financial markets regulation is the Financial Conduct Authority: the definition in its Handbook of the term "security" applies only to equities, debentures, alternative debentures, government and public securities, warrants, certificates representing certain securities, units, stakeholder pension schemes, personal pension schemes, rights to or interests in investments, and anything that may be admitted to the Official List.

Securities are broadly categorized into:

- **Debt securities**, (e.g., banknotes, bonds and debentures)
- **Equity securities**, (e.g., common stocks)
- **Derivatives,** (e.g., forwards, futures, options and swaps).

Brokerage firms are the business entities that deal with stock trading. India, with an increasing capital market and a growing number of investors, has a number of brokerage firms. In Indian retail brokerage industry, the brokerage firms primarily work as agents for buying and selling of securities like shares, stocks and other financial instruments and earn commission for each of the transactions. There are plenty of brokerage firms in India. Let's have a look at the top 10 brokerage firms in India.

The Indian Capital market is undergoing a wonderful phase when the growth rate is on the higher side. As of 31 March 2015, a total of 2,33,18,447 investors have their accounts and have their business going with the Indian Stock Market. This number is expected to exceed the 3 corer investor mark within a year.

Top Brokerage Firms in India

1) Indiabulls Securities

Indiabulls Securities is the leading brokerage firm in India, which started functioning in the year 2000. The company's businesses include real estates, home loans, power, securities and IT. Indiabulls securities is headquartered in Gurgaon, Haryana and employees over 4,000 people. Across the nation, Indiabulls securities operates through its 450 branches. The company provides its services both through off-line and on-line channels. Indiabulls Securities boasts of running one of the most efficient and fastest trading base in India. Rs. 1200 is the trade account opening fees at Indiabulls Securities.

2) Sharekhan Limited

Sharekhan Limited was also established in 2000 and is one of the top brokerage firms in India today. With its head office in Mumbai, Maharashtra, Sharekhan is present in around 450 cities in India and it is serving over 9,50,000 customers through its 429 outlets across the country. Sharekhan has two branches in Oman and UAE as well. The services provided by Sharekhan Ltd. include equities trade execution, portfolio management, distribution of mutual funds and commodities, structured products and insurance. One can open their trade account with harekhan Ltd. with Rs. 750 (Classic account) and Rs. 1000 (Trade Tiger).

3) Angel Broking Limited

Angel Broking started its operations in 1987 and has its headquarters in Mumbai, the commercial capital of India. Angel Broking is involved in the businesses such as equity trading, portfolio management services, commodities, mutual funds, IPO, Life Insurance, Investment Advisory and Depository Services. Angel Broking has more than 5,500 terminals in around 400 branches across India.

4) Reliance Money(Securities)

Reliance Money is retail brokerage company and a subsidiary of the prestigious Reliance Industries. It was founded in 1987 and is based in Mumbai, Maharashtra. On a nationwide level, Reliance Money runs its business through 150 brnaches and around 2,000 employees. Reliance Money provides services related to mutual funds, fixed income, gold, portfolio management services and structured products. Rs. 750 are charged by Reliance Money to open a Demat or a trade account.

5) Kotak Securities Limited

With its headquarters in Mumbai, Kotak Securities Limited started its operations in 1994. It is subsidiary of Kotak Mahindra Bank. Over 5.58 lakh customers have an account with Kotak Securities. It has 450 branches in around 352 cities in India. The service base of Kotak Securities consists of stock broking, portfolio management services and other customer oriented financial services.

6) India Infoline Services

Like most of the other brokerage firms, India Infoline Services has its headquarters in Mumbai. It was started in 1995 and serves more than 2 million customers. The company has around 650 locations in India and abroad. It is present in Sri Lanka, Mauritius, Singapore, Hong Kong, Dubai, Switzerland, UK and USA. Rs. 750 is the amount required to open a demat account with India Infoline Services.

7) HDFC Securities

HDFC Securities is based in Mumbai and over 1 million customers have an account with it. The business services that HDFC Securities provides are mutual funds, equity, IPO, national pension system, NRI offerings, insurance, fixed deposits, bonds and loans. HDFC Securities has over 100 branches in India and has got over 1,500 employees working for it.

8) ICICI Direct

ICICI Direct is a subsidiary of the leading private bank the ICICI Bank and is headquartered in Mumbai, Maharashtra. It is involved in businesses such as equity, mutual funds, ETF, life insurance, fixed deposit, bonds and loans. ICICI Direct has around 300 branches across the country and over

2,000 employees. A trade account at the ICICI Direct can be opened with a fees of Rs. 750.

9) Aditya Birla Money

Aditya Birla Money is the brokerage arm of the Indian conglomerate the Aditya Birla Group. It is headquartered in Mumbai, Maharashtra and has 150 branches across the nation. The business solutions provided by Aditya Birla Money concern broking and distribution, wealth management, corporate and treasury services, real estate advisory and online money management. A total of 2,500 employees contribute to the operations of Aditya Birla Money.

Analysis and Discussion

1) Trading & Demat Charges

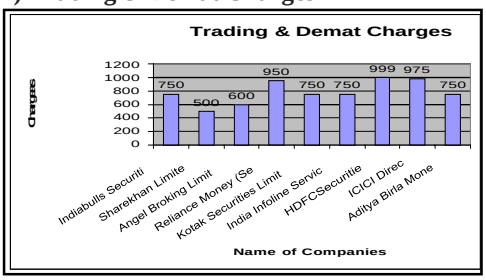

Fig1.1 Trading and Demat Charges

In Above graph, it is beneficial for the customer to choose the particular securities firm to enter in the financial market. By analyzing the above graph, it is clear indication for various securities firm that customer will attract with their terms and conditions with the particular price they offered. In Above graph, the Depository Participant (DP) Charges will vary per companies, in fig 1.1 HDFC Securities charge highest price to open demat account the study shows that by offering the higher charges with maximum services among others. In Financial Market the most prominent player that is sharekhan charge minimum amount to the customers. The interesting thing among above comparison is that the middle level players (Indiabulls, Kotak, India infoline, Aditya birla securities) in the financial market charged equal amount to the interested customers.

2) **Commodity Charges**

In following fig.1.2 shows that most of companies exempted commodity charges for their customer with the terms and condition defined by them. The three financial securities company charge below the 300 rupees. Indiabulls and Kotak securities charges are equal and other securities firm not to provide charges.

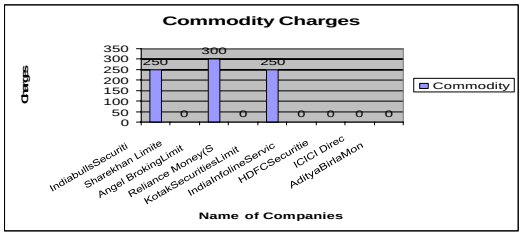

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Fig.1.2 **Commodity Charges**

3) DP Transaction Charge:

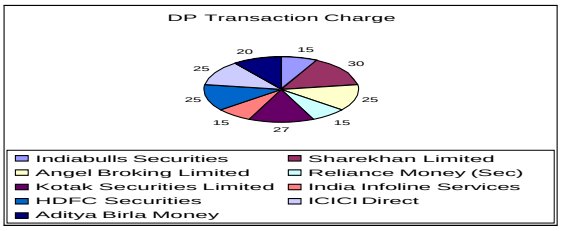

Fig: 1.3 **DP Transaction Charge:**

In Above graph, it is beneficial for the customer to choose the particular securities firm to enter in the financial market. By analyzing the above graph, it is clear indication for various securities firm that customer will attract with their terms and conditions with the particular price they offered. In Above graph, the Depository Participant (DP) Transaction Charges will vary per companies, in fig 1.3 Sharekhan Securities DP Transaction charges is highest compare with others. In Financial Market the most prominent player that is Indiabulls, Reliance Money and India info line charge minimum amount to the customers.

Findings, Suggestion and Recommendations:

1. It is clear that most of the companies provide Financial Education & Training but practically the visibility of above facilities is not practically implemented in the ground.
2. The good thing in above companies is that, the rules and regulations laid down by SEBI (Securities Exchange Board of India) for providing Secure database, Online Transactions, User Profiles, and to check Companies information on respective portals.

Conclusion

In above discussion, it is important to all the customers who want to enter in financial market need some basic knowledge about Financial Securities Company. The authenticity of particular Securities Company is most important factor on which the customer will trust. This comparative study will provide a clear picture about why particular security company to be selected and what basis.

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Appendix-A
COMPARATIVE CHART OF SECURITIES FIRMS

Company	Indiabulls Securities	Sharekhan Limited	Angel Broking Limited	Reliance Money (Sec)	Kotak Securities Limited	India Infoline Services	HDFC Securities	ICICI Direct	Aditya Birla Money
Established	2000	2000	1987	2006	1994	1996	2002	2000	1994
Exchanges enabled	NSE/BSE/ MCX/ NCDEX	NSE/BSE/ MCX/NCDEX	NSE/BSE/MCX/ NCDEX	NSE/BSE/MCX/ NCDEX	NSE/BSE/MCX/ NCDEX	NSE/BSE/MCX/ NCDEX	NSE/BSE	NSE/ BSE	NSE/BSE/MCX/ NCDEX
Demat (NSDL/CDSL)	NSDL, CDSL	NSDL,CDSL	CDSL	NSDL, CDSL	NSDL, CDSL	NSDL, CDSL	NSDL,CDSL	NSDL,CDSL	NSDL, CDSL
Brokarages:									
Equity- Int-intraday Del-delevary	0.03% BOTH	0.03% BOTH	0.03% BOTH	0.04%/0.4 int/Del	0.05%/0.5 Int/Del	0.05%/0.5 Int/del	0.05%/0.5 Int/Del	0.05/0.25 Int/Del	0.03%/0.3 Int/Del
Equity Futures	0.03% OF TURNOVER	0.03% OF TURNOVER	0.03% OF TURNOVER	0.04% to 0.01%	0.05%	0.05%	0.05%	0.05%	0.03%
Equity Options	Rs. 100/lot	Rs. 50/ lot	Rs60/lot	Rs. 70/lot	Rs.100/lot	Rs.100/lot	Rs.100/lot	Rs.95/lot	Rs.50/lot
Currency Futures	0.03%	0.03%	0.03%	0.04%	0.05%	Rs.25/lot	Rs.23/lot	0.05%	0.03%
Currency Options	Rs. 100/lot	Rs. 20/lot	Rs. 30/lot	Rs. 70/lot	Rs.100/lot	Rs.10/lot	Rs 23/lot	Rs.95/lot	Rs.50/lot
Commodity	0.03%	0.03%	0.03%	NA	0.05%	0.03%	NA	NA	0.03%
A/C opening charges:									
Trading & Demat	Rs.750	Rs.500	Rs.600	Rs.950	Rs.750	Rs.750	Rs.999	Rs.975	Rs.750
Commodity	Rs.250	nil	Rs.300	NA	Rs.250	Nil	NA	NA	NA
AMC charge	Rs.450/yr	Rs.400/yr	Rs. 300/yr	Rs.300/yr	Rs.50/ month	Rs.555/ one time	Rs. 750/ yr	Rs.450/ yr	Rs. 28/ month
DP Transaction Charge	Rs. 15	RS.30	Rs.25	Rs 15	Rs.27	Rs.15	Rs. 25	Rs.25	Rs.20
Software	Y	Y	Y	Y	Y	Y	N	Y	Y
Web/HTML 5	Y	Y	Y	Y	Y	Y	Y	Y	Y
Mobile	Y	Y	Y	Y	Y	Y	Y	Y	Y
Online Reporting:									
Trade Reports	Y	Y	Y	Y	Y	Y	Y	Y	Y
PNL Reports	Y	Y	Y	Y	Y	Y	Y	Y	Y
Contract Notes	Y	Y	Y	Y	Y	Y	Y	Y	Y
Support & Tools:									
Research & Tips	Y	Y	Y	Y	Y	Y	Y	Y	Y
Brokerage Calculator	N	N	N	N	N	N	N	N	N
Margin Calculator	N	N	N	N	N	N	N	N	N
Bracket orders & Trailing Stoploss	N	Y	N	N	N	N	N	N	N
Training & Education	N	Y	Y	Y	Y	Y	Y	Y	Y
Convenience:									
3 in 1 Account	N	N	N	N	Y	N	Y	Y	N
Instant Fund withdrawal	N	N	N	N	Y	N	Y	Y	N
Relationship Managers	Y	Y	Y	Y	Y	Y	Y	Y	Y

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DEVNAGARI SPOKEN VOWELS FOR SPEECH SYNTHESIZER

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Abstract

The paper presents speech synthesis system for distinct Devnagari vowels. The system comprises with character processing and voice generation. Character processing is normalized in Devnagari script. And voice generation is producible in spoken form. The voice signals with noise-free environment were extracted formants by formant frequencies detection algorithm. The results for formants frequencies using LPC-based technique were evaluated. The average of MOS test has been received the score 3.2 for a male voice and 2.87 for a female voice. Both scores of MOS values are between fair and good rates for listening quality. Finally, the fine model for Devnagari vowels is organized for hearing the sound.

***Keywords*- Speech Synthesis System; Phones; Corpus; Formant Pitch Detection; MOS.**

Introduction

In recent decade, a lot of researchers have been working on speech processing. Speech synthesizer is one type of the speech processing. Speech synthesizer translates the text into syntactic generation audible form. Character processing and voice/waveform generation are two pivotal components for speech synthesis system (SSS). Character processing depends upon the shape of character in Marathi and Hindi languages which are written in Devnagari script. Another one component of SSS is voice/ waveform generation which is a producible form for Devnagari vowels. In this paper, both components of SSS are worked on rule-based approach for analyzing of the characters and generating the voice. The sound samples of Devnagari vowels with noisy environment are recorded by various speakers with different ages. The speech signals is not only collected but also normalized by various tools like PRAAT and sound recorder of windows [1-4]. DSP assists to extract the features of voice signals. The formant pitch tracking technique is applied on the actual output of speech-synthesis-system. The formant frequency is one of most useful speech parameters. The definition of formants is the movements of the spectral resonances which are associated with human vocal track. The formant frequencies are important signal in the characterization of speech. This algorithm for computing formants frequencies would be utilized for speech synthesizer. The purpose of the present technique is the extraction of the first four frequencies (denoted as F1, F2, F3 and F4) of Devnagari vowels pronounced. [6, 12, 14]

The primary objective of speech synthesis system is to design a model for Devnagari vowels as input conversion into spoken form as output. These synthetic voice signals with noiseless environment are extracting the formants based on LPC technique.

This paper is organized as follows: The section-II depicts the Hindi and Marathi vowels in Devnagari Script. The section–III proposes speech synthesis engine for Devnagari vowels. The experimental work and results explained in section–IV. The present paper concludes in section-V.

Isolated Marathi and Hindi Vowels for Devnagari Script

The vowels are written in Devnagari script. Several languages depend upon Devnagari Script in India. Most of the times, Devnagari vowel is called as Swaras. The paper is focused on Marathi and Hindi languages which are one of the 22-constiutional languages in India. Marathi is an official language in most of the government as similar as private sector at Maharashtra state in India. Hindi is a national language of India. The writing style of Devnagari vowels is from right to left. [3, 8]

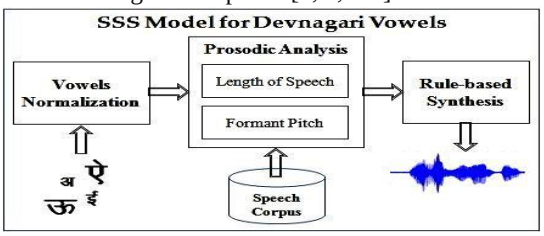
Table I. FIVE TYPES OF ISOLATED DEVNAGARI VOWELS

5-Types of Devnagari Vowels	1	2	3	4
Short (h`sva)	A	[	{	.
	(/a/)	(/i/)	(/u/)	
Long (dIGa_)	Aa	[_	{]	.
	(/aa/)	(/ee/)	(/oo/)	
Conjunct (saMyauWt a)	A + [= e	A + [_ = eo	A + { = Aao	A + {] = AaO
	(/e/)	(/ai/)	(/o/)	(/ao/)
Nasal (Anaunaaisak)	AM	.	.	.
	(/am/ or /an/)			
Visarg (ivasaga_)	A:	.	.	.
	(/ah/)			

There are five types of isolated Devnagari vowels as per Table I: Short, Long, Conjunct, Nasal and Visarg vowels. Short vowels (h`sva) are in a short letter or syllable and usually, the vowel makes a short sound. One example for the short vowel represents character **A** (/a/) in Marathi and **Anaar** (/anar/) in Hindi. Second type is long which a vowel-consonant (VC) is ended for a short word or syllable. Long vowels (dIGa_) can be seen the combination of (aa-ee-oo) e.g. **Aa[_** (/aa/, /ee/) in Marathi. The vowel respresents makes the long sound like **maa[_** (/ma/, /ee/) in Marathi. Third one is conjunct. Conjunct vowels (saMyauWta) are in the addition of short and long vowels. These phonemes are produced in Marathi e.g. **A** + **[** = **e** (/a/ + /i/ = /e/). Second last one is Nasal vowel. Nasal vowels (Anaunaaisak) are produced with a low tune so that air pressure through nose and mouth e. g. **AM** (/am/ or /an/) in Marathi. Last type is Visarg vowel which is used in Devnagari. The visarg is pronounced as the voiceless **h** sound after the vowels e.g. **Aah** (/ah/) in Marathi. The purpose of 5-categories of isolated Devnagari vowels is used for the Text-To-Speech technology. [13, 14]

Proposed Speech Synthesis System for Devnagari Vowels

Speech synthesis system (SSS) produces the human voice syntactically from Devnagari character. The model of speech synthesis system includes character processing and voice generation. Using character processing, character is identified into Devnagari form. The normalized character relies on particular two languages like Marathi and Hindi. Another one process is voice generation which is involved prosodic analysis. The prosodic level is analyzed into formants and length of speech. It is fetched from speech corpus as per **Error! Reference source not found.**. Rule-based synthesis is defined the rules for synthesizing sound signals. Unit selection provides the extreme natural voice and intelligibility. The data of isolated Devnagari vowels are stored in a digital computer. [4, 6, 8-9]



Model of Speech Synthesis System for Devnagari Vowels

There are two types of information: text and voice. The input text can be available in Unicode and phonetic forms. But here, it is used in phonetic form.

These approaches use context sensitive rewrite rule, which shows the form:

$$A \rightarrow B / d / C \qquad (1)$$

Where, A is converted d when preceded by B and followed by C. In developed systems, the context B and C can be any kind of length. Voice information is focused on next two sections in detailed.

Prosodic Analysis

Main objective of prosodic analysis is to detect formants pitch reading of without-generation sound signals and to find out the length of speech. Prosody includes length of speech signals related to duration, formant frequency detection is related to the movements of the spectral resonances of human vocal track. All speech signals are stored in speech dictionary. [10, 11]

Length of Speech Signals

The following equation is to find out length of speech signals:

$$T = \frac{1}{F} \qquad (2)$$

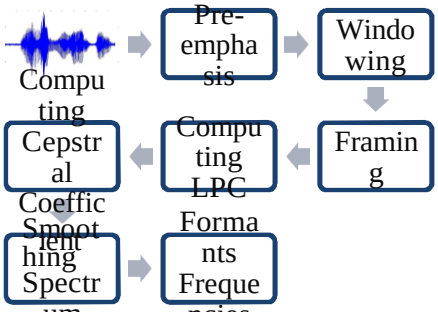
Where, T is total duration of speech signals, 1 is information of sampled signals, F is what actual sampling frequency of speech signals.

Formant Frequencies Estimation Technique

In this section, it is presented a small module for formant estimation based on LPC as shown in Fig. 2. The vocal tract filter is characterized by formant frequencies. The parameter related to the vocal tract called formants which is closed at the larynx end and open at mouth end. The excitation differs for voiced and unvoiced sounds. The excitation is a periodic pulse train for voiced speech generation. [5, 14]

The speech signal is divided into frames. Each frame is windowed using a Hamming window. Linear predictive coding (LPC) is a tool which utilized in voice processing and audio signal processing. It is speech processing for representing the spectral envelope of a digital signal of speech. The LPC analysis is not predicting the values but to get the most suited coefficients. This process consists of analysis and synthesis. In the analysis section, it extracts the residual signal.

Fig. 1. A Block Diagram of Formant Frequencies Estimation us



ing LPC Technique.

In the synthesis section, it reconstructs the signal using the residual signal and reflection coefficients. For each segmented frame, the parameter of the linear prediction is computed for speech signals. These formants frequencies characterize the individual according to its age and gender. For male, initial-four formants frequencies are a range of (100 to 900 Hz for F1, 600 to 2800 for F2, 1200 to 3800 for F3 and 1600 to 4500 for F4). As similar as for female, first-four formants ranges are 200 to 1100 Hz for F1, 500 to 3000 Hz for F2, 1400 to 4200 Hz for F3 and 1800 to 5500 for F4. [7, 9, 14]

Recording and Generation of Speech Signals

The acquired data of Devnagari vowels is used for speech synthesis model. The unit of recording was

characters. The speech corpus of Devnagari vowels is acquired through standard PRAAT tool. These Devnagari vowels are pronounced by 10-Male and 23-Female speakers with noisy environment. The age groups 19-23, 20-25 are in 10x12 rooms, 12x15 rooms respectively at School of Computer Sciences in North Maharashtra University, Jalgaon. The total recorded sounds in Devnagari vowels is 396. Each recorded sound is done at a sampling rate of 22 KHz. The phonemes dataset consists of all the vowels.

Opinion Score

In this section, one part of the voice message is involved by speakers. Usually, quality in voice communication dictates whether the experience is a good or bad on.

A numerical method of expressing voice quality is called MOS. MOS is expressed in one number from 0 to 5 like a being the very poor and the excellent as per Table II. The listening quality of opinion score values are divided into 6 categories. Individual feedback was taken from 13 listeners. 13 persons are 8-male and 5-female.

Table II. MEAN OPINION SCORE (MOS) VALUES

MOS Value	Listening Quality
5	Excellent
4	Good
3	Fair
2	Poor
1	Bad
0	Very Poor

The process of MOS was performed at the vowels in Devnagari script. For scoring MOS was used. Each listener was asked to provide the score under each parameter with 0 to 5 as low and high scores respectively. 0 means very poor for listening quality and the score of 5 is excellent rate for quality of listening.

Experimental Work and Result Discussion

The purpose of the work is to increase a level of intelligibility which would be for listening factors. The working process of the system has been divided into two bizarre tests: Prosodic test and MOS test. Prosodic test is detection of pitch and speech duration. On the other hand, MOS stands for Mean Opinion Score which depends on the brain of human.

Prosodic test

12- Devnagari vowels have been used for the experiment. Its categories were divided into five types such as Short, Long, Conjunct, Nasal and Visarg as shown in Table-I. But 5 isolated vowels out of 12-devnagari vowels have been selected for testing it. The standard vowels [a, e, i, o, u] for English ([**A, [, eo, Aao, {]**] for Marathi) was computed using LPC based technique.

All Devnagari vowels have been pre-emphasis speech signal using 512 points of Hamming window of each speech frame. After the smoothing spectrum, it is found the results of formant frequencies. The results for estimated speech formant frequency are shown in Table-III and Table-IV Devnagari vowels. All vowels were pronounced by MALE and FEMALE speakers.

The computed speech formants frequencies of Devnagari vowels are that the range of initial-four formants in Hz using Linear Prediction Coefficient (LPC) is considered between 200 Hz to 3400 Hz. The fig. 3 (A) and fig. 4 (A) are depicted the output for the same pattern in time domain. Formant estimation of noise-free signals on basis of LPC for male and female voice is demonstrated tracking of formant waveforms in graphical way such as in fig. 3(B) and fig. 4(B) respectively.

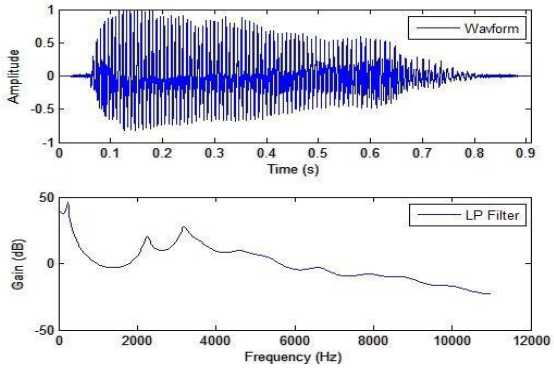


Fig. 2. Pronounced Devnagari Vowels "Aao " (O) by FEMALE Speaker
A] Speech Signals with Noise-Free
B] Formant Frequency using LPC technique.

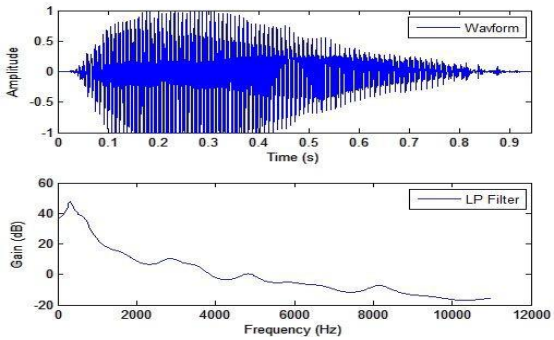


Fig. 3. Pronounced Devnagari Vowels "Aao " (O) by MALE Speaker
A] Speech Waveform with Noise-Free
B] Formant Frequency using LPC technique.

Table I. ESTIMATED FORMANT FREQUENCIES USING LPC TECHNIQUE OF DEVNAGARI VOWELS PRONOUNCED

by Male (Ml) and Female (Fl) Speaker

Pronounced Devnagari Vowels	Speaker with Duration of Sound Signals	Formant Frequencies based on LPC in Hz			
		F1	*F2*	*F3*	*F4*
A (/a/)	ML (2.01Sec)	481.14	1098.99	2204.01	3162.31
	FL (0.73Sec)	463.60	965.43	2177.02	3240.66
[_ (/i/)	ML (0.90Sec)	206.58	1349.31	2472.50	3302.80
	FL (0.75Sec)	317.85	1071.63	2471.72	3248.38
eo (/ai/)	ML (0.89Sec)	361.62	1184.72	2393.06	3309.36
	FL (0.81Sec)	318.36	1037.09	2546.48	3176.10
Aao (/o/)	ML (0.94Sec)	346.63	705.47	2020.43	3009.60
	FL (0.82Sec)	405.16	886.51	2212.16	3142.56
{] (/oo/)	ML (1.71Sec)	332.78	937.05	2160.11	3148.53
	FL (0.80Sec)	331.51	823.68	2162.05	3150.20

A. MOS test

MOS test is subjective listening test on the basis of input received from listeners. Each listener has been given the score on the basis of Mean Opinion Score values. On the basis of input received from listeners, the results were declared the scores in Tables IV and V. First parameter to test was quality of listening. It means how much the speech reliable to human voice for listening quality. The average score was 2.87 for a male voice and 3.2 for a female voice. It shows the speech of listening which was very clear for intelligibility. Intelligibility means that how many Devnagari vowels are recognized correctly. The parameter of speech was identified the score which belongs to speakers. The declared scores were used to predict the awareness of speakers.

Table I. MEAN OPINION SCORE (MOS) VALUES BASED ON GENERATED SOUND BY THE MALE VOICE

Sr. No.	Devnagari Vowel	Sound in English Format with Duration	Speaker (Male as ML and Female as FL)	Tested MOS Score for listening quality by 13 Listeners
1	A	A (2.01sec)	ML (08)	2.87
			FL (05)	3.20
2	[_	I (0.90sec)	ML (08)	3.25
			FL (05)	3.00
3	eo	AI (0.89sec)	ML (08)	3.25
			FL (05)	3.00
4	Aao	O (0.94sec)	ML (08)	3.25
			FL (05)	3.60
5	{]	OO (1.71sec)	ML (08)	3.50
			FL (05)	2.60
Average				2.87

Table I. MEAN OPINION SCORE (MOS) VALUES BASED ON GENERATED SOUND BY A FEMALE VOICE

Sr. No.	Devnagari Vowel	Spoken in English Format with Duration	Listener (Male as ML and Female as FL)	Tested MOS Score for Listening Rate by 13 Listeners
1	A	A (0.73sec)	ML (08)	3.50
			FL (05)	3.40
2	[_	I (0.75sec)	ML (08)	3.12
			FL (05)	3.00
3	eo	AI (0.81sec)	ML (08)	3.25
			FL (05)	3.80
4	Aao	O (0.82sec)	ML (08)	3.37
			FL (05)	3.00
5	{]	OO (0.80sec)	ML (08)	2.12
			FL (05)	3.40
Average				**3.2**

Conclusion

The proposed work of speech synthesizer for Devnagari vowels has been implemented. The present work was verified the performance of converting Devnagari vowels into artificial generation spoken form. Any type of Devnagari vowel was analyzed as similar as synthesized which person would be able to understand by voice signals. For the implementation, Devnagari vowels were pronounced by MALE and FEMALE speakers. The total size of speech database is 396. For the demonstration, the standard vowels like [a, e, i, o, u] for English, [**A, [, eo, Aao, {]**] for Marathi) were selected. The non-synthesized sound signals have been estimated the formants frequencies. The range of initial-four formants using LPC technique was evaluated between 200 Hz to 3400 Hz for male as well as female speakers. The MOS test was evaluated the score for intelligibility. The average score of MOS by 13 persons was achieved 3.2 (Between fair and good) for male voice and 2.87 (to close fair) for female voice. The achievement of the proposed module enables to understand the Devnagari vowels and close to mankind of sound.

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Future Scope

In future, Text-To-Speech synthesis system will be attempted on the basis of phonetic and voice processing in Marathi and Hindi language. And the audible samples will be collected by several speakers with noise-free signals. The prosodic analysis technique would be applied on the generated synthetic sound by the machine.

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THE CURRENT TENDS IN E-MARKETING AND IT'S APPLICATION

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Abstract:

E-Marketing is achieving marketing objectives through use of electronic communications technology. E-Marketing is a part of e-Business that utilizes electronic medium to perform marketing activities and achieve desired marketing objectives for an organization. Internet Marketing, Interactive Marketing and Mobile Marketing are all a form of e-Marketing.It helps to sell product & services online. This paper is versioned towards accessing more knowledge & focusing on scope of E-Marketing.

Keywords:

E-marketing, Aspects of marketing ,Classification, Meaning, Model of e-marketing.

1. Introduction:

Marketing: "Marketing is the process of discovering and translating consumer needs and wants into product and services specification, creating demand for these products and services and then in turned expanding this demand"

2. Aspect of Marketing:

It's a tool of marketing all over the world. With the help of it a person seating at one place he can market the product through the country and across the world. Out of all the Aspect of Marketing one of the best, easy, cheap and effective way of market the product is Online Marketing. There is various aspect of marketing they are as follow:

1. Field Marketing (B2B, B2C)

- B2B means Business To Business.
- B2C means Business To Customers.

2.Online Marketing

E-marketing also helps for the business concerns.E-business also classified the relation between to producers & customers as under:-

- business-to-business (B2B)
- business-to-consumer (B2C)
- business-to-employee (B2E)
- business-to-government (B2G)
- government-to-business (G2B)
- government-to-government (G2G)
- government-to-citizen (G2C)
- consumer-to-consumer (C2C)
- consumer-to-business (C2B)

In this way E-marketing helps to businessman for selling their products & services as well as customers to getting the goods & services what they want in their life.

3. What is e-Marketing?

E-Marketing is buying and selling, marketing and services, and delivery and payment of product and services and information over the internet, intranet, extranet and other networks between inter-networked enterprises and its prospects ,customers, suppliers and other business partners. "E-Marketing is defined as Internet Marketing (IM), Web Marketing, or online marketing is defined as the marketing process through the use of electronic communications technology."

. E-marketing concerns the development of information technology for marketing strategy and process more effective and efficient. Technology and the Internet also changed the way marketing is conducted. For example, the fundamental idea of digitizing data has transformed media and software delivery methods as well as created a new transaction channel.

E-marketing is the most immediate, flexible and cost effective marketing tool available in business today. Businesses have to embrace the Web as a platform; as a way to do business in this day and age. E-marketing would also help to make these environmentally friendly products available at the doorsteps of the consumers. e-marketing helps to consumers about the significance of a particular product, by making the modes of access on the Internet more user friendly study. .

4. History of E- Business Scenario:

There is a history of e –marketing in a business

1997: Introduction of a brand new phrase – e-business

- 1999: The emphasis of e-business shifted from B2C to B2B
- 2001: The emphasis shifted from B2B to B2E, e-commerce, e-marketing,e-government, e-learning, and m-commerce
- 2004: Total online shopping and transactions in the United States between $3 to $7 trillion

E-Marketing Includes:

There are various tools in e –marketing:-

Banners, Internet Marketing, E Mail Marketing, Web Marketing, TV Advertisements, Radios

Benefits: Save Time and money you spend on sending faxes, couriers, printing Catalogs, Brochures and other promotional material.

- Faster & easier access to products, buyers and sellers.
- Always accessible (24/7)
- No physical or geographical limitations

6. Objectives of E-Marketing

- E-marketing objectives define what you want to achieve through your e-marketing campaign.
- Different businesses may develop different e-marketing objectives depending on their individual Circumstances. A useful framework for developing effective e-marketing objectives is the five S's framework,after using the internet these five S's are following which includes:-
- Sell – to sell products and services.
- Serve – to serve customers.
- Speak – to communicate with customers (both potential and existing).
- Save – to save/ reduce cost.
- Sizzle – to build brand identity.

7. Importance of E-Marketing

E-marketing gives businesses of any size access to the mass market at an affordable price and, unlike TV or print advertising, it allows truly personalized marketing. Specific benefits of e-marketing include:

- **Global reach** – a website can reach anyone in the world who has internet access. This allows you to find new markets and compete globally for only a small investment.
- **Lower cost** – a properly planned and effectively targeted e-marketing campaign can reach the right customers at a much lower cost than traditional marketing methods.
- **24-hour marketing** – with a website your customers can find out about your products even if your office is closed.
- **One-to-one marketing** – e-marketing lets you reach people who want to know about your products and services instantly.
- **More interesting campaigns** – e-marketing create interactive campaigns using music, graphics and videos like;-game or a quiz – whatever you think will interest them.

8. Success of E-Marketing:

The fact that e-business encompasses so many activities which can make it difficult for organizations to identify their electronic opportunities. Barbara Babcock, vice president of electronic business for Unisys says that a simple tool can help in the e-business solutions matrix developed by Unisys corp. the matrix divide e- business into three categories:

Attract: The focus in this category is on marketing and gaining new customer. It starts with simple static web sites

Interact: Companies will interface with customers, adapting offers in real time, and providing true one to one marketing.

Transact: The most challenging and potentially beneficial-e-business opportunities are found in transact. Here, the e-business rubber meets the road.

9. E-Marketing Contributes to the E-Business Model:

E-Marketing Increases a Firm's Benefits

- Online mass customization.
- Personalization .
- 24/7 convenience for product/customer
- Self-service ordering and tracking
- coordination and communication

E-Marketing Decreases a Firm's Costs

- Low cost distribution of communication messages (e.g., e-mail)
- Low cost distribution channel for digital products
- Lowers costs for transaction processing
- Creates efficiencies in supply chain through communication

E-Marketing Increases Firm's Revenues

- Online transaction revenues such as product, information, advertising, and subscriptions sales or commission/fee on a transaction .
- Add value to products/services and increase prices (e.g., online FAQ and customer support)
- Increase customer base by reaching new markets
- Build customer relationships

10. Conclusion:

The global e-marketing revolution is entering into a new phase. Many global businesses are now viewing B2B e-commerce as critical to their electronic survival. It is the fast growth in the new economy .

E-marketing transaction in number, volume and percentage of total transaction are currently very low in India.The Internet is restructuring and transforming a business process by fundamental rethinking and redesign to achieve dramatic improvement in cost, quality and speed & so on. It is dissolving boundaries between buyer and seller. Today customer able to make more informed choice. The power undoubtly now in the hands of consumer.

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A REVIEW: AN APPLICATION OF MOBILE CLOUD COMPUTING AND RESEARCH ISSUE

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Abstract:

Mobile Cloud Computing (MCC) has revolutionized the way in which mobile subscribers across the globe power services on the go. The mobile devices have evolved from mere devices that enabled voice calls only a few years back to smart devices that enable the user to access value added services anytime, anywhere. MCC integrates cloud computing into the mobile environment and overcomes obstacles related to performance (e.g. battery life, storage, and bandwidth), environment (e.g. heterogeneity, scalability, availability) and security (e.g. reliability and privacy)

Keywords:
Mobile Cloud Computing.

INTRODUCTION:

The market of mobile phones has expanded rapidly.The premier global market intelligence firm, the worldwide Smartphone market grew 42.5% year over year in the first quarter of 2012. The growth of mobility has changed our lives fundamentally in an extraordinary way, close to 80 percent of the world's population has access to the mobile phone and new devices like the iPhone, Android smartphones and tablets have brought a host of applications at the palms of people's hands.

At the same time, Cloud Computing has emerged as a fact that represents the way by which IT services and functionality are charged for and delivered. Cloud Computing is:"Cloud Computing is a model for enabling convenient, on demand network access to a shared pool of configurable resources.
(e.g. networks, servers, storage, applications and services) that can rapidly be provisioned and released with minimum management effort or service provider interaction."

A more formal definition that encapsulates the key benefits of cloud computing from a business perspective as well as its unique features from a technological perspective given by Sean Martson et all in their research paper is as follows:

- It is an information technology service model where computing services (both hardware and software) are delivered on demand to customers over a network in a self
- service fashion, independent of device and location. The resources required to provide the requisite quality of service levels are shared, dynamically scalable, rapidly provisioned, virtualized and released with minimal service provider interaction. Users pay for the service as an operating expense without incurring any significant initial capital expenditure, with the cloud services employing a metering system that divides the computing resource in appropriate blocks."

Unlike conventional mobile computing technologies, the resources in mobile cloud computing are virtualized and assigned
in a group of numerous distributed computers rather than local computers or servers. Many applications based on Mobile
Cloud Computing, such as Google's gmail, Maps and Navigation systems for mobile, Voice Search, and some applications
on an Android platfo
rm, MobileMe from Apple, LiveMesh from Microsoft and Motoblur from Motorola, have been
developed and served to users. The general architecture is as depicted in Fig 1 below.

Fig 1: Mobile Cloud Computing

Delivering cloud services in a mobile environment brings numerous challenges and problems. Mobile devices cannot handle complicated applications due to their innate characters. Also, it is impossible that a mobile device is always online, the offline solution of the device need beconsidered as well. The absence of

standards, security and privacy, elastic mobile applications
requirement may obstruct the development of Mobile Cloud Computing. In order to understand the challenges and provide further scope for research, an understanding of this n
ovel approach is essential. This paper introduces the basic model of MCC,
its background, key technology, challenges, current research status and future research perspectives.

BACKGROUND:

As an inheritance and emergence of cloud computing and mobile computing, mobile cloud computing has been devised as a new phrase since 2009.
From a simple perspective, mobile cloud computing can
be thought of as infrastructure where data and processing could happen
outside of the mobile device, enabling new types of applications such as context aware mobile social networks. As a result, many mobile cloud applications are not restricted to powerful smartphones, but to a broad range of less advanced mobile phones and, therefore, to a broader subscriber audience. MCC can be simply divided intomobile computing and cloud computing.

The mobile devices can be laptops, PDA, smartphones and so on, which c
onnect with a base station or a hotspot by a radio link such as 3G, Wi-Fi or GPRS. Although the client is changed from PCs or fixed machines to mobile devices, the main concept is still cloud computing. Mobile users send service requests to the cloud through a web browser or desktop application. The management component of cloud then allocates resources to the request to establish connection, while the monitoring and calculating functions of mobile cloud computing are implemented to ensure the QoS until theconnection is completed.
The cloud model as defined by NIST promotes availability and is composed of five essential characteristics, three service models and four deployment models.

Essential characteristics:

- **On-demand self service:**

A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.

- **Broad network access:** Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms like mobile phones, laptops, PDAs etc.
- **Resource pooling:**

The provider's computing resources are pooled to serve multiple consumers using a multitenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand.
Examples of resources include storage, processing,memory, network bandwidth and virtual machines.

- **Rapid elasticity:** Capabilities can be rapidly and elastically provisioned, in some cases automatically, to quickly scale out and rapidly released to quickly scale in.
- **Measured Service:** Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g. storage, processing, bandwidth and active user accounts).

ARCHITECTURE:

An overview of basic Mobile Cloud Computing was presented in the
previous section. A general architecture in a broader sense was as depicted in Fig 1. A more detailed representation will be presented in this section.

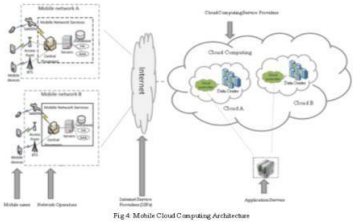

Fig.4 Mobile Cloud Computing Architecture

The mobile devices are connected to the mobile networks through base stations that establish and control the connections (airinterface) and functional interfaces between the networks and mobile devices. Mobile users' request and information are transmitted to the central processors that are connected to the servers providing mobile network services. Here, services like AAA (Authentication, Authorization and Accounting) can be provided to the users based on Home Agent (HA) and subscribers' data stored in databases. The subscribers' requests are then delivered to a cloud through the Internet. Cloud controllers present in the Cloud, process the requests to provide the mobile users with the corresponding cloud services. These services are
developed based on the concepts of utility computing, virtualization and service-oriented architecture.

The details of cloud computing will be different in different contexts. The major function of a cloud computing system is storing data on the cloud and using technology on the client to access that data.

Cloud Computing has manifest itself as a descendent of several other computing areas such as Service-oriented Architecture, grid and distributed computing, and virtualization and inherits their

advancements and limitations. They introduced Cloud Computing as a new paradigm in the sense that it presented a superior advantage over the existing under-utilized resources at the data centers. Several business models rapidly evolved to connect this technology by providing software applications, programming platforms, data-storage, computing infrastructure and hardware as services. Cloud as a type of parallel and distributed system consisting of a collection of interconnected and
virtualized computers that offer computing resources from service providers to customers meeting their agreed SLA(service level agreement).

We focus on a layered architecture which commonly demonstrates the effectiveness of Cloud Computing model in terms of user's requirements. The service model has been explained earlier in this section. Fig 5 below gives an overview of the layered architecture or cloud stack and who uses these.

Fig 5 : Cloud stack

The following strategy can be adopted by service providers to address the above issues:

- Network bandwidth strategy: Using regional data centers or other means to bring content closer to mobile broadband
- Network latency strategy: Application processor nodes to be moved to the edge of mobile broadband
- Battery saving strategy: Cloning the device in the network for compute and energy intensive management tasks such as automatic virus scanning of mobile devices
- Mobile cloud application elasticity: Dynamic optimization of application delivery and execution between the device and the network.

	Cloud infrastructure attributes		
Applications	**Compute intensity**	**Network bandwidth**	**Network latency**
Web-mail (Yahoo!,Gmail)	Low	Low	High
Social networking(Facebook)	Low	Medium	Medium
Web browsing	Low	Low	High
Online gaming	High	Medium	Low
Augmented reality	High	Medium	Low
Face recognition	High	Medium	Low
HD video streaming	High	High	Low
Language translation	High	Medium	Low

Compute intensity – High, required for compute-intensive apps
Network bandwidth – High, required for content, heavy, large data transfer apps
Network latency – Low, required for high interactivity

Table 1: APPLICATION AND CLOUD INFRASTRUCTURE MAPPING
Source: Alcatel-Lucent

OPEN RESEARCH ISSUES:

A. Energy efficiency:

Owing to the limited resources such as battery life, available network bandwidth, storage capacity and processor performance, on the mobile devices, researchers are always on the lookout for solutions that result in optimal utilization of available resources.

B. Security:

The absence of standards poses a serious issue specifically with respect to security and privacy of data being delivered to and from the mobile devices to the cloud.

C.Better service:

The original motivation behind MCC was to provide PC-like services to mobile devices. However, owing to the varied differences in features between fixed and mobile devices, transformation of services from one to the other may not be as direct.

D. Task division:

Researchers are always on the lookout for strategies and algorithms to offload computation tasks from mobile devices to cloud. However, due to differences in computational requirement of numerous applications available to the users and the variety of handsets available in the market, an optimal strategy is an area to be explored.

CONCLUSION:

Mobile Cloud Computing, as a development and extension of Cloud Computing and Mobile Computing, is the most emerging and well accepted technology with fast growth. The combination of cloud computing, wireless communication infrastructure,
portable computing devices, location-based services, mobile Web etc has laid the foundation for the novel computing model. In this paper we have given an overview of Mobile Cloud Computing that includes basic,general and layerd architecture,issues.

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A STUDY: 3D INTERNET VIRTUAL WORLDS

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Abstract

Also known as virtual worlds, the 3D Internet is a powerful new way for you to reach consumers, business customers, co-workers, partners, and students. It combines the immediacy of television, the versatile content of the Web, and the relationship-building strengths of social networking sites like Face book . Yet unlike the passive experience of television, the 3D Internet is inherently interactive and engaging. Virtual worlds provide immersive 3D experiences that replicate (and in some cases exceed) real life.

People who take part in virtual worlds stay online longer with a heightened level of interest. To take advantage of that interest, diverse businesses and organizations have claimed an early stake in this fast-growing market. They include technology leaders such as IBM, Microsoft, and Cisco, companies such as BMW, Toyota, Circuit City, Coca Cola, and Calvin Klein, and scores of universities, including Harvard, Stanford and Penn State.

Keywords

3D worlds, 3 dimensional virtual realities, exit reality.

Introduction

The success of 3D communities and mapping applications, combined with the falling costs of producing 3D environments, are leading some analysts to predict that a dramatic shift is taking place in the way people see and navigate the Internet. The appeal of 3D worlds to consumers and vendors lies in the level of immersion that the programs offer. The experience of interacting with another character in a 3D environment, as opposed to a screen name or a flat image, adds new appeal to the act of socializing on the Internet.

Advertisements in Microsoft's Virtual Earth 3D mapping application are placed as billboards and signs on top of buildings, blending in with the application's urban landscapes.

3D worlds also hold benefits beyond simple social interactions. Companies that specialize in interior design or furniture showrooms, where users want to view entire rooms from a variety of angles and perspectives, will be able to offer customized models through users' home PCs .

3D worlds also hold benefits beyond simple social interactions. Companies that specialize in interior design or furniture showrooms, where users want to view entire rooms from a variety of angles and perspectives, will be able to offer customized models through users' home PCs .

Google's new three dimensional virtual reality

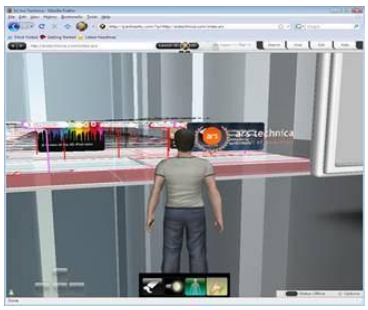
Anyone putting on "the Googgles" - as the insiders call them - will be immersed in a three dimensional "stereo-vision" virtual reality called 3dLife. 3dLife is a pun referring to the three dimensional nature of the interface, but also a reference to the increasingly popular Second Life virtual reality.

The "home page" of 3dLife is called "the Library", a virtual room with virtual books categorized according to the Dewey system. Each book presents a knowledge resource within 3dLife or on the regular World Wide Web. If you pick the book for Pandia, Google will open the Pandia Web site within the frame of a virtual painting hanging on the wall in the virtual library. However, Google admits that many users may find this too complicated.

Apparently Google is preparing a new revolutionary product called Google Goggles, an interactive visor which will display Internet content in three dimensions.

A 3D mouse lets you move effortlessly in all dimensions. Move the 3D mouse controller cap to zoom, pan and rotate simultaneously. The 3D mouse is a virtual extension of your body - and the ideal way to navigate virtual worlds like Second Life. The Space Navigator is designed for precise control over 3D objects in virtual worlds. Move, fly and build effortlessly without having to think about keyboard commands, which makes the experience more lifelike.

Controlling your avatar with this 3D mouse is fluid and effortless. Walk or fly spontaneously, with ease. In fly cam mode you just move the cap in all directions to fly over the landscape and through the virtual world. Hands on: Exit Reality The idea behind Exit Reality is that when browsing the web in the old-n-busted 2D version you're undoubtedly using now, you can hit a button to magically transform the site into a 3D environment that you can walk around in and virtually socialize with other users visiting the same site. This shares many of the same goals as Google's Lively (which, so far, doesn't seem so lively), though Exit Reality is admittedly attempting a few other tricks. Installation is performed via an executable file which places ExitReality shortcuts in Quick Launch and on the desktop, but somehow forgets to add the necessary ExitReality button to Firefox's toolbar . After adding the button manually and repeatedly being told our current version was out of date, we were ready to 3D-ify some websites and see just how much of reality we could leave in two-dimensional dust.



Exit Reality is designed to offer different kinds of 3D environments that center around spacious rooms that users can explore and customize, but it can also turn some sites like Flickr into virtual museums, hanging photos on virtual walls and halls. Strangely, it's treating Ars Technical as an image gallery and presenting it as a malformed 3D gallery .

3D Shopping is the most effective way to shop online. 3DInternet dedicated years of research and development and has developed the worlds' first fully functional, interactive and collaborative shopping mall where online users can use our 3DInternet's Hyper-Reality technology to navigate and immerse themselves in a Virtual Shopping Environment. Unlike real life, you won't get tired running around a mall looking for that perfect gift; you won't have to worry about your kids getting lost in the crowd; and you can finally say goodbye to waiting in long lines to check out.

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XML REPRESENTATION IN RDBMS- A REVIEW

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ABSTRACT:

XML is an emerging standard for the representation and exchange of Internet data. Along with document type definition (DTD),XML permits the execution of a collection of queries, using XPath to identify data in XML documents. In this paper we examine how XML data can be stored and queried using a standard relational database management system (RDBMS). We propose a technique for automatic mapping from an XML document to relations within the RDBMS. we propose a novel mechanism for translating an XPath query into an SQL statement. Furthermore, we propose efficient techniques for the construction of an XML document on the fly from the result set of the SQL statement.

KEYWORDS:

XML, Relational DBMS, DTD, XPath, SQL

1. INRODUCTION:

XML stands for E**X**tensible **M**arkup **L**anguage.XML was designed to store and transport data.XML was designed to be both human- and machine-readable.XML [3] is an emerging standard for the representation and exchange of Internet data. It is obvious that relational, object relational, or object-oriented data models, do not suffice to integrate data from several data sources in the web. To support this, semi-structured data models have been proposed. The nature of this semi-structured data is that it is self-descriptive, and that it incorporates an optional XML definition (DTD). The structure of a DTD can be very difficult to understand by simply looking directly at the XML.One of three alternative data models can be deployed for the persistent storage of semi-structured data (i.e., XML documents). First, the development of specialized data management systems can be noted, such as Rufus [11], Lore [1, 9], and Strudel [7].

It is not possible to reliably predict which of these three approaches will be widely accepted. The first, the use of specialized or special purpose database system, may work best, once needs are met concerning scalability and the level of maturity required for the handling of huge amounts of data. The second, an object-oriented database system, seems well-suited to complex data like XML, but vulnerable in the area of evaluating queries addressed to a very large database. The third approach, (RDBMS), provides maturity, stability, portability, and scalability [12]. Furthermore, since a majority of the data on the web currently resides in and will continue to be stored in RDBMS, the opportunity arises for constructing system using a RDBMS to store XML documents, making impossible to seamlessly query of data with one system and one query language We have proposed a novel and innovative approach for mapping XML documents into RDMBS relations. This mapping technique takes into account nested structure, and stores this information into the relation in an encoded form. Furthermore, the mapping technique relies on both DTD and content (the document itself).

Our goal is to provide the user with transparent, seamless data access. In other words, RDBMS storage and query processing will be hidden from the user. XPath is used for querying.

2. RELATED WORK:

To store semi-structured data (i.e., XML documents) into persistence storage, three alternative approaches can be proposed: a special purpose database management system, an object-oriented database management system, and a relational database management system. For a relational database management system one of two techniques can be considered. First, schema is extracted from XML documents based on semi-structured data [4, 6, 10]. By analyzing this semi-

structured data, and the workload of a target application, efficient schema can be constructed. Thus, performance will be little concerned with the matter of how semi structured data is stored in RDBMS. Second, rather than extracting a schema, different techniques are studied for storing .XML documents in relational databases.

3. XML PRIMERS:

An element of XML is simply a type declaration or a set of elements. Document type definitions (DTDs) define the structure of an XML document (e.g., what elements, attributes etc. are permitted in the document). XML documents contain data, and must contain exactly one root element which will contain all the other elements. It might happen that an element contains a set of sub-elements in addition to the data

For query purposes XPath can be used. XPath is a language for finding information in an XML document. Using XPath, we can specify the locations of document structures or data in an XML Document, and then process this information using XSLT.

4. PROBLEM STATEMENT:

XML is an emerging technology which is hierarchical in nature. It has been proposed for the purpose of data exchange in the Web. Its nested, self-describing nature provides simple, flexible means for applications to exchange data. However, it is not designed to facilitate efficient retrieval of data or data storage. Database management systems facilitate the persistent storage of data. The relational database management system is one of the successful DBMS which have dominated applications for more than 30 years because of its reliability, scalability, tools and performance. Therefore, XML documents are stored into a RDBMS. In this case, in order to handle XML queries, we need to come up with a mechanism for translating from XPath to SQL statements. Furthermore, we would like to render the RDBMS transparent to the user. In other words, the RDBMS will be hidden from the user.

5. OUR APPROACHES:

In this section, we first address the initial problem, then present a solution to the second.

5.1 X-R Conversion:-

Our approach to converting an XML document to the relations of the RDBMS (X-R) is as follows: First, we create a relation named, Sample Table in the RDBM Swith the columns *PathId, DataItem, and ParentId*. Note that PathId is the primary key. Each element along the data item of anXML document will be mapped as a tuple in the table. For the time being, we will ignore the element's attribute, as well as its value and Ids further . However, each element's tag will participate in the generation of PathId . Furthermore, each element's data will be stored as avalue under the column, DataItem. ParentId is used to keep the element's parent information .An element may be structured rather than atomic. In other words, an element may contain a set of sub-elements. In this case, besides a tuple for this element, a tuple or row will be created for each ofthe sub-elements. For example, in an XML document an element “transaction Set” will be mapped as a tuple in the Sample Table along with the content.,sub-element “table” of this “transactionSet” will be mapped as a tuple in the Sample Table relation. It is important to note that even if an element only contains a setof sub-elements (i.e., no Data Item associated with the element tagitself) we will still create a tuple for this element along with a null value in the Data Item. The rational behind this is to keep the element in the relation so that this will prove helpful during the extraction of nested structure information on the fly. For example, the sub-element “table” does not have any content, but it is nevertheless associated with a set of attributes and their values. Thus, DataItem for this row in the relation is empty .

5.2 Query Mechanism:-

With regard to the second problem, conversion of relational data to XML (R-X), we will first present a technique for translating XPath query to query path Id (similar to PathId), the latter Denominated QPathId. Next, we can construct an SQL statement using this QPathId. Finally, we will present alternative techniques for R-X conversion. In this paper we will address location path, that is, basic XPath query.

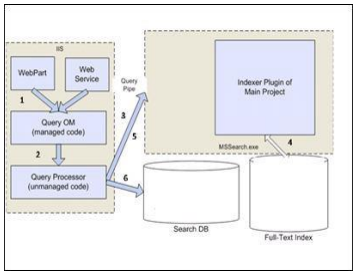

Fig1. Query mechanism

The basic XPath syntax is similar to file system addressing. If the path starts with the slash / it represents an absolute path to the required element. Furthermore, allocation path consists of a sequence of one or more location steps separated by /. For

example, location path /A/B/C consists of 3 location steps, A, Band C.

6. IMPLEMENTATION:

As the RDBMS, the Oracle database management system is used in a client server setting. Note that tuple shipment (i.e., communication cost) affects the response time of queries. To speed retrieval, the primary index is built on the PathId attribute of Sample Table. For mapping an XML document into the database we need to traverse the XML document. For this we rely on an XML document object model (DOM), the use of which facilitates the construction of a tree structure in the main memory. This tree structure will contain the document's elements, attributes, and text etc. A DOM-based parser exposes the data(i.e., makes available), along with a programming library-called the DOM Application Programming Interface (API), which will allow data in an XML document to be accessed and manipulated. This API is available for many different programming languages, including Java, which is used here.

7. CONCLUSIONS :

We have proposed an automatic mapping technique from an XML document to relations within an RDBMS. We have demonstrated that our novel approach preserves the nested structure of the XML documents. We have also devised a seamless, transparent framework for user access to XML data by hiding database details. For this, we have proposed a novel mechanism for the translation of an XPath query to an SQL statement. Further more, we propose efficient techniques for the construction of an XML document on the fly from the result set.

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BLUE EYE TECHNOLOGY: AN OVERVIEW

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Abstract:

It seems to be a fiction, but it will be the life lead by "BLUE EYES" technology in the very near future. The basic idea behind this technology is to give the computer the human power. We all have some perceptual abilities. That is we can understand each other's feelings. The "BLUE EYES" technology aims at creating computational machines that have perceptual and sensory ability like those of human beings. The Blue Eye system has hardware with software loaded on it. Blue Eye system can be applied in every working environment requiring permanent operator's attention for it. The hardware comprises of data acquisition unit and central system unit. The heart of data acquisition unit is ATMEL 89C52 microcontroller. Bluetooth technology is used for communication and coordination between the two units. Blue eye system can be applied in every working environment, which requires permanent operator's attention. Blue eye system provides technical means for monitoring and recording human operator's physiological condition. A blue eye is a project aiming to be a means of stress reliever driven by the advanced, technology of studying the facial expressions for judgment of intensity of stress handled. In totality blue eye aims at adding perceptual abilities which would end up in a healthy stress free environment and can be applied in every working environment requiring permanent operator's attention.

Keywords: *ATMEL 89C52 microcontroller, DAU (Data Acquisition Unit), CSU (Central System Unit)*

Introduction:

- BLUE in the term stands for Bluetooth, which enables reliable wireless communication.
- EYES, because the eye movement enables us to obtain a lot of interesting and important information.

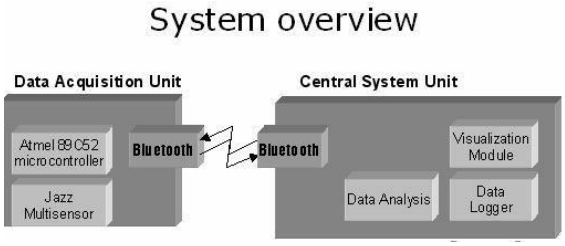
Blue eyes are a concept which targets on developing the machines that are mechanical and computer dependent. These machines also has the sensory capabilities and affective same as like those of the Human Beings. It is designed to be an interdependent system computer and here the system computer is made to work same like of those of the human behavior. Theses computer also recognize the emotional and physical condition of the human beings. Animal survival depends on highly developed sensory abilities. Likewise, human recognition depends on highly developed abilities to perceive, integrate, and interpret visual, auditory, and touch information. Without a doubt, computers would be much more powerful if they had even a small fraction of the perceptual ability of animals or humans. Adding such perceptual abilities to computers would enable computers and humans to work together more as partners. Toward this end, the Blue Eyes aims at creating computational devices with the sort of perceptual abilities that people take for granted Blue eyes is being developed by the team of **Poznan University of Technology& Microsoft**. It makes use of the "blue tooth technology "developed by **Ericsson.**

Key features of the system:

- visual attention monitoring (eye motility analysis)
- physiological condition monitoring (pulse rate, blood oxygenation)
- operator's position detection (standing, lying)
- wireless data acquisition using Blue tooth technology
- real-time user-defined alarm triggering
- physiological data, operator's voice and overall view of the control room recording
- recorded data playback

Structure of a Blue Eye System:

The major parts in the Blue eye system are Data Acquisition Unit and Central System Unit. The tasks of the mobile Data Acquisition Unit are to maintain Bluetooth connections, to get information from the sensor and sending it over the wireless connection, to deliver the alarm messages sent from the Central System Unit to the operator and handle personalized ID cards. Central System Unit maintains the other side of the Blue tooth connection, buffers incoming sensor data, performs on-line data analysis, records the conclusions for further exploration and provides visualization interface.



Data Acquisition Unit:

Data Acquisition Unit is a mobile part of the Blue eyes system. Its main task is to fetch the physiological data from the sensor and to send it to the central system to be processed. To accomplish the task the device must manage wireless Bluetooth connections (connection establishment, authentication and termination). Personal ID cards and PIN codes provide operator's authorization.

Jazz-multi Sensor:

Eye position measuring-direct infrared oculography

- Oxy and Deoxyhemoglobin measurement
- Two axial accelerometer
- Ambient light sensor

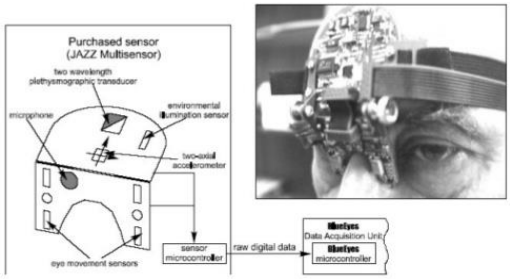
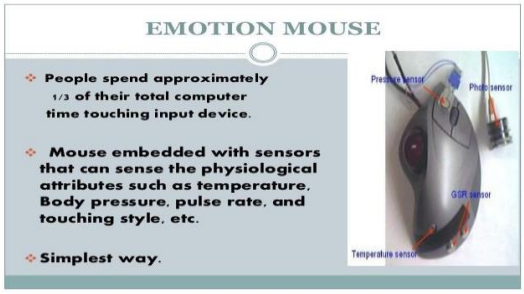


Figure 5. Jazz Multisensor

Central System Unit:

Central System Unit hardware is the second peer of the wireless connection. Maintains blue tooth connections in the other side. Buffers incoming sensor data. Performs on-line data analysis. Records the conclusion for further exploration. Provides visualization interface.

Emotion Mouse:

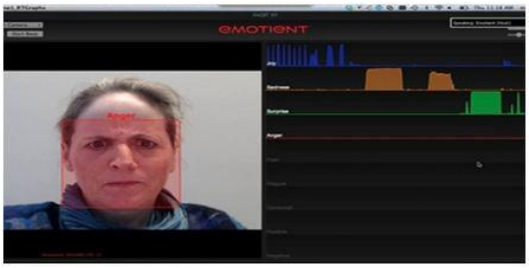


Emotion and Computing:

Rosalind Picard (1997) describes why emotions are important to the computing community. There are two aspects of affective computing: giving the computer the ability to detect emotions and giving the computer the ability to express emotions. Not only are emotions crucial for rational decision making as Picard describes, but emotion detection is an important step to an adaptive computer system. An adaptive, smart computer system has been driving our efforts to detect a person's emotional state. By matching a person's emotional state and the context of the expressed emotion, over a period of time the person's personality is being exhibited. Therefore, by giving the computer a longitudinal understanding of the emotional state of its user, the computer could adapt a working style which fits with its user's personality. The result of this collaboration could increase productivity for the user. One way of gaining information from a user non-intrusively is by video. Cameras have been used to detect a person's emotional state

(Johnson, 1999). We have explored gaining information through touch. One obvious place to put sensors is on the mouse. Through observing normal computer usage (creating and editing documents and surfing the web), people spend approximately 1/3 of their total computer time touching their input device. Because of the incredible amount of time spent touching an input device, we will explore the possibility of detecting emotion through touch.

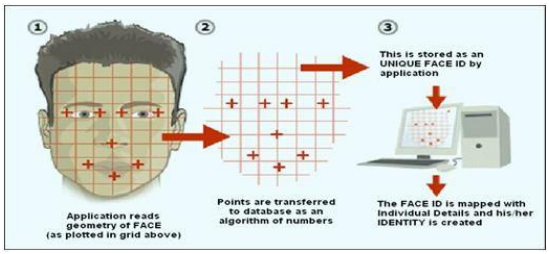
Facial-Recognition Tech Can Read Your Emotions:



If someone is described as "smiling, but not with their eyes," that person is likely faking the smile. But what does that mean, exactly? And how can one tell a real grin from a fake one?

New software by California-based company Emotion can do just that. Using a simple digital camera, Emotion's software can analyze a human face and determine whether that person is feeling joy, sadness, surprise, anger, fear, disgust, contempt or any combination of those seven emotions.

"There's often a disconnect between what people say and what people do and what people think," said Marian Bartlett, co-founder and lead scientist at Emotion. The company's software, called Facet, can reconnect those dots by accurately reading the emotions registering on a person's face in a single photograph or video frame. All it needs is a resolution of at least 40 by 40 pixels.



Above image describes how application reads geometry of FACE (as plotted in grid above). Points are transferred to database as an algorithm of numbers. This is stored as an UNIQUE FACE ID by application. Then the FACE ID is mapped with individual details and his/her IDENTITY is created.

Applications:

1. In automobile industry
2. In video games
3. To create "Face Responsive Display". Ex.- A blue eyes enabled TV set would become active when we look in its direction. Voice commands could then tune your favorite channel and adjust the volume.
4. Generic control rooms
5. Power station
6. Captain bridge
7. Flight control centers
8. Operating theaters
9. Military-To have devices with emotional intelligence.

   Ex.- 1.Training equipment
   2. Simulation systems

Advantages:

- Prevention from dangerous incidents
- Physiological condition monitoring
- Operators position detection

Disadvantages:

- Doesn't predict nor interface with operator's thoughts
- Cannot force directly the operator to work

Future Trend:

What can we do with blue eye technology?

It has the ability to gather information about you and interact with you through special techniques like facial recognition, speech recognition, etc.

It can even understand your emotions at the touch of the mouse.

It can verify your identity, feel your presence, and start interacting with you.

The machine can understand what a user wants, where he is looking at, and even realize his physical or emotional states.

It realizes the urgency of the situation through the mouse.

For instance if you ask the computer to dial to your friend at his office, it understands the situation and establishes a connection.

It can reconstruct the course of operator's work.

Conclusion:

In the near future, ordinary household devices-such as television, refrigerators, ovens may be able to do their jobs when we look at them and speak to them. Future applications of blue eye technology are limitless. It provides more delicate and user friendly facilities in computing devices. Gap between the electronic and physical world is reduced. The computers can be run using implicit commands instead of the explicit commands. These new possibilities can cover areas such as industry, transportation, military command centers or operation theaters. Many researchers are trying to implement this technology.

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OVERVIEW OF WEB DESIGN AND IT'S APPLICATION

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Abstract:

Web design means representation of content transfer from user to client through World Wide Web by web browser. User can send various types text, images, etc. using markup languages user can able to implement a web site. i.e. markup language such as HTML, CSS, etc. Server, client, and network are the major component of web design medium. Implementation of web site is the main purpose of web design. Web design is undoubtedly the most sophisticated and increasingly complex method to support communication in today's world.

Keywords:

Markup language, HTML, CSS, Server, client

Introduction:

Web design is one of the fastest growing and most industrious professions in today's market. Given that web design is a practically new field in which there are not many occupations, there are trends and ideas being added to web pages everyday by prominent webmasters around the world. Whether it is created for recreational reasons, for business purposes, or for practice, the designing of web pages is a remarkable, and in depth process. From large enterprises, to small industries, independent owners, or someone develops their own personal site using the web design.

The web has grown to be the easiest way to broadcast information and advertise. Many of today's webmasters use different approaches in web design. There are two formats that are universally known: HTML format i.e HTML provides tags is used to develop a web site design, and the recently developed Microsoft Front Page in 1998, it is easier for the average computer user with the development of Microsoft Front Page.

History:

Tim Berners-Lee published first Website in August 1991.A simple text-base page with plain left-aligned black text and bright blue links on a white background. Web design as we know it was born in 1993 when early browser began to display images with text Berners-Lee was the first to combine Internet communication with hypertext Websites are written in a markup language called HTML, This was new and different from existing forms of communication - users could easily navigate to other pages by following hyperlinks from page to page.

The markup language changed to become more complex and flexible, giving the ability to add objects like images and tables to a page, which has feature that the table is used to display tubular information. As times change, websites are changing the code on the inside and visual design on the outside with ever-evolving programs and utilities.

- **What is web design?**

"It is the creating presentations of content is delivered to an end user through the World Wide Web , by via of a Web browser "
Web design is the process of creating websites. It encompasses several different aspects, including webpage layout, content production, and graphic design. While the terms web design and web development are often used interchangeably, web design is technically a subset of the broader category of web development.

Defining Web Design

There are five areas that cover the major facets of Web design:

Content This includes the form and organization of a site's content. This can range from the way text is written to how it is organized, presented, and structured using a markup technology such as HTML.

Visuals This refers to the screen layout used in a site. The layout is usually created using HTML, CSS, or even Flash and may include graphic elements either as decoration or for navigation. The visual aspect of the site is the most obvious aspect of Web design, but it is not the sole, or most important, aspect of the discipline.

Technology The use of various core Web technologies such as HTML or CSS fall into this category. In this

technology refers interactive elements of site, which built using programming techniques. Such elements range from client-side scripting languages like JavaScript to server-side applications such as Java servlets.

Delivery The speed and reliability of a site's delivery over the Internet or an internal corporate network are related to the server hardware/software used and to the network architecture employed.

Purpose The reason the site exists, often related to an economic issue, is arguably the most important part of Web design. This element should be considered in all decisions involving the other areas.

Medium of the Web Design:

1) The Web Design Pyramid

The pyramid provides a simple way for designers to think of all aspects of Web design in interplay, but does little to provide a deeper understanding of the Web medium.

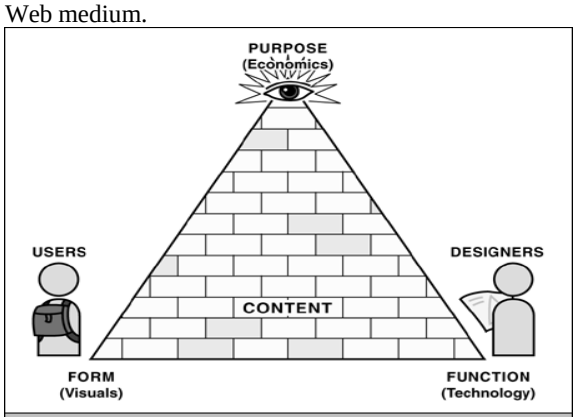
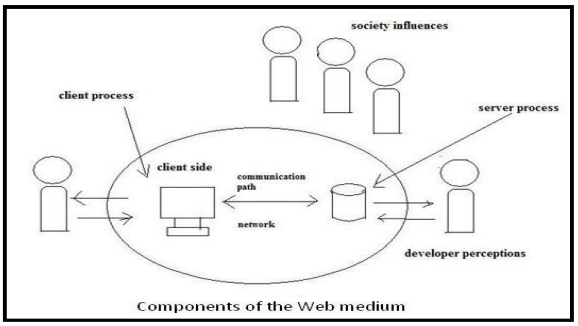


Figure 1: Web pyramids: the facets of Web design

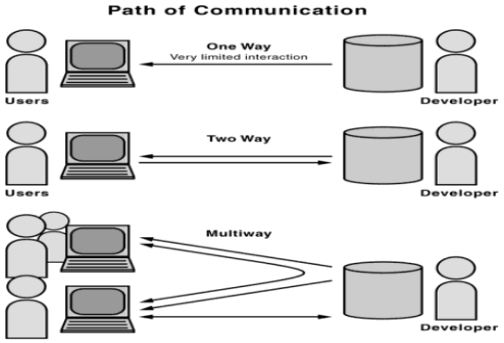
While the Web pyramid analogy is a very abstract way of describing Web design, it is a useful tool for showing the interplay of the various components of Web building.

Component of web medium:-

There are 3 component of the web medium.



The server-side: This includes the Web server hardware and software as well as programming elements and built in technologies. The technologies can range from simple CGI programs written in PERL to complex multi-tier Java based applications and include backend technologies such as database servers that may support the Web site.
The client-side: The client-side is concerned with the Web browser and its supported technologies, such as HTML, CSS, and JavaScript languages and ActiveX controls or Netscape plug-ins, which are utilized to create the presentation of a page or provide interactive features.
The network: The network describes the various connectivity elements utilized to deliver the Web site to a user.



Types of Web Sites

1) Abstract Groupings

This abstract grouping suggests that there is a transition from more document- or print-oriented Web sites to more interactive programmatic Web sites.

Another way we might group sites is within the following broad categories:

- **Informational sites** These sites provide information about a particular subject or organization. aspects
- **Transactional sites** This type of site can be used to conduct some transaction or task. E-commerce sites fall into this category.
- **Community sites** These provide information or transaction-related facilities, but focus on the interaction between the visitors of the site.
- **Entertainment sites** These sites are for game playing or some form of amusing interaction, which may include transactional, community, and informational elements.
- **Other sites** Included here are artistic or experimental sites, personal Web spaces .such as Web.

Type of categorization we see five major groupings:

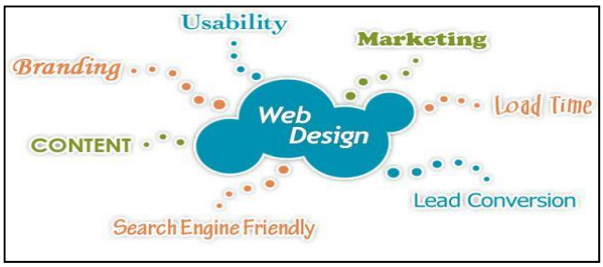
- **Commercial**: These sites provide information about a particular subject or organization.
- **Government**: This type of site can be used to conduct some transaction or task. E-commerce sites fall into this category.
- **Educational**: These provide information or transaction-related facilities, but focus on the interaction between the visitors of the site.
- **Charitable**: It includes transactional, community, and informational elements.
- **Personal**: It Include into the artistic or experimental sites

2) Visual Groupings

- **Text oriented** These are sites designed with a focus on textual content. Such sites are relatively lightweight, download-wise, and often somewhat minimalist in design.
- **GUI style** These are sites that follow certain graphical user interface (GUI) conventions from software design, such as top-oriented menu bars, icons, and pop-up windows.

Text oriented sites:

- **Metaphorical:** Metaphor sites borrow ideas from "real life." For example, a site about cars might employ a dashboard and steering wheel in design and navigation.
- **Experimental**: Experimental include in Creativity, unpredictability, innovation and even randomness.
- **Website Planning**:Steps of website planning:



1. **Set your purpose and goals:** It's important to identify your website's purpose, as well as your target audience. You should also define your goals.
2. **Create a budget.** Whether you're an established, mid-sized organization or a fledgling start-up. You should always set a budget for your website expenses. This will probably include funds for web design, programming, and web hosting what you save in money you may later pay for with a lackluster site and lots of headaches.
3. **Assign roles.** Assemble the team of people who will be working on the website. Your team may consist of: Company stakeholders(owner, marketing manager),Web developer Content writer and/or editor HTML/CSS professional, Web and graphic designer
4. **Create a content strategy.** What kind of content will you be displaying on your website? Content is basically anything that gives your visitors information. It can include, but is not limited to: Blog posts, Documents ,Video, Pictures (such as in a gallery),Slideshows, Embedded social media feeds
5. **Structure your website.** Decide what pages you'll be using and what features will be on each one. Most websites have an about and Contact page, but the pages you use should meet your business' needs.

6. **Create a mock-up.** A page mock-up, also known as a wireframe, is essentially the outline of your website. Usually created in Photoshop or Fireworks, you don't have to put too much detail into your mock-up.

7. Start designing. Good website design includes both usability and aesthetics. An ugly website will drive away visitors, as will a website that's difficult to navigate.

Make your navigation easy to understand and easy to find. Research shows that most users expect website navigation to be vertical and centered at the top of the page.

Use an easy-to-read font for blocks of text. Choose a background color and text color that contrast well

Make sure your site fits the screen. Use responsive design to make your website one that adapts to all screen sizes.

Keep your website light so that it loads quickly.

Make the company logo and tag line prominent on the page.

Keep styles and colors consistent across the website.

Make notes about what to include in the style sheet as you design, as you want to keep style and function separate.

8. Test it out. Testing is important for getting out bugs out and catching details that you might have missed initially. Make sure your website shows up the way you want it to in all browsers, Test it on our personal electronic device such as mobile, and tablet.

9. Maintain your site. Once your site is launched, the work isn't over. A website is an ongoing entity that continuously represents your company, so maintenance is very important.

Application of web design:

1) Better search engine ranking and visibility.
2) Exceptional design gives more revenue.
3)Business
4) The most important things in web designing are branding and graphic designing. It includes banners, logos, pictures and interactive features of the company.
5) Web layout is an essential part of designing and it presents the layout of web pages.
6) Navigation systems.
7) Fonts and typography are important things to make your website attractive and eye-catching.
8) SEO is the best tool to publish your website and raise traffic for it.
9) Website Designers can convert any existing or new website design into live Site using simple copy & paste.

Conclusion:

Good web design plays a part for accessibility, readability and usability. This is the reason why Web design is so difficult. Getting our feet wet in design is easy, especially today, with so many content management systems, blogging tools and themes readily available but truly mastering all of the facets of Web design takes time and let's be honest, talent. Having the ability to craft pretty designs is just one facet, but an important one**.**

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AUTOMATED SYSTEM FOR THE GENERATION OF DIGITIZED TEXT FORMAT MUSICAL NOTATIONFROM THE RECORDED INDIAN CLASSICAL BANDISH

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Abstract

This research work is abasic step towards the development of the automated digitized text format notation generation systemfor the Indian classical Bandish. The detail knowledge of the Swar and Indian classical Bandish is studied for this proposed research work. The speech-to-text recognition method is proposed here for the generation of Musical notation from recorded Bandish. The main emphasis of this paper is to discuss and explain the distinguish feature of the Swara which is useful to recognize the Bandish notation and framing and windowing technique of the speech.

Keywords: Indian classical Bandish, speech-to-text recognition, notation, feature extraction, windowing and framing.

1. Introduction

In the current era research in digital signal processing i.e. Musical signal processing is the separation or formation of Musical notes or notation [1].

1.1 Automatic Speech-to-Text Recognition System

This system uses the process and related technology for recognition, understanding and conversion of speech signals into a sequenceof words,characters, digits, or other units of the speech in the text format. Currently the number of researcher has been tried to develop an automated system for Speech understanding systems for various Indian languages like Hindi, Marathi. Speech signal contains mainly twotypes of information: speech content and the speaker identity. The main aim of the Speech recognizersis to extract the lexical information from the speech signal independently of thespeaker by reducing the inter-speaker variability. Speaker recognition is concerned withextracting the identity of the person [7]. The speech is classified in to the two categories as:

a) Continuous speech**:** When user speak in amore normal, fluid manner without having to pause
b) between words, which is referred as continuous speech.
c) Discrete speech:when user speaks with taking rest between each word then such speech is referred as discrete speech. [3,4,7]

1.2 Speech Terms

a) Phoneme - A phoneme is an abstract unit that represents sounds and writing in a systematic, unambiguous way [3].
b) Phonetics - It is the representation of the sounds of a language [3].
c) Grapheme-It is the smallest unit of written language. Multiple graphemes may represent a single phoneme [3].
d) Fundamental frequency - Some complex sounds repeats over time, as do many of the sound of speech and music. Such sounds are called periodic. When a number of pure tones are presented, one of them will naturally have a frequency lower than the others. The lowest rate of a sound's vibration is called the fundamental frequency and it is determined by the physical properties of the vibrating body [3].
e) Pitch Period: A. Pitch Period is estimated using a Parallel Processing Approach. Pitch period estimation (fundamental frequency estimation) is one of the most important problems in speech processing. Pitch detectors are used in vocoders, speaker identification and verification systems, and aids-to the handicapped [3].
f) Pitch:The study of the speech spectrum told us that the speech consists of pitch and related harmonic frequencies [3].
g) Cepstral feature:The feature extractor computes cepstral features of the enhanced speech signals using a combination of linear predictive coding and mel-filter analysis. The extractor compensates for the enhancement to the time varying speech signals after they are transformed to a frequency domain representation [3].
h) Wavelet:The computation of wavelet is carried out by mallat decomposition. The signal is decomposed by passing through both low pass filters and high filters and then down-sampled. The low passed version then is processed with the same procedure. This offers both smoothed

version and detailed version of the signal in different scales and thus achieves multi-resolution analysis [3].

1.3 Indian Classical Music and Bandish

Music is bestowed upon mankind by nature for influencing the inner world (spiritual) and moral characters. It is an integral part of social and cultural life of the human beings. It is a strongest effective vitamin for personality development in all aspects physiological, psychological, physical, moral, intellectual andspiritual effects.

The Indian classical music is based upon the "Ragas" concept. From the ancient time the teaching method for music is used "Gurumukhi", that means orally one-to-one and face-to-face teaching. Students listen from the teacher and try to absorb it. The seven basic Swaras "Sa", "Re", "Ga" "Ma", "Pa", "Dha" and "Ni" (musical notes) of the musical octave with five intermediate notes "Komal Re" , "KomalGa" ,"KomalDha" , "Komal Ni" and "Tivra Ma"have a one-to-one correspondence with the character's sang in a lyric.[8,9,10] The figure 1 shows the theSwars with two types of presentation system Bahtkhande and Paluskar.

	Bhatkhande System	Paluskar System
Pure notes	रे ग म	रेगम
Flat Notes	रे॒ ग॒ ध॒	रे॒ ग॒ ध॒
Sharp Note	मं	म़
Middle Octave	सरेगम	सरेगम
Lower Octave	नी॒ ध॒ प॒	नी॒ ध॒ प॒
Upper Octave	गं मं पं	गंमंपं
Single Beat (Semi-Breve)	रे ग म	रे॒ ग॒

ancient Indian text, SwaraSastra,presentedthe seventy-two melakarta ragas (parent ragas) like Bhairav, Kalyan and so on[8]. The theoretical part of music has been found in written form in various books and the practical part also available in various books; after the life-spend work of two legends Pandit V.N. Bhatkhande&Pandit V.D. Paluskar. They were worked deeply and very hardly on making notations of Indian Classical Music, especially the notations of Bandish. Bandish is alyric or small song with two part Sthayi and Antara. It includes all the Swar of that particular Raga to which that Bandish is presented. Since, Bandish is very important to learn and study the Raga.

Making notation is the task to write the Swar related to the lyrics. The Swar decides how to sing the lyric and how to play it on musical instrument. Also Swar decides what scale of voice to sing that lyric.By hearing the Bandish,it is very difficult and tedious task to write the notation for same. Only the expert persons of Indian classical music have been able to write notation by listening the Bandish. [9, 10] Till today,the manual system is used to write the notation of a Bandish.

This paper proposed an automated system for the generation of digitized text format musical notation from the recorded Indian classical Bandish. The atomization of this system will be helpful to make the hard & soft copies of notations which will be helpful for singers, teachers, composers and students in present period and for the future era. This system mainly focuses on to study the basics of Indian classical Music related to this system and the design phase of this system.

After giving a brief introduction about speech-to-text recognition system, speech terms and Indian classical music in the section 2, literature is reviewed. In the section 3 discussed the proposed system and presented the architecture for the system. In the Section 3 also discussed the framing and windowing technique for the segmentation of the inputted sound file and a distinguish feature to find out the notation of the Bandish. Section 4 is the concluding section followed by the references.

2. Literature Review

For this research work numbers of literatures are reviewed to study the speech recognition system, speech-to-text conversion system. In research paper [1] theyconcluded that the musical notes Bass, Drum and Human vocals with Guitarcan be separated from each other according to their musical source by using Non-Negative Decompositionmethodology [1].

The main aim of work presented in [2] is tohow to apply the different techniques for Speech-to-Text Recognition in an effort to improve learningperformance in an online synchronous cyber classroom environment.

An efficient speech to text converter for mobile application is presented in [5]. The prime motive of this research work is to formulate a system which would give optimum performance in terms of complexity, accuracy, delay and memory requirements for mobile environment. And lastly they concluded that the accuracy increases with the increase in training data. As a result, memory needed also increases. They found that carefully forming the database helps a lot in reducing memory requirements and increases recognition accuracy [5].

The several elements are identified in the research paper [12] to improve theperformance and might give better accuracy. They conclude that the theme of

thisstudy will be helpful for other languages for Speech-to-Textconversion and similar tasks.

The paper [13] has been given a possibility to manage mobile devices without installing complex software for speech processing, resulting in memory savings. They concluded that a lack of application Voice SMS is its adaption only for English language, and the need for permanent Internet connection.

The [14] document presents various Speech Recognition issues in Indian script. They also discussed the various steps, fundamental terms and basic information about speech recognition and speech synthesis. In this paper they also discussed the fundamentals of speech recognition and different issues like commands by using hyperlink, effectiveness, overlapping speech, low signal to noise ratio, homonyms.

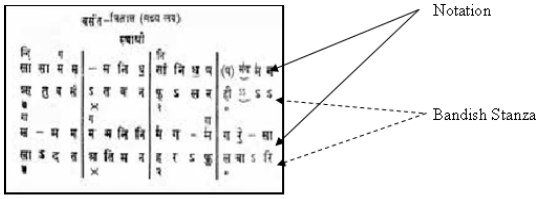
The paper [15] is analyzedthe limitations of current methods for the automatic music transcription and identify promising directions for future research. They concluded that current transcription methods use general purpose models which are unable to capture the rich diversity found in music signals.

In paper [17] a musical note recognition system basedon harmonic modification and Artificial Neural Network(ANN) is proposed. In this study, musical notes were accurately classified.Taking into account that real life audio signals work onstructured and unstructured environments, the probleminvolves factors that seriously affect intelligent systemsperformance. Issues as noise, variable amplitude and tonecolor are present on the audio files conforming the dataset, although it was observed that the neural network wasrobust enough to discriminate these problems.

The detail process of speechrecognition using artificial intelligence technique is described in [18]. This process included coustic model, Language model,Trigram model, Class model, Source channel model. They concluded that speech recognition performance systems are now beingdeployed within telephone and cellular network and within nextfew years speech recognition will be pervasive in telephonenetwork around the world telephone needs completelydifferent acoustic model it need to be able to interface withtelephony system because there is no GUI it needs to managea spoken dialogue with user. Information about the music lyrics includes individual notes; tempo, beat, and othermusical properties, along with listener preferences based onhow the listener experiences music are discussed in [19].In this paper they considered thekinds of information available in the music signal, reviewing currentwork in automatic music signal analysis, from the detection of individualnotes to the prediction of listeners' music preferences.

3. Proposed System

The input for the proposed system is the recorded sound file of the Badish and the output of this automated system is the digitized notation text file. Figure 2 shows example of the notation of the Bandish' RutuBasantBan', of Raga 'Basnat'.



Notation of 'RutuBasantBan' Bandish based on the Raga 'Basant'

Figure 2: Example of Bandish Notation.

3.1 System Architecture

Speech to text technology translates speech input into text in a digitized form [2, 5].The proposed automated system of creation of notation of Bandish has two phases. The first phase is speech recognition and second is speech detection. The first phase included the number of steps as: Bandish acquisition, conversion of acoustic signal to digital signal, noise removal i.e. filtering of the noise, segmentation of digital signal into words and phonemes,and feature extraction. The second phase included the steps as match the feature with training database, generation of the notation for each phoneme, concatenation of the notations and creation of a notation text file. Figure 3. shows the architecture of the proposed system.

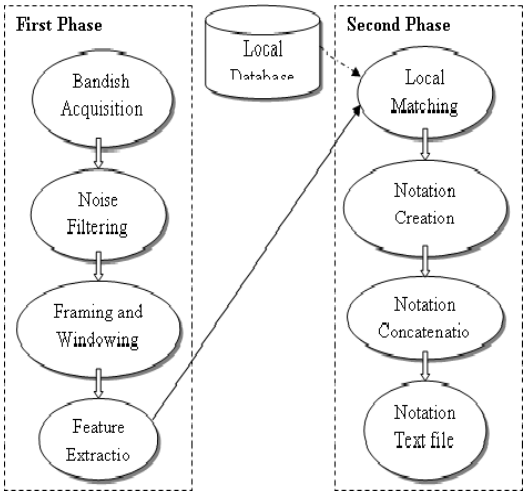


Figure 3: System Architecture.

In this system local database contain the feature vector related to each Swar. The feature vector contains the feature sound vibration feature, wavelet, frequency, pitch, pitch period, intensity about that Swar. Extracted feature of the phoneme will be matched with matching algorithm and appropriate notation for that phoneme will be found out. After creation of notation of whole Bandish notations are concatenated in the sequence in which they are created and finally notation text file will be generated.

3.2 Framing and Windowing

The size and shape of the vocal tract is altered during the speech, mostly by moving the tongue and resulted in frequency and intensity changes that emphasize some harmonics and suppress others. Since, the resulting waveform has a series of peaks and valleys. Each of the peaks is called a formant and it is manipulation of formant frequencies that facilitates the recognition of different vowels sounds [11].Figure 4 shows the example of wave form and spectrogram to shows the peaks and valleys in a sound speech.

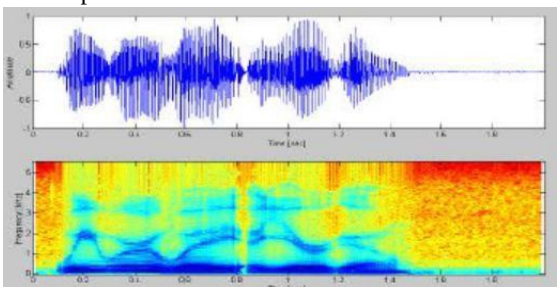


Figure 4: Waveform and Spectrogram of input sound file [3].

3.3 Feature Extraction

Each Raga is presented by the Raga lakshana(norms) and srutishuddhi, (pitch purity) [8]. When each character in the Bandish has been sung the sound vibrations has been generated. These sound vibrations are related to that Swars which are associated with that character of the words in stanza of the Bandish. The Table 1 shows the sound vibrations associated with each Swar for the middle octave. When the Swars are in lower or upper octave then sound vibrations are one half and double to the middle octave respectively.

Swar	**Swar type**	**Sound Vibrations in Hz**
‘Sa’	Shudha	240
‘Re’	Komal	$254\frac{2}{17}$
‘Re’	Shudha	270
‘Ga’	Komal	288
‘Ga’	Shudha	$301\frac{17}{43}$
‘Ma’	Shudha	320
‘Ma’	Tivra	$388\frac{14}{17}$
‘Pa’	Shudha	360
‘Dha’	Komal	$381\frac{3}{17}$
‘Dha’	Shudha	405
‘Ni’	Komal	432
‘Ni’	Shudha	$452\frac{4}{53}$
‘Sa’	Shudha	480

Table 1: List of Swars with its types and sound vibrations for middle octave.

The sound vibrations have been calculated by using the frequencylike calculating the frequency of an oscillating pendulumand force such as tines of a tuning fork[11]. Frequency is the measurement of the number of occurrences of a repeated event per unit of time. It is also defined as the rate of change of phase of a sinusoidal waveform. To calculate the frequency of the event, the number of occurrences of the event within a fixed time interval are counted, and then divided by the length of the time interval.

Similarly, speech has a number of features that need to be taken into account such as wave, pitch,Fundamental frequency, wavelet, intensity, pitch period and so on.

Conclusion

The proposed work for the automated system for notation formation of Indian classical Bandish will be useful for the formation of other Indian classical songs type such asTarana, Dhrupad, Chaturang, Dhamar etc. The atomization of this system will be helpful to make the hard and soft copies of notations which will be helpful for singers, teachers, composers,and students in present period and also a databank for the future era.The sound vibration feature is the most useful feature to distinguish the notation from another notation and plays an important role to recognize the notation.

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PERFORMANCE ANALYSIS OF DES AND RSA ALGORITHMS BYFESTIALSTRUCTURE AND MODULAR EXPONENTIATION METHOD

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Abstract:

DES performs 16 sequential calculations of substitutions on separate halves of the message to derive the encrypted result. DES is a symmetric process, linear calculation, and results in one secret key. The RSA algorithm is the best-known public-key system. In public-key cryptography, a pair of keys are involved: a public key and a private key. Every person has both a public key and a private key. Keys are the heart of encryption. Keys are complex mathematical formulas (algorithms), that are used to encrypt and decrypt messages.

Introduction:- The data stored in the computer is called information. The information plays an important role for the business decisions. Therefore it is highly confidential and need to be secured properly. Insecurity of information may lead to destruction and failure of the system.

For protection of the data, the concept of Information Security has evolved. The computerized system, the information is transferred through internet. The system which are very popular for handling information like Credit Cards, ATMs, e-banking transaction, e-commerce transaction, military information, government information, hospital information etc. must be completed confidentially and consistently. Therefore a system is required to protect such data from unwanted users. Such important data can be used by the people having destructing mind and may cause a severe damage.

Information security means protecting the important data from the unauthorized users. It has some characteristics like confidentiality, integrity, repudiation and availability. In this system data can be secured in proper way and confidentiality can be maintained in the business transaction.

Introduction to Cryptography:

Cryptography is the study of methods of secret and secure communications. Normally, any communication system will be as follows: -

Medium

Message (Sender) → Message (Receiver)

The medium is a telephone line or a satellite link etc. None of which is secure. Any intruder can have access to the message because the medium is not secure. Hence, the following model is there: -

Plain Text → Encryption → Cipher Text (Sender)

Cipher Text → Decryption → Plain Text (Receiver)

Plain Text: - Message in the original form.

Encryption: - The process of encoding the plain text.

Cipher Text: - Encrypted plain text.

The process of encryption and decryption make use the entity called key, which is normally known only to sender and receiver.

Types of Cryptography: -

There are two type of cryptography: -

1. Symmetric Key cryptography: - In this cryptography, the same key is used by both sender and receiver. Using the same key, both can encrypt and decrypt the data.

2. Asymmetric Key Cryptography: - In this cryptography, there are two keys, a private key and a public key. The private key is kept by the receiver. The public key is announced to the public. When the message is received, receiver uses the private and decrypts the message.

Information Security Objectives

•Confidentiality or secrecy is the prevention of the disclosure of information.

•Data separation is the ability to keep information of varying types and levels of access in the same physical or logical location, e.g. on the same hard disc drive.

•User Identification and Authentication (I&A) is the process of proving one's identity.

•User authentication is the binding of a user's identity to information.

•Non-repudiation is the ability to prove that a user's identity is bound to information.
•Data integrity is the ability to detect tampering of information. Message authentication means data integrity, user authentication and non-repudiation.

All Cryptographic algorithms are mostly use to provide security for various types of data

There are many examples of strong and weak keys of cryptography algorithms like RC2, DES, 3DES, RC6, Blowfish, and AES. RC2 uses one 64-bit key .DES uses one 64-bits key. Triple DES (3DES) uses three 64-bits keys while AES uses various (128,192,256) bits keys.

In Asymmetric Key encryption, two different keys are used for encryption and decryption- Public and Private. The public key is meant for general use so it is available to anyone on the network. Anyone who wants to encrypt the plaintext should know the Public Key of receiver. Only the authorized person can be able to decrypt the cipher text through his own private key. Private Key is kept secret from the outside world. Algorithms are RSA, Diffie-Hellman, Elgamal.

DES: (Data Encryption Standard), was the first encryption standard to be recommended by NIST (National Institute of Standards and Technology). It is based on the IBM proposed algorithm called Lucifer. DES became a standard in 1974 . Since that time, many attacks and methods recorded that exploit the weaknesses of DES, which made it an insecure block cipher.

3DES: As an enhancement of DES, the3DES (Triple DES) encryption standard was proposed. In this standard the encryption method is similar to the one in original DES but applied 3 times to increase the encryption level.But it is a known fact that 3DES is slower than other block cipher methods.[12]

AES: (Advanced Encryption Standard), is the new encryption standard recommended by NIST to replace DES. Rijndael (pronounced Rain Doll) algorithm was selected in 1997 after a competition to select the best encryption standard. Brute force attack is the only effective attack known against it, in which the attacker tries to test all the characters combinations to unlock the encryption. Both AES and DES are block ciphers.

Blowfish: It is one of the most common public domain encryption algorithms provided by Bruce Schneier – one of the world's leading cryptologists, and the president of Counterpane Systems, a consulting firm specializing in Blowfish is a variable length key, 64-bit block cipher. The Blowfish algorithm was first introduced in 1993.This algorithm can be optimized in hardware applications though it's mostly used in software applications.[3]

RSA: The RSA cryptosystem, named after its inventors R. Rivest, A. Shamir, and L. Adleman, is the most widely used public key Cryptosystem. It may be used to provide both secrecy and digital signatures and its security is based on the intractability of the integer factorization. The RSA scheme is a block cipher in which the plaintext and cipher text are integers between 0 and n 1 for some n. A typical size for n is 1024 bits, or 309 decimal digits. That is, n is less than $2^{1024.}$

This introduction to each algorithm is to provide the minimum information to distinguish the main differences between them.

As described in introduction part about all Symmetric key and Asymmetric key encryption algorithms which are mostly applicable for maintaining information security here I select most common algorithms DES and RSA . Here in both of the types the role of the key is very important for maintaining the information security

DES algorithm is used for data transmission because for its higher efficiency in block encryption.[7]

Features	DES	RSA
Algorithm Type	Symmetric	Asymmetric
Block size	64 bit	
Key Size	56 bit	512 to 4,096 bit typical
Created By	IBM in 1975	Ron Rivest, Adi Shamir, andLeonard Adleman IN 1977
Algorithm Structure	Fiestel Network	The algorithm is based on modular exponentiation
Rounds	16	1
Attacks	Brute Force Attack	A 768 bit key has been broken
Key used	Same key is used for encryption and decryption purpose.	Different keys are used for encryption and decryption purpose.
Scalability	Scalable algorithm due to varying the key size and block size.	No scalability occurs
Throughput	Very High	Low
Confidentiality	High	Low
Avlanche Effect	No more effected	More effected

[13][14]

Fig : Comparative study of DES and RSA algorithms

Block Cipher - An encryption scheme in which the clear text is broken up into blocks of fixed length, and encrypted one block at a time .

A block cipher is one in which a block of plaintext is treated as a whole and used to produce a ciphertext block of equal length. Typically, a block size of 64 or 128 bits is used. A symmetric key modern cipher encrypts an n bit block of plaintext or decrypts an n bit block of ciphertext.

Block Cipher is generally used using following concepts which are strongly recommended and used in standard algorithms like DES,3-DES,AES, BLOWFISH, TWOFISH, RC-4, IDEA etc.

As per comparative study in first report common structure required for three algorithms DES, TDES and BLOWFISH is Fiestel structure.

Working of Feistel Cipher :

Feistel Cipher - An iterate block cipher that uses the following algorithm:

Feistel function F is represented by the following operations:

1. Expansion – 32 bits to 48 bits based on an expansion table.
2. Key mixing – round key combined with 48 bits from previous step by XOR operation.
3. Substitution – previous result divided into 8x6bits blocks before processed by s-boxes
4. Permutation based on a fixed permutation table.

DES Algorithmic Description :

DES algorithm is good for introduction, because it represent an old standard on which many new algorithms are built, and is quite easy to understand. It will naturally lead to another algorithm

The overall structure of encryption steps are as follows:

1. A block of 64 bits is permuted by an initial permutation called IP.
2. Resulting 64 bits are divided in two halves of 32 bits, left and right.
3. Right half goes through a function F(Feistel function)
4. Left half is XOR-ed with output from F function above.

5. Left and right are swapped(except last round).
6. If last round, apply an inverse permutation IP-1 on both halves and that's the output else, goto step 3.

Steps 3-5 constitute a round. DES has 16 identical rounds. Note the two halves are processed alternately. This structure represents what is called a Feistel network.[8]

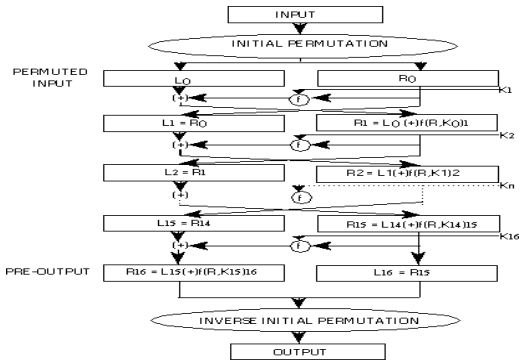


Fig : Permutation for DES Rounds

DES Decryption process is same as encryption with some minor differences. The only difference between is the reversal of key portions. If original key K was divided into K1, K2, k3,…….k16 for the 16 encryption round, then for decryption , the key should be used as K16, K15, K14,……K1.[4]

Avalanche Effect :

Means a small change in the plaintext (or key) should create a significant change in the ciphertext. DES has been proved to be strong with regard to this property.

After executing the DES algorithm for checking the avalanche effect it proves that DES is the best and more secure. [10]

Key : 456789ADF0568BC1
Plaintext : 88888880AABBCC00
Cipher : AEFAE56FBA8DAA89

Key : 456789ADF0568BC1
Plaintext : 88888880AABBCC01
Cipher : E94F7BBA749DB4DB

Key : 456789ADF0218BC1
Plaintext : 88888880AABBCC01
Cipher : 5F3AD086497107F3

Plaintext: ADFBC45678901234
Cipher : CD33B55CE0968713

Key : FB2345DAA2315678
Plaintext : 90743ADB18CD778B
Cipher : 081768C332ED807B

In the above output both of the plaintext blocks are different. In the second plain text block only rightmost bit is replaced by 1 and same is true after changing keys for both. This means that changing of only one bit effects to generate approximately 100% change in cipher text.

Two desired properties of a block cipher are the avalanche effect and the completeness.

Algorithmic Steps for RSA Algorithm

Step 1 : Select two prime nos – p & q
Step 2 : Calculate n as product of p & q,
i.e. n=pq
Step 3 : Calculate m as product of (p-1) & (q-1) i.e. m = (p-1)(q-1)
Step 4 : Select any integer e<m such that it is co-prime to m, i.e gcd(e,m) =1
Step 5 : Calculate d such that de mod m = 1 , i.e. d = e-1 mod m
Step 6: The public key is {e,n}
The private key is {d,n}

Description of the Algorithm

Plaintext is encrypted in blocks, where each block has a binary value less than some number n'.The block size is 2k , where 2k < n < 2k+1

Encryption and Decryption is done as follows on the plain-text P and cipher-text C :

C = Pe mod n
P = Cd mod n

Where {e,n) is the public key and {d,n} is the private key.

Encryption :
Plaintext = P & P<n
Ciphertext = C & C = Pe

Decryption :

Ciphertext = C

Plaintext = P & P= Cd mod n

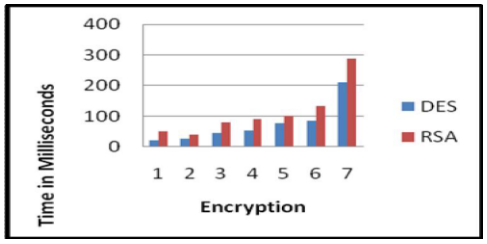
Decryption :

Ciphertext = C

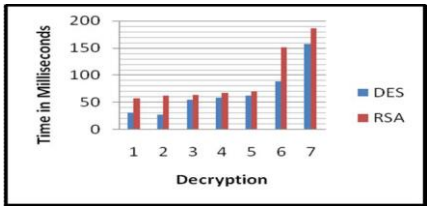
Plaintext = P & P= Cd mod n

Comparative Encryption and Decryption time in Milliseconds

INPUT IN KB	DES	RSA
40	31	58
58	28	62
87	55	64
110	59	68
220	63	70
316	89	151
706	157	186

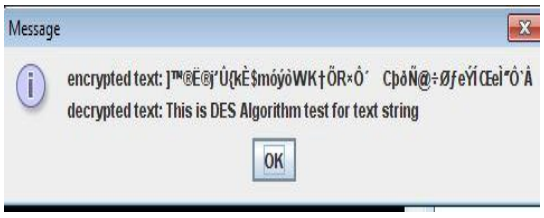


INPUT IN KB	DES	RSA
40	22	51
58	27	39
87	45	79
110	52	92
220	77	101
316	86	134
706	211	289



Implementation Results of DES and RSA Algorithms:

DES Test for String



DES Testing using Files:

Original file

DES algorithm need festial structure . This algorithm is basic algorithm since other

encryption algorithms are totally follows tech. of this algorithm

Encrypted File

"œlé¼)'Î'u@ ß W×L ˆ¤eëÐ6ªTÁ}G¹]-úxÀZÁãñ$]óþ%tÇ¡_©ÁÞGt½õôïA xîö?'÷·YB6â3ºû÷ºÞÄŒ–Þîaj5bM@ïBnÈf³&V·Fz|Ë -í+Œ.b¿4<{J2Ï*ÓL8vZàDF¸$?G²¯{tA xîö?'÷àš|etõ3

Decrypted File

DES algorithm need festial structure . This algorithm is basic algorithm since other

encryption algorithms are totally follows tech. of this algorithm

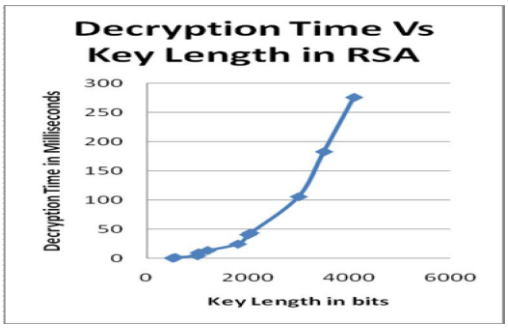
RSA Algorithm test results

Divide the input binary text into 16 bit apart. We have converted the first 16 bit text into an integer form. After that we take a private key 'd' from key generator and perform decryption operation for that integer. For example 'C' is an integer then we encrypt 'C' by performing P = Cd mod n.

With every doubling of the RSA key length, decryption is 6-7 times times slower.

Several points are to be concluded. First, despite the key distribution, DES is more suitable to the application, which has the decryption as the highest priority.

Key length	**Decryption Time in Milliseconds**
512	1
560	2
1000	5
1024	10
1200	14
1800	25
2000	41
2048	44
3000	106
3500	183
4096	276



Encryption strength is measured by the length of its "key," which is expressed in bits. The larger the key, the greater the strength of the encryption.

RSA Testing using Files:

Key length – 2048
Encryption time-67
Decryption time-62

Original file

Symmetric Algorithm: This algorithm uses the same key for encryption and decryption.
This is also known as 'Secret key'.

Encrypted File

‰tµ£ÚËŸÏ÷K[« +¹Å-Ø3Ä:L ZTÝê¼ ‡M@Á^"}g Îr Ô(qŠŠ®hqÇ182N¤ÚúÞä,'@üPE @x,,®+¤8gËíF182& òŒAM
«*½————————————————————©ÎEk› tÀó$1¯}ã¶·zå• àÙoUô¼^2
————————————————————½Ž =4âŸƒï ¸ª ¸´ÜD¶œ ^¹ ',,ðn5ð HÛ÷¸ôQáÍ"~ëã dd Å8šk´KûpžðÍŠèK©ªÊŸ 'è ½sñÚÿõ¥¡ÆÐŽD¿ÉN:ÁtÀVO=ý]äy'á)´L" ™182 øœþù182S¹Ã9

Decrypted File

Symmetric Algorithm: This algorithm uses the same key for encryption and decryption.
This is also known as 'Secret key'.

Conclusion

The selected algorithms DES and RSA are discussed with their working mechanisms. As DES is secret key based algorithm suffers from key distribution and key agreement problems .But RSA consumes large amount of time to perform encryption and decryption operation Simulation result showed that DES has better performance than RSA.

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SECRET IMAGE HIDING ALGORITHM USING COMBINATION OF LEAST SIGNIFICANT BIT (LSBS)

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Abstract:

A Digital Watermarking algorithm using LSB is very popular. In this paper LSB algorithm is little bit modified and make combination of more than one LSB. Results observed after this algorithms are very good. By observing Quality factors MSE and PSNR we can say which LSB combination generates good result.

Keyword: Least Significant Bit(LSB), Mean Squared Error (MSE), Peak Signal Noise Ratio (PSNR)

Introduction:

In steganography the secret data is hidden in covered image. The covered image with secret data is known as Stego-image. Image Steganography is performed in two steps. To embed the secret message in the covered image and the resultant image is the stego image is the embedding process. Secondly, the extraction of secret message from the stego-image is the extraction process.[1] . Digital Watermark is one of the important securities through text and graphical images and also provides a copyright protection in digital format. The information embedded in image is watermark image where the watermark to be embedded is called the host image.

This secret information or logo is called watermark and it contains some metadata, like security or copyright information about the main data/image. The main image in which the watermark is embedded is known as cover image since it covers the watermark. The digital image watermarking system essentially consists of a watermark embedder and a watermark detector as shown in figure [2]

Least Significant Bit (LSB):

Least Significant Bit is one of the prime and easy algorithm for Image hiding. The least significant bit (in other words, the 8th bit) of some or all of the bytes inside an image is changed to a bit of the secret message. Digital images are mainly of two types (i) 24 bit images and (ii) 8 bit images. In 24 bit images we can embed three bits of information in each pixel, one in each LSB position of the three eight bit values. Increasing or decreasing the value by changing the LSB does not change the appearance of the image; much so the resultant stego image looks almost same as the cover image. In 8 bit images, one bit of information can be hidden.

With some easy construction of LSB also suffers from many drawbacks. When anybody disturbs image or apply any changes in image we can easily find that changes like using MATLAB Image Histogram difference. If any attacker attacks like cropping , Introduction of undesirable noise and any lossy compression occurs then Extraction of Image creates some problem. Once the algorithm is known to a hacker, the embedded watermark could be easily modified by him without any difficulty.

Two LSB replacement Algorithm

1. Read Cover image , im
2. Read text message which embeds into cover image , s
3. Convert text message into binary.
4. Store LSB after converting in binary to k for 1 byte (or 8 bit)
5. Apply replacement of LSB and LSB+1 of text message for two cases only
   i) If LSB=0 and LSB+1=1 of test message then replace image LSB with 1 and LSB+1 with 0
   ii)If LSB=1 and LSB+1=0 of test message then replace image LSB with 0 and LSB+1 with 1

(this process LSB replacement is for every byte of text as well as every byte of image)

6. Text messages hides in cover image and now image becomes stego image.

Fig.1

Fig. 2

Following text embeds in image

This is lsb 2 bit image hiding algorithm. Here a jpg image is used to hide text

This text used **316** LSB Bytes for hiding text in Image as per above algorithm

Sample test for embedding a single character 't in image after applying above algorithm the cases for k get changes after replacement of LSB bits.

s = 't'

sb = 01110100

k =10010001

k =10010011

k =10010001

k =10010000

Byte_LSB = 4

'n' LSB replacement Algorithm :

1. Read Cover image C
2. Find the size of Cover Image
3. Select Secret Image (may contains text in image)
4. Embed text or secret image as uint8 (bitor(bitand(C,bitcmp(2n-1,8)),bitshift(Y,n- 8)))
5. Extract text or secret image as uint8 (bitand(255,bitshift(S,8-n)))

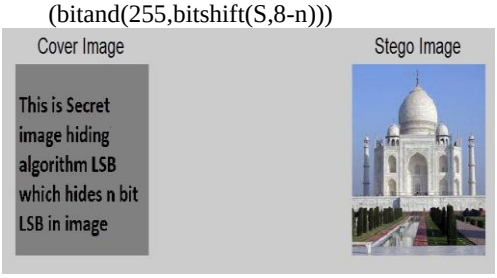

Fig.3 n=1 Stego image with no distortion

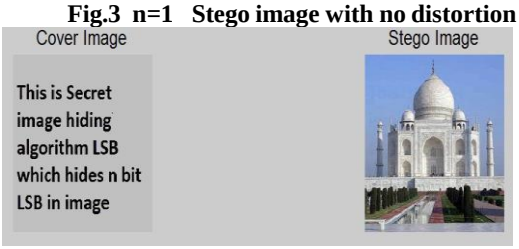

Fig.4 n=2 Stego image with no distortion

Fig.5 n=3 Stego image with no distortion

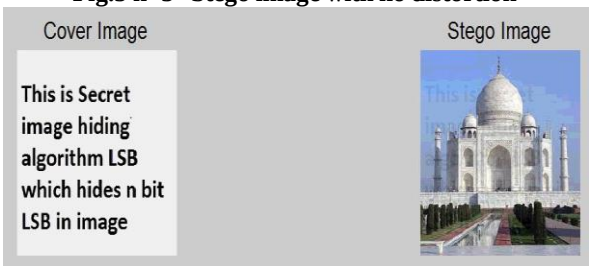

Fig.5 n=4 Stego image with some distortion

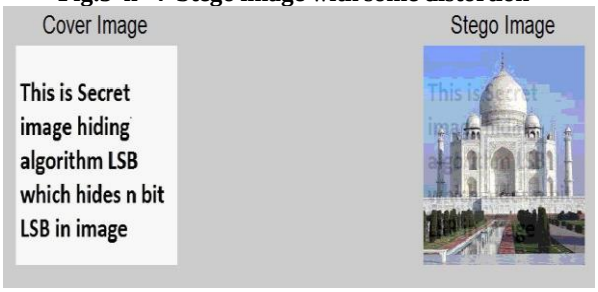

Fig.6 n=5 Stego image with distortion

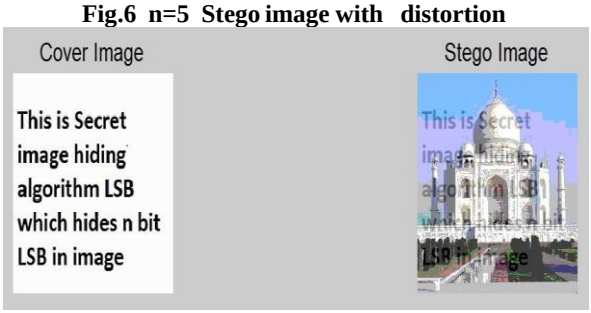

Fig.7 n=6 Stego image with more distortion

Fig.8 n=7 Stego image with max distortion

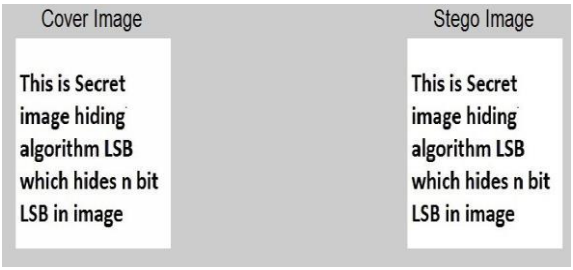

Fig.9 n=8 Stego image

When N=5, values are
Diff: 0.02445285
MSE: 0.0480733
PSNR: 61.3457630

When N=7, values are
Diff: 0.2711
MSE : 0.2711
PSNR : 53.8327

This algorithm test LSB up to 7 th bit . If we test LSB value 1 to 7 for replacement of bits there are some changes occurs in the image pixel matrix. These changes are tested for all types of images for LSB 1 to 8 bit.

The LSB have been used to conceal the data in the image. The LSB insertion varies according to the number of bits in an image. For 24-bit image the colors red, green and blue have been changed. For an 8-bit image, the eighth bit of the each image is changed to the bit of secret message**.[3]**

Method	**MSE**	**PSNR**
MSB or 8th Bit Substitution	0.3793	52.3746696
7th Bit Substitution	0.2711	53.8327954
6th Bit Substitution	0.2218	54.7049220
5th Bit Substitution	0.1971	55.2173321
4th Bit Substitution	0.17209	55.8070548
3rd Bit Substitution	0.1312	56.9845113
2nd Bit Substitution	0.06509	60.0292938
LSB or 1st Substitution	0.0000083	98.9679336

Table 1: LSB effects on MSE and PSNR

In the above case of LSB implementation each LSB bit is tested and result is generated with the help of quality measures MSE and PSNR. By using the same algorithm for dynamic bit replacement from 8 bit the following table 3 shows various result for the pair of any bit[4]

As per the algorithm executed which is written in MATLAB for proposed LSB which is more accurate than traditional LSB , here it is very difficult to hacker to identify where is the actual information hided or in which part of the pixel the information is hided. How the distortion takes place after hiding image in LSB to MSB bit in 8 bit is described as follows.

First bit of LSB – Maximum changes in every pixel is 1 hence human eye can not seen these changes.

Second bit of LSB - we got the watermarked images without noticeable distortion because the maximum change in every pixel is 2.

Third bit of LSB - we got the watermarked images with some noticeable distortions in watermarked images because the maximum change in every pixel is 4 and it is somehow noticeable.

Fourth bit of LSB - we got the watermarked images with some distortion in all watermarked because the maximum change in every pixel is 8 and the 8 grade difference is noticeable.

First and Second combined LSB - we got the watermarked images without any distortion in the watermarked images because the maximum change in every pixel is 3.

First and Third combined LSB - some distortion in watermarked image because the maximum change in every pixel is 5 and it is somehow noticeable.

Second and Third combined LSB - Distortion in watermarked image because the maximum change in every pixel is 6 and it is somehow noticeable.

Second and Fourth combined LSB - Distortion in watermarked image because the maximum change in every pixel is 10 and it is somehow noticeable.

Fig.1 indicated LSB 6,7 combination notifies distortion in image

Fig.3 Stego Image

Fig.4 Secret Image

Fig.2 Indicates after combination of LSB 1,2 there is no distortion occurs in Stego Image

Fig.5

Fig.1 indicated LSB 4,5 combination notifies distortion in image

Fig.6

Fig.1 indicated LSB 5,6 combination notifies distortion in image

Fig.7

Fig.1 indicated LSB 7,8 combination notifies distortion in image

Fig.8

Bit pair	MSE	PSNR
(1,2)	0.2013	55.1259
(2,3)	0.8150	49.0528
(3,4)	3.1396	43.1964
(4,5)	8.4817	38.8799
(5,6)	11.9394	37.3849
(6,7)	12.0197	37.3658
(7,8)	12.9179	37.0528
Odd pair of Bits		
(1,3)	0.6038	50.3558
(3,5)	7.9391	39.1670
(5,7)	12.2826	37.2718
Even pair of Bits		
(2,4)	2.4043	44.3549
(4,6)	9.0639	38.5919
(6,8)	12.9070	36.0565
Three bits		
(1,3,5)	7.9637	39.1536
(2,4,6)	9.2607	38.4983

Table :2 : Effects of combined LSB on MSE and PSNR

Conclusion :

This paper proposed a new LSB based digital watermarking scheme with the combination of LSB . The experimental result shows that the proposed algorithm maintains the quality of the watermarked image. This paper also shows the experimental results when combining different positions of LSB such as the second LSB and the third LSB and fourth LSB and the combination between them. The proposed algorithm is also tested using Peak signal-to-noise ratio (PSNR).

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CYBER CRIME AND CYBER LAW IN INDIA: AN OVERVIEW

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ABSRACT:

Crime has many facets, but handlers of crime are more sophisticated and intelligent they used recent and advanced technology to make crime. The use of the internet has become so wide-spread now that it covers almost every aspect of human life today. Acts such as banking, payment of bills, shopping, personal affairs, etc. are relying on computers and the internet more and more. Therefore, the internet has become very vital in man's economic and social life. Tomorrow's terrorist may be able to do more damage with a keyboard than with a bomb".

KEYWORD: Virus, cyber crime, Trojan horse, Forgery, Online gambling

INTRODUCTION:

Cybercrime is criminal activity done using computers and the Internet. This includes anything from downloading illegal music files to stealing millions of dollars from online bank accounts. Cybercrime also includes non-monetary offenses, such as creating and distributing viruses on other computers or posting confidential business information on the Internet. Computer Crime, E-Crime, Hi-Tech Crime or Electronic Crime is where a computer is the target of a crime or is the means adopted to commit a crime. Most of these crimes are not new. Criminals simply devise different ways to undertake standard s activities such as fraud, theft, blackmail, forgery, and embezzlement using the new medium, often involving the Internet. Computers store huge amounts of data in small spaces. Ease of access of the data things that are stored in the system. Today's computer software is very complex, comprised of thousands of lines of code. Since software is written by humans, it's hardly surprising that they contain programming mistakes, known as vulnerabilities. These loopholes are used by hackers to break into systems; they are also used by authors of malicious code to launch their programs automatically on your computer. Cyber criminals are like electronic burglars, who use loopholes in your programs - vulnerabilities - to break into your computer system one of the key elements that keeps most members of any society honest is fear of being caught — the deterrence factor. Cyberspace changes two of those rules.

Type of Cyber Crimes:

Cyber Crime refers to all activities done with criminal intent in cyberspace. These fall into three slots.

- Those against persons.
- Against Business and Non-business organizations.
- Crime targeting the government.

Let us examine the acts wherein the computer is a tool for an unlawful act. This kind of activity usually involves a modification of a conventional crime by using computer. Some examples are;

Financial Claims:
This would include cheating, credit card frauds, money laundering etc.

Cyber Pornography:
This would include pornographic websites; pornographic magazines produced using computer and the Internet (to down load and transmit pornographic pictures, photos, writings etc.)

Sale of illegal articles:
This would include sale of narcotics, weapons and wildlife etc., by posting information on websites, bulletin boards or simply by using e-mail communications.

Online gambling:
There are millions of websites, all hosted on servers abroad, that offer online gambling. In fact, it is believed that many of these websites are actually fronts for money laundering.

Intellectual Property Crimes:
These include software piracy, copyright infringement, trademarks violations etc.

E-Mail spoofing:
A spoofed email is one that appears to originate from one source but actually has been sent
from another source. This can also be termed as E-Mail forging.

Forgery:
Counterfeit currency notes, postage and revenue stamps, mark sheets etc., can be forged using sophisticated computers, printers and scanners.

Unauthorized access to computer system or network:
This activity is commonly referred to as hacking. The Indian Law has however given a different connotation to the term hacking.

Theft of information contained in electronic from:
This includes information stored in computer hard disks, removable storage media etc.

E-Mail bombing:
Email bombing refers to sending a large amount of e-mails to the victim resulting in the victims' e-mail account or mail servers.

Data diddling:
This kind of an attack involves altering the raw data just before it is processed by a computer and then changing it back after the processing is completed.

Salami attacks:
Those attacks are used for the commission of financial crimes. The key here is to make the alteration so insignificant that in a single case it would go completely unnoticed e.g. A bank employee inserts a program into bank's servers, that deducts a small amount from the account of every customer.

Denial of Service:
This involves flooding computer resources with more requests than it can handle. This causes the resources to crash thereby denying authorized users the service offered by the resources.

Virus/worm:
Viruses are programs that attach themselves to a computer or a file and then circulate themselves to other files and to other computers on a network. They usually affect the data on a computer, either by altering or deleting it. Worms, unlike viruses don not need the host to attach themselves to.

Logic bombs:
These are dependent programs. This implies that these programs are created to do something only when a certain event occurs, e.g. some viruses may be termed logic bombs because they lie dormant all through the year and become active only on a particular date.

Trojan Horse:
A Trojan as this program is aptly called, is an unauthorized program which functions from inside what seems to be an authorized program, thereby concealing what it is actually doing.

Internet Time Theft:
This connotes the usage by unauthorized persons of the Internet hours paid for by another person.

Physically damaging a computer system:
This crime is committed by physically damaging a computer or its peripherals.

CYBER LAW:

Cyber law is a much newer phenomenon having emerged much after the onset of Internet. Internet grew in a completely unplanned and unregulated manner. Even the inventors of Internet could not have really anticipated the scope and far reaching consequences of cyberspace. The growth rate of cyberspace has been enormous. Internet is growing rapidly and with the population of Internet doubling roughly every 100 days, Cyberspace is becoming the new preferred environment of the world. With the spontaneous and almost phenomenal growth of cyberspace, new and ticklish issues relating to various legal aspects of cyberspace began cropping up.

In response to the absolutely complex and newly emerging legal issues relating to cyberspace, CYBERLAW or the law of Internet came into being. The growth of Cyberspace has resulted in the development of a new and highly specialised branch of law called CYBERLAWS- LAWS OF THE INTERNET AND THE WORLD WIDE WEB.

Cyberlaw is a generic term which refers to all the legal and regulatory aspects of Internet and the World Wide Web. Anything concerned with or related to or emanating from any legal aspects or issues concerning any activity of netizens in and concerning Cyberspace comes within the ambit of Cyberlaw.

Cyber law, the Information Technology Act in 2000:

Cyber crimes can involve criminal activities that are traditional in nature, such as theft, fraud, forgery, defamation and mischief, all of which are subject to the Indian Penal Code. The abuse of computers has also given birth to a gamut of new age crimes that are addressed by the Information Technology Act, 2000.The Parliament of India passed its first Cyber law, the Information Technology Act on 17 October 2000. It extends to whole of India and also applies to any offence or contraventions committed outside India by any person (s 1(2),IT Act 2000). According to s 75 of the Act, the Act applies to any offence or contravention committed outside India by any person irrespective of his nationality, if such act involves a computer, computer system or network located in India. The main features of IT Act are:

- pplicable to communications made through cell phones ,PDAs.
- Conferred legal validity and recognition to electronic documents & digital signatures.
- Legal recognition to e-contracts.
- et up Regulatory regime to supervise Certifying Authorities.
- Laid down civil and criminal liabilities for contravention of provisions of IT Act,2000.
- Created the office of Adjudicating Authority to adjudge contraventions.

The IT Act defines five cyber-crimes. They are: damage to computer source code, Hacking, Publishing electronic information which is prurient or lascivious, Breach of confidentiality, Publishing false digital signature.

Snapshot of Important Cyber law Provisions in India

Offences	Section under IT Act
Tampering with Computer source documents	Sec.65
Hacking with Computer systems, Data alteration	Sec.66
Publishing obscene information	Sec.67
Un-authorized access to protected system	Sec.70
Breach of Confidentiality and Privacy	Sec.72
Publishing false digital signature certificates	Sec.73

NOTE: Sec.78 of I.T. Act empowers Deputy Superintendent Of Police to investigate cases falling under this Act. Computer Related Crimes Covered under Indian Penal Code and Special Laws

Offence	Section IPC
Sending threatening messages by email	Sec 503 IPC
Sending defamatory messages by email	Sec 499 IPC
Forgery of electronic records	Sec 463 IPC
Bogus websites, cyber frauds	Sec 420 IPC
Email spoofing	Sec 463 IPC
Web-Jacking	Sec 383 IPC
E-Mail Abuse	Sec 500 IPC
Online sale of Drugs	NDPS Act
Online sale of Arms	Arms Act

CONCLUSION:

It can be seen that the threat of computer crime is not as big as the authority claim. This means that the method s that they introducing to combat it represents an unwarranted attack on human rights and is not proportionate to the threat posed by cyber-criminals. Part of the problem is that there are no reliable statistics on the problem; this means that it is hard to justify the increased powers that the Regulation of Investigatory Powers Act has given to the authorities. These powers will also be ineffective in dealing with the problem of computer. The international treaties being drawn up to deal with it are so vague that they are bound to be ineffective in dealing with the problem. It will also mean the civil liberties will be unjustly affected by the terms of the treaties since they could, conceivably, imply that everybody who owns a computer fitted with a modem could be suspected of being a hacker. The attempts to outlaw the possession of hacking software could harm people who trying to make the internet more secure as they will not be able to test there systems; therefore the legislation could do more harm than good

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PERFORMANCE ANALYSIS OF TORA: MANET ROUTING PROTOCOL.

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Abstract:

Mobile Ad hoc Networks (MANETs) has gained an important part of the interest of researchers and become very popular in last few years. MANETs can operate without fixed infrastructure and can survive rapid changes in the network topology. MANETs created a new set of demands to be implemented and to provide efficient better end to end communication. Routing in MANETs is a challenging task and has received a tremendous amount of attention from researchers around the world. To overcome this problem a number of routing protocols have been developed and the number is still increasing day by day. It is quite difficult to determine which protocols may perform well under a number of different network scenarios such as network size and topology etc [1]. This paper evaluates the performance of reactive routing protocol TORA in MANETs based on Average end-to-end delay, Throughput using Network Simulator NS2 simulator.

Keywords: MANET, TORA, Routing Load, Throughput, End-to-End Delay.

I. INTRODUCTION:

Mobile Ad hoc Network is the rapid growing technology from the past 20 years. The gain in their popularity is because of the ease of deployment, infrastructure less and their dynamic nature. A MANET is a type of ad- hoc network that can change locations and configure itself on the fly. MANET can be a model Wi-Fi connection, or another standard, like a cellular or satellite transmission. MANET diagram is shown in Figure-1. MANET has many applications like military, communication, conference meeting, automated battlefield, creating virtual classrooms and in sensor network. The main features of MANET are restoring and self organizing and transmission through multiple hopes [2]. The Routing Protocols for ad hoc wireless networks-MANET can be divided into three categories based on the routing information update mechanism. They could be Reactive (On-demand), Proactive (Table-driven) or Hybrid[1][2][3][4]

Figure-1. Mobile Ad hoc Network

II. ROUTING PROTOCOLS

Routing protocols define a set of rules which governs the journey of message packets from source to destination in a network. In MANET, there are different types of routing protocols each of them is applied according to the network circumstances [5]. Routing classification is shown in Figure-2.

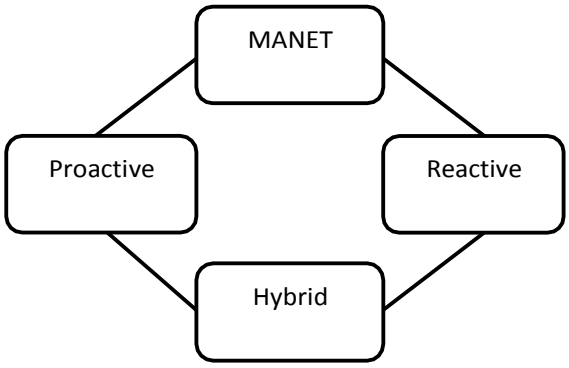


Figure-2. Classification of MANET

Proactive Routing Protocols

Proactive routing protocols attempt to maintain consistent, up-to-date routing information from each node to every other node in the network. In this every node maintain routing table which contains information about the network topology even without requiring it [6]. The routing tables are updated periodically whenever the network topology changes. Proactive protocols are not suitable for large networks as they need to maintain node entries for each and every node in the routing table of

every node [7]. These protocols maintain different number of routing tables varying from protocol to protocol. There are various well known proactive routing protocols. Example: DSDV, OLSR etc.

Reactive Routing Protocols

Reactive routing protocols create routes only when desired by the source node. Once a route has been established, it is maintained by a route maintenance procedure [6]. In this protocol route is discovered whenever it is needed Nodes initiate route discovery on demand basis. Source node sees its route cache for the available route from source to destination if the route is not available then it initiates route discovery process. The on- demand routing protocols have two major components : Route discovery and Route Maintenance. Route discovery: In this phase source node initiates route discovery on demand basis. Source nodes consults its route cache for the available route from source to destination otherwise if the route is not present it initiates route discovery. The source node, in the packet, includes the destination address of the node as well address of the intermediate nodes to the destination. Route maintenance: Due to dynamic topology of the network cases of the route failure between the nodes arises due to link breakage etc, so route maintenance is done. Reactive protocols have acknowledgement mechanism due to which route maintenance is possible [8][9][10]. Example: AODV, DSR, TORA etc.

Hybrid routing protocols

Hybrid routing protocols are proposed to combine the merits of both proactive and reactive routing protocols and overcome their shortcomings. Hybrid routing protocol is combination of both proactive and reactive routing protocol [6]. Proactive protocols have large overhead and less latency while reactive protocols have less overhead and more latency. So a Hybrid protocol is presented to overcome the shortcomings of both proactive and reactive routing protocols. It uses the route discovery mechanism of reactive protocol and the table maintenance mechanism of proactive protocol so as to avoid latency and overhead problems in the network. Hybrid protocol is suitable for large networks where large numbers of nodes are present. In this large network is divided into set of zones where routing inside the zone is performed by using reactive approach and outside the zone routing is done using reactive approach [7][8]. Example: ZRP, SHARP etc.

III. Temporally-Ordered Routing Algorithm (TORA)

The Temporally-Ordered Routing Algorithm (TORA) was developed by Park and Corson. Temporarily ordered routing algorithm (TORA) is highly adaptive, loop-free, distributed routing algorithm based on the concept of link reversal. TORA is a reactive routing protocol with some proactive enhancements where a link between nodes is established creating a Directed Acyclic Graph (DAG) of the route from the source node to the destination [11]. It uses directed acyclic graphs (DAG) to define the routes either as upstream or downstream. This graph enables TORA to provide better route aid for networks with dense, large population of nodes [12]. TORA involves four major functions: creating, maintaining, erasing and optimizing routes. Since every node must have a height, any node which does not have a height is considered as an erased node and its height is considered as null. Sometimes the nodes are given new heights to improve the linking structure. This function is called optimization of routes.

Advantages:

- TORA is a fairly complicated protocol but what makes it unique and prominent is its main feature of propagation of control messages only around the point of failure when a link failure occurs.
- In comparison, all the other protocols need to re-initiate a route discovery when a link fails but TORA would be able to patch itself up around the point of failure. This feature allows TORA to scale up to larger networks.
- TORA offers multiple routes and is loop free.

Disadvantages:

- To provide the DAG feature of TORA needs synchronization of the nodes which limits the application of the protocol. In TORA there may be temporary routing loops, and has overall complexity.
- It has higher overhead for smaller networks.

IV. METHODOLOGY

Simulation: The communication model and Mobility model for the simulation are given bellow.

Communication Model:

Network Simulator NS-2 is used for the simulation of TORA routing protocol. The simulator assumes constant bit rate (CBR) traffic with a transmission rate of 8 packets per second. The number of nodes varies from 10 to 200 in the denomination of 10, 20, 25, 50.

Parameter	Value
Traffic	CBR
No. of nodes	10, 20, 30, 50,75, 100, 150, 200
Transmission Rate	8 packets/sec

Movement Model:

The realistic mobility pattern of the mobile nodes, the simulation assumes a Random Waypoint Model, where a node is allowed to move in any direction arbitrarily. The nodes select any random destination in the 500 X 500 space and moves to destination at a speed distributed uniformly between 1 and nodes maximum speed (assumed to be 20 meter per second). Upon reaching the destination, the node pauses for fixed time, selects another destination, and proceeds there as discussed above. This behavior repeats throughout the duration of the simulation (600 seconds)[11]. Meanwhile, number of nodes has been varied to compare the performance of the protocols for low as well as high density environment.

Parameter	Value

Simulator	NS-2
Simulation time	600 seconds
Area of network	500m x 500m
Pause time	10 seconds
Max. speed of nodes	20 meters/sec
Mobility Model	Random waypoint

PERFORMANCE MATRICES

i) Throughput

The ratio of Total Received Packet Size (data) at destination which is sent from source to destination to the Time required to receive the last packet at receiver send from source to destination is called as throughput [13]. Throughput is expressed in terms of bytes per second or bits per second (bytes/sec or bits/sec).

Throughput=Received Packet Size/Time to Send

ii) Avg. End-to-End Delay

Average time taken by a specific packet to travel the network from source to destination. It is also referred as Packet End-to-End Delay. Average End-to-End delay includes all the delays as transmission times, buffer queues, route discovery, processing delay and propagation delay [14]. Avg. End-to-End Delay is expressed in terms of seconds.

Avg. End to End Delay=∑1 to n(CBR Sent Time – CBR Received Time)/∑ i to n CBR Received

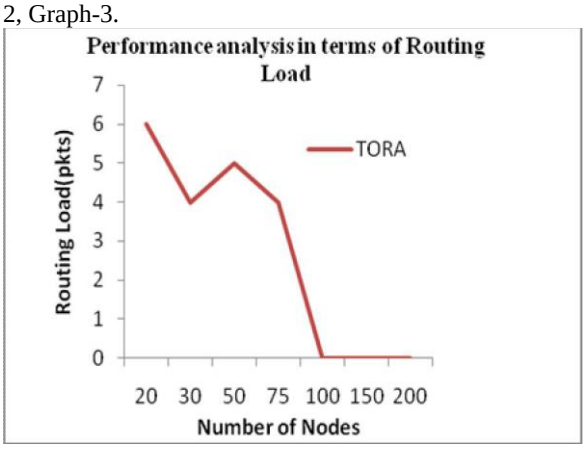
iii) Normalized Routing Load

The ratio of Number of Routing Packets Received to the Number of Data Packets Received [13][14]. Normalized Routing Load is expressed in terms of bits per second (bits/sec).

Normalized Routing Load=Number of Routing Packets Received/ Number of Data Packets Received

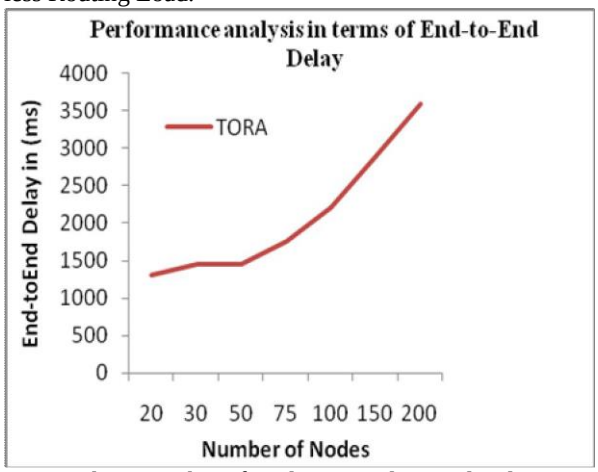
V. SIMULATION RESULT

The simulation result for experiment setup is represented in graphical format in following graphs: Graph-1, Graph-2, Graph-3.



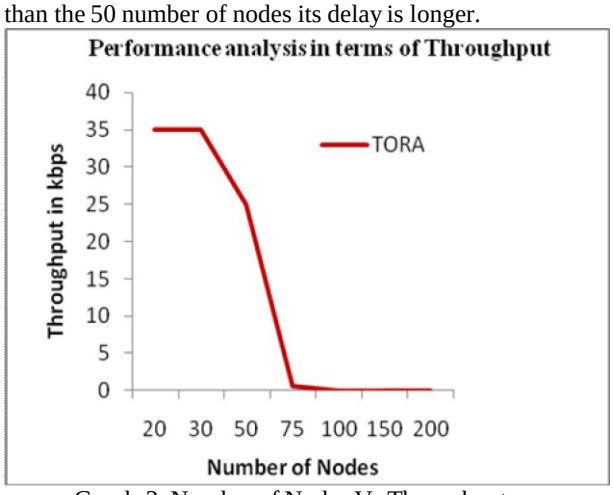
Graph-1. Number of Nodes Vs Routing Load.

The routing Load of a protocol has influenced nodes efficiency of battery energy and decided its scalability especially under an environment of narrower bandwidth and easy congestion [15]. TORA has the lightest load up to the number of nodes 75. For Larger than 75 number of nodes load is negligible as per in Graph-1. TORA has the less Routing Load.



Graph-2. Number of Nodes Vs End-to-End Delay.

Graph-1 indicates that TORA has less routing load and up to the 50 number of nodes delay is also low. But as per Graph-2 it is observed that, because of having vague memory of mobile nodes placed at distant places more than the 50 number of nodes its delay is longer.



Graph-3. Number of Nodes Vs Throughput.

Graph-3 shows that the throughput for TORA is better up to the 30 number of nodes. And the reliability of TORA is the worst as the number of nodes increased above 30.

VI. CONCLUSION:

The performance evaluation of the routing protocol TORA has been done with respect to metrics Routing Load, Average End-to-End Delay and throughput for varying the number of nodes. From the above Result analysis it has been observed that Routing Load is lower and has good scalability for mobility of nodes. For larger number of nodes the routing load of TORA is less as well as End-to-End delay is minimum. TORA on the other hand has difficulties in finding routes when number of nodes increases, where the throughput drops slightly with the number of nodes smaller than 50. TORA is very sensitive to pause time and network size. TORA is that it also supports multicasting it is observed that the TORA

is better routing protocol for application of MANET wherever multicasting is required.

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WHEN ATOM MEETS BITS: SOCIAL SITE, MOBILE, INDIAN RIOTS

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Abstract:

The rise of mobile phones and social media grows the atmosphere of dissent. There is a massive gathering of digitally connected people in physical space. The technology plays vital role to produce this dissent. Improved technology, boosting powers of digitally creating and disseminating network information. This information leads to number of riots in India. In India riots were made worse by rolling news on social media such as Facebook, whatsapp, twitter and so on. Now, it is not sole problem of India, it touches on the whole world. In this paper we proposed a new algorithm to overcome these dissent situations. We provide an interesting distributed solution to this problem with the help on Neural Network and Image Mining.

Keywords: Riots, Social Media, Neural Network,

Introduction

The world has seen social media fuel the Egyptian revolution and then the London riots. Sadly India has not learned from these events. It has not only failed in understanding the dynamics of social media but also how to respond to it. The social media is key tool for rioters to organize unrest. Mobile communication technology is continually evolving new development benefits to more to rioters than policemen. Social media is a tool that can be use in good ways or bad ways just like hammer or baseball bat. Image mining deals with the extraction of implicit knowledge, image data relationship or another patterns not explicitly stored in the images. The detail idea is explained in figure 1 and figure 2.

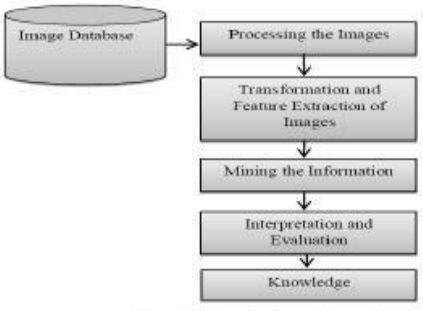


Figure 1. Examination of Image in Phase 1.

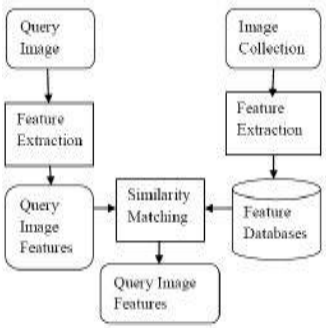


Figure 2. Examination of features in step 2

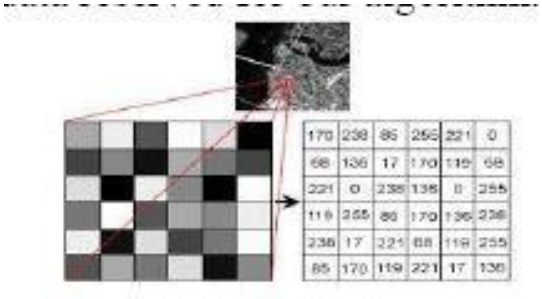
Materials and Method

Prerequisite

1. A trained Neural Network for Natural Language Recognition.
2. Updatable image database for images of important people, important things.

Algorithm :UploadValidImage

1. When a user upload an image transfer that image into the special format where the first line of digital data reserved for our algorithm.



2. Examine the image in different dimensions. First extract the text data from image. Feed this data to Neural Network. If Neural Network agrees the purity of content forward the image to the next phase. Otherwise, mark the image as fake image stored it to database of

fake image and set destroy bit to 1 so that image is automatically destroyed from the device when it is connected to the site. Also record the location and account credentials.

3) In this phase, we search for the important things of the globe in an image. If a image matches to features of any important thing. Check weather a image is manipulated or original with the help color feature and Texture feature. If the image is original allow it to upload increment its count bit by one.

4)When an image passes some threshold value create the chain of image sharing. Analyze the image more closely. If image contains some riot message or data that is not filtered in step 1 and step 2. Mark it as special case ,train the neural network. Set destroy bit to 1. Destroy the image from the whole chain. Mark the account in chain as suspect account. If image is valid allow the image for all activities.

5)Update the database of valid and Invalid images and pass it to serve.

Conclusion:

In this paper, we have highlighted the need for image mining in view of avoiding riots due to disseminating network information of image data. We have pointed out the unique characteristics of image databases that bring with it a whole new set of challenging and interesting research issues to be resolved. Thus we conclude that it is possible to check validity of image in terms of text and objects in image. So it is possible to prevent the users from uploading the fake content to social networking sites.

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PERSON IDENTIFICATION USING ELECTROENCEPHALOGRAM SIGNAL.

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Abstract

In this work we proposed Person Identification system using Electroencephalogram (EEG) signal. The main purpose is to analyze the Beta rhythm of EEG signal related to left hemisphere and right hemisphere regions of the Brain. We have selected 6 right handed subjects in the age of 18 and 25. In this study we record EEG signal of different subjects recognizing the photos of number of known people displayed on the screen. This study suggests that the Beta rhythms in left hemisphere are more dominant over right hemisphere. So we conclude that the left region of the Brain give more response to person identification rather than right hemisphere. Further we observed that in the left hemisphere the electrode F7 is more active, So we concentrate on this single electrode data. We get an average recognition rate of 70% using Linear Discriminate Analysis. The database generated in our study is used to interface brain with any machine such as computer mobile device etc.

Keyword:- EEG, LDA, Mobile, Person

Introduction:

The Human Computer Interaction (HCI) is media of communication between the user and Computer[1] . EEG signal is a unique measure of the Brain electrical function[2]. This electrical signal is generated due to electrical potential produce by the brain[3].EEG spectrum contains characteristics waveform. These waveform are divided into 4 frequency bands such as delta (0-4 Hz), Theta (4-8HZ), Alpha (8-13 Hz), Beta (13-30Hz). In this study we try to translate EEG signal features into appropriate commands. These commands are used to control mobile devices.

Materials and Method

When we see any person, it induces thoughts in mind. These thoughts are dependent not only on people but also on sensitivity for that person. Understanding of these induced brain signals will have useful information for training mobile devices to distinguish different types of people. Figure 1 shows the proposed model for HCI system.

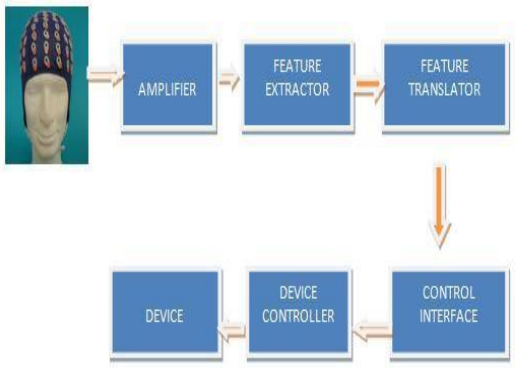


Figure 1. Proposed HCI Model

Subject Selection

EEG recordings of 6 right handed male subject in a group of (18-25) are taken. All subjects are normal without any mental disorder. They have normal vision.

Experimental Setup

In this study, we select 6 subjects. We explained the design and operation of the experiment. Brain signal measured from 19 electrode mounted on scalp. Figure 2(a) shows the EEG acquisition system. Figure 2(b) shows the 10-20 system for electrode placement. Figure 2(c) shows emotive epoch headset. Figure 2(c) shows sample EEG.

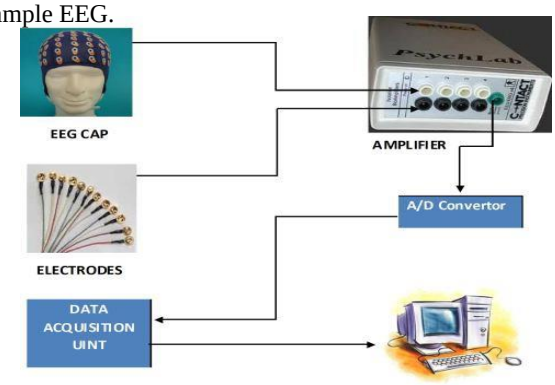
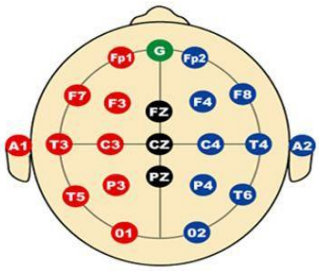
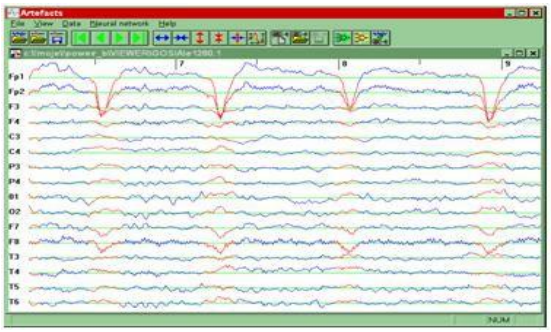


Figure 2 a). EEG Acquisition System



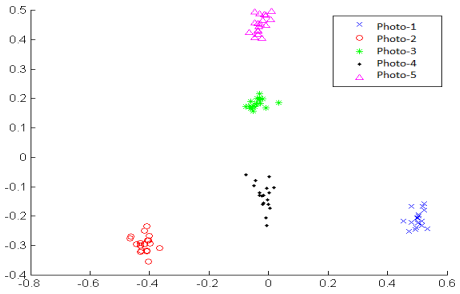
b) 10-20 System for electrode placement

c) EEG acquisition device

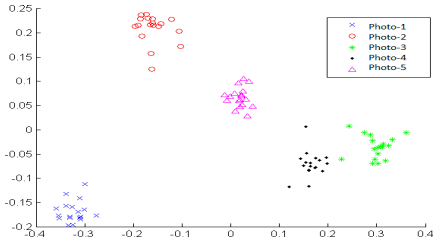


d) Sample EEG signal

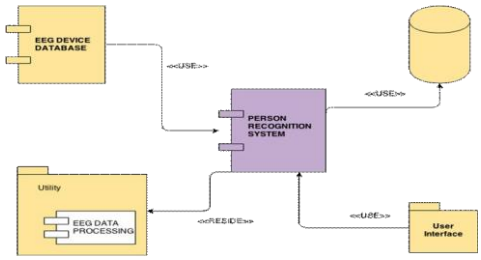
Result and Discussion



3. a) Graph for Subject-I



b) Graph for subject -2



c) Component diagram for the system

From the graph-1 and graph-2 it is cleared that we get distinct cluster for each photo. So it is cleared that it is possible to differentiate the image of each person. Thus we developed person identification system using EEG.

Conclusion

This study suggests that the Beta rhythms in left hemisphere are more dominant over right hemisphere. So we conclude that the left region of the Brain give more response to person identification rather than right hemisphere. Further we observed that in the left hemisphere the electrode F7 is more active , so we concentrate on this single electrode data. We get an average recognition rate of 70% using Linear Discriminate Analysis.

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MODERN SOURCES AND NEED OF VALUE EDUCATION IN CHILD DEVELOPMENT

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Abstract

Value education is foundation of character and moral development. It includes training in physical health, mental hygiene, social behavior, civil rights and duties to spiritual practice. It is the development of appropriate behavior, and practices which includes habits. The important aim of value education is to develop the ability to make moral judgment based on sound reasoning. Moral development of a child starts from the social life of the school. Here we discuss the need of value education in child development.

Keywords: Value Education, Child Development, Spiritual Practice.

Introduction:

At present due to materialization approach many problems are arising related to human life .The social moral and cultural and spiritual values are disintegrating power and knowledge both are being misuse for wastage interest notions are not sharing their trust one another. The black marketing corruption, indiscipline, violence are fast spreading. Due to all these reasons it is necessary that the education should be value oriented. Only value oriented education can promote social welfare, peace goodwill and understanding.A child learns a lot from the people around him. If the social environment is not good, then it becomes very difficult for him to display ethics and values in his behavior. It is only at the level of the primary education that such lessons need to begin. If the impressionable mind once gets set to noble goals difficult would it is to lead him astray. It is not merely talking about great men that the child would get oriented to values; the teacher has to play a major and a decisive role in giving this lesson by precept as well as by example. It is the intellectual, the physical, the emotional, the psychological parts of the child's personality which would need to be moldedand modeled.**Mother is the first teacher for her child.** Value based teachings and education are the fields, the first teacher in which is the mother. It is the mother who tends to lend the first lessons and it is on her that rests the foundation-laying responsibility. What is right, what is wrong, what is true**,** what is false, what is respectable and noble and what is not – it is the mother who imparts these lessons. It is the mother who taught her child remain honest. She encourages her child to always speak up the truth. She should ensure that her children never tell a lie. The mother should make the child learn that she would never scold him if her child tells the truth even if the child had done some wrong. 'Admit the wrong done and you would be a nice child' – let the child develop this faith and he would never fall a victim to falsehood. This is how slowly and gradually, step by step the lessons in morality can be taught.

Figure 1. Different values in Human

The role of schools and teachers are very important. Then, when the child enters the school at the age now of four or five, the schools and the teachers there have to give him lessons in universal brotherhood, respect for all religions, feeling of honor for our great man, a sense of pride in our national flag. Students learn moral values at school. Along with these the child shall be given lessons in dignity of labour. No work is mean or low. Self-dependence, respect for the elders, concern for those who are handicapped or under-privileged.**Value education should be included in higher education levels.** NCC, boy scouts and guides programmes are also a helpful means of creating a consciousness in discipline and co-working. The Indian Education System should adopt value based education at all levels. The value-oriented educational programme should not be led only during the school level, but should be carried on further up to the level of higher education too, as it is from there that the nation's political leaders, bureaucrats and army personnel would emerge.**The young should learn what is moral and what is immoral.**It has yet not been finally

thought off how and in what manner sex-education is imparted to the young. But at least let them be made aware about AIDs/HIV etc, and why and how people catch these fatal diseases would automatically be explained. That is also a part of morality in society. That is a necessary part of value based education. It need not be any part of the curriculum but it is a lesson that they must learn through discussions and discourses.Value Based Education, therefore, is a part of the Educational programme which cannot be shelved or done away with. It has to be a part of life and life is a constant education and the process of living is a process of learning.

Research Objectives

- To investigate the difference between past and present education system.
- To search reasons for destructive the value education.
- Investigate the modern sources through which it is possible to give the value education .

Research Application

Value education improves the following fact related with the child and development his personality.

- Moral development
- Cultural development
- Spiritual development
- Holistic development
- Social welfare development

All are achieved by use of present communicating Media such as internet, mobile devices and TV.

Possible Modern sources of value Education

Students learn from the teacher, each other, the internet, books, movies, people inside the school, people outside the school, people in other countries. Students learn through inquiry. They ask questions, wonder, explore, experiment and investigate new ideas.

- Non-existance of gurukulasampradaya as well as joint family.
- Absence of a holistic approach.
- Misdirected educational system.

Conclusion:

- Right education should cater to an individual's intellectual,physical,emotional,social and spiritual development.
- Education should help him/her evolve into a person with holistic vision and growth , culminating in preparing a happy future for an integrated mankind.
- The means to achieve these objectives are presented in these paper, the most effective being subtle approach.

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DETECTION OF LEXICAL UNITS OF LANGUAGE USING SPEECH RECOGNITION SYSTEM.

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Abstract:

Speech is prime communication mechanisms for human being. It is used to transmit message through a sequence of sound units of a language. Speech produces sound waves modulated by vocal tract systems. In this paper we collect the speech signals of lexical units of c programming language. We create speech database for lexical units of c programming language. This study focuses on application of preprocessing algorithms on speech signal. The preprocessing is used to process raw data and prepare it for further processing. We use MFCC and SVM. We get average recognition rate of 79.84%.

Introduction:

Speech Recognition is the process of converting a speech signal to a sequence of words, with the help of computer program. It is also known as Automatic Speech Recognition (ASR) [1]. Speech is the most common form of human communication [2, 3]. Due to Speech recognition technology it is possible for us to work on computer usinghuman voice commands [4].It allows the computer to understand human languages [5]. Speech recognition techniques are used to develop systems for speech input to machine [6]. Applications based on spoken interfaces are more crucial. They enables user to interact with a computer as if it were a conversational partner.Speech Processing is study of speech signal and processing method of these signals [7, 8, 9]. Itcan be divided in to various categories i.e. Speaker Recognition, Speech Coding,Speech Enhancement, Speech Synthesis, Voice analysis, and Speech Recognition [10, 11, 12].**Speech Signal processing** is refers to the acquisition, manipulation, storage, transferand output vocal utterances by a computer [13]. The main applications are the recognitionsyntheses and Compression of human speeches.Speech technology is the technology with a developing number of methods. and toolsfor better implementation. Speech recognition has a number of practicalimplementations for both fun and serious works. Automatic speech recognition has aninteresting and useful implementation in expert systems, a technology wherebycomputers can act as a substitute for a human expert. An intelligent computer thatacts, responds or thinks like a human being can be equipped with an automatic speechrecognition module that enables it to process spoken information.

In this paper we processed the speech signal of different lexical units of c language.

The next section of paper explains the experimental setup

Experimental Setup

We divide the work into two phases as training phase and Testing Phase. Intraining, first speech utterances of each lexical unit are recorded. Thefeatures are extracted for the each word segmentsusing MFCC feature extraction method. Here we work on our own database. We create the database for the lexical units of programming language. The words for the database are listed in following table

Table 1. Speech database

int	float	char	Do	While
For	Switch	If	Else	Main
Symbol	Goto	Auto	Struct	Union
Start	End	Input	Output	

The training database contains recorded speechutterances of number of lexical units of uttered by ten differentusers. Each word is uttered 10 times by each user. Hundred utterances of each words are used to train the system. The words which are used for creation data base are mentioned in table 1.

The testing database also contains recorded speechutterances of word uttered by ten differentusers. Each word is uttered by each user for 20 times. For online and offline testing same number of testutterances are used and according to that recognition rate iscalculated.

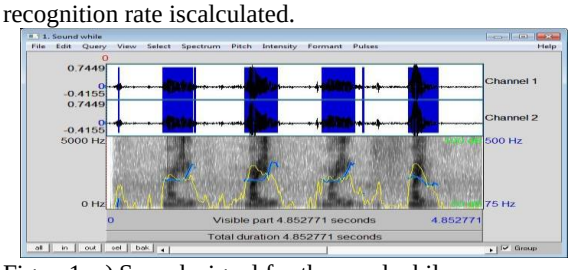
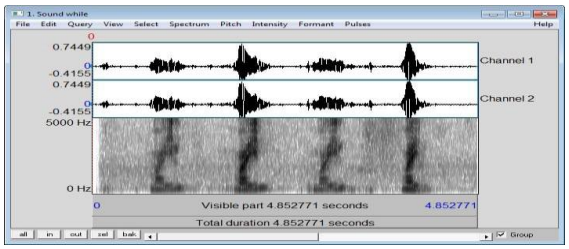


Figure1. a) Speech signal for the word while



b) Pitch analysis for the Speech signal of word while

Mel Frequency Cepstral Coefficients for speech feature extraction

Mel Frequency Cepstral Coefficients (MFCC) technique is robust and dynamic technique for speech feature extraction [14, 15, 16]. The Mel-frequency Cepstral Coefficient (MFCC) technique is often used to extract important features of sound file [17, 18].Features are extracted using MFCC.

Result and Discussion

The features are extracted by MFCC. These features are tested by using SVM and we get offline recognition rate as follows.

Table 2. Average recognition rate using SVM

Lexical Units	**Average Recogniti on**	**Lexica l Units**	**Average Recogniti on**	**Lexic al Units**	**Average Recogni tion**
Int	83%	float	73%	Char	89%
For	85%	Switch	91%	If	90%
Symbol	78%	Goto	76%	Auto	67%
Start	76%	End	80%	Input	91%

Table 2. Average recognition rate using SVM

Lexical Units	Average Recognition	Lexical Units	Average Recognition
Do	81%	While	83%
Else	75%	Main	76%
Struct	79%	Union	76%
Output	68%	**Average**	**79.84%**

Conclusion:

In this paper we explained the system developed or speech recognition system to recognize the lexical units of C language. Lexical units are the basic constructs of any language. Here, initially we consider the 19 lexical units. This system is developed in matlab programming language. We construct two speech databases one for training and one for testing. Both databases have sufficient number of utterances of lexical words. We apply MFCC and then SVM and the corresponding results are displayed in table 2 and 3. Table list average recognition rate of all 10 users. Using SVM we get moderate accuracy 0f 79.84%.It will improve as the content of training databases improves.

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BIOMETRIC ENABLED RATION CARD.

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Abstract

Typically the ration shop owners do the fraud and the 'right amount of goods is not distributed to beneficiary ' or 'distribute to unauthorized people' or 'sold out at higher rates'. In an effort to make the public distribution system (PDS) more efficient various state governments in India has decided to introduce smart card for the customers. In the initial phase of the project hand held computers would be installed and special training is provided to ration dealers to handle this device. A smart card has a computer chip and enables its holders to purchase goods avail of services, or perform other operation using data stored on chip. But introducing the smart cards can also be use by wrong ways and use the same card for issuing to an unauthorized peoples as the card owners need not be present at the time ration distribution. And it is easy to make duplicate smart card. And this is lead to black marketing. We suggest the solution to allthese problems and black marketing. We proposed 'A Biometric Enabled Ration Card'. This System stored data of right persons with its biometric identity, like fingerprints, Face, Retina, Iris etc. and unique PIN which authorized by government. This system is also useful to identify person in other sectors like in crime investigation and other governmental schemes. And this card also consider as proof of existence and address.

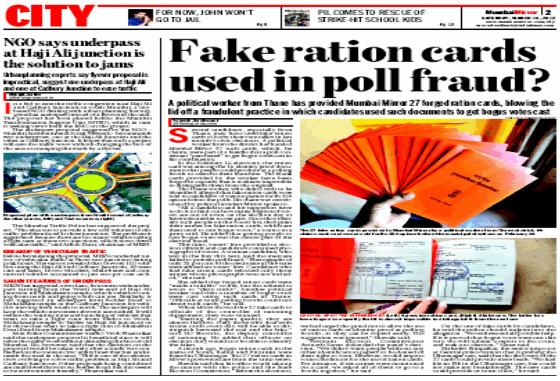
Keyword:- *Biometrics , Face Recognition , Ration Card, Thumb*

Introduction:

Biometric identification and transfers to individuals, rather than households, offer a way of ensuring that transfers reach intended recipients. Every resident of India must get an unique identification number. A person gets photographed, fingerprinted, and gets an iris scan. Associated with this biometric information is the UIDnumber of the person. Once everyone has a UID, the government can simply make an electronic transfer to a person's bank account once a week.

The amount can be indexed to the price of food, and updated monthly. Of course, many people do not have bank accounts. But with weekly government transfers in place, shopkeepers will have a strong incentive to invest in a fingerprint scanner that can connect to the government network. A person can identify themselves at such a shop by means of their fingerprints, and the transfer can be made to the shopkeeper electronically. He then hands over the cash to the person and avails of the potential customer's business. The central database will ensure that there are no duplicates. This eliminates the possibility of theft. The rupee amount to be transferred to each person per week can be set to be equivalent to any desired grain amount at market prices. This method will provide an assured transfer of money, equivalent to a fixed amount of food, to every adult every week, and will go a long

Way towards assuring food security for the poor. It will also avoid the misuses of ration card

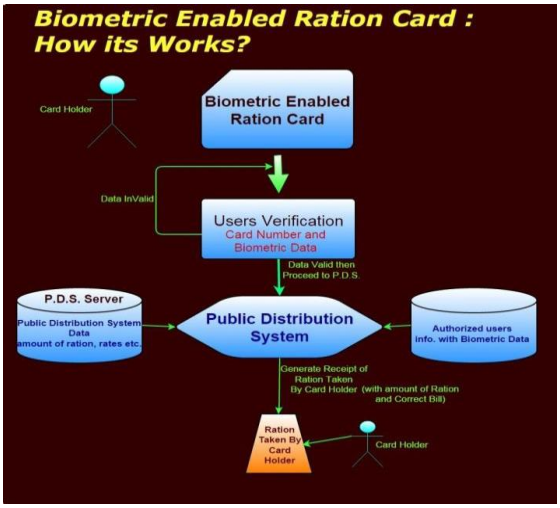

CITY

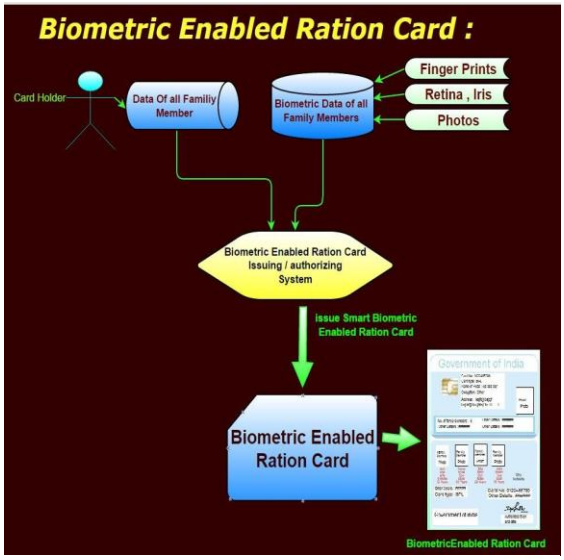
NGO says underpass at Haji Ali junction is the solution to jams

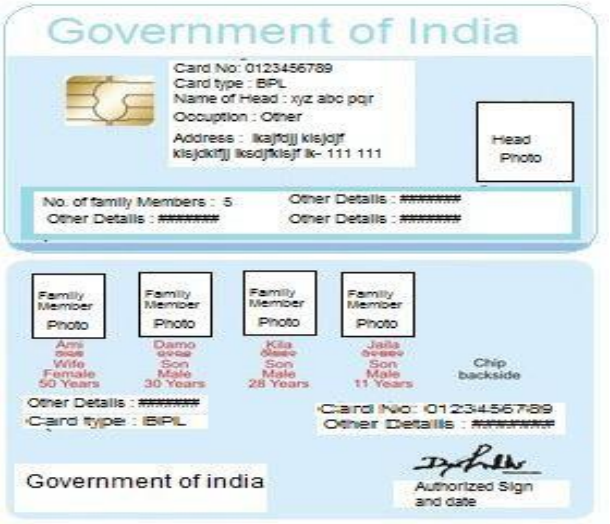
Fake ration cards used in poll fraud?

A political worker from Thane has provided Mumbai Mirror 27 forged ration cards, blowing the lid off a fraudulent practice in which candidates used such documents to get bogus votes cast

Our Concept for ration card







Features of Biometric Ration Card

- With biometric sensors to identify the right person.
- Will have predefined list of dependents of the ration card holders.
- Will have prior information about the amount of ration to be distributed.
- Will display the current and true rates.
- Will monitor the 'stock taken In' and the 'current stock' status to shop owner and also directly to PDS server.

Conclusion:

So far, we have focused on the immediate implications of our proposal for the welfare of those who are not economically secure. The introduction of this system will, however, carry wider ramifications. First, the fact that transfers go to individuals whose physical presence is required will empower women. They will get an independent and assured source of income. Second, the existence of an entitlement with no harassment involved in realizing it protects the recipient's dignity. Third, the existence of the UID and its use in excluding income taxpayers and other high wealth persons from the transfer will enable better integration of tax systems, and reduce tax evasion. This will improve the fiscal position of the government as well as the fairness and progressivity of the over all tax system, giving the government moral way to implement social programmes. Fourth, the provision of a truly assured and significant source of income to for merely economically insecure people can only have a healthy impact on electoral politics. It will bring an electoral reward to any government that implements it. This, in turn, will stimulate political parties to rely more on universal programmes to improve their electoral chances, and move India's political economy towards universal social security, education and health.

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EFFECTS OF TOWER RADIATION ON HUMAN BODY: A DETAILED REVIEW

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Abstract:

Mobile Phone usage has been rapidly spread globally and to provide proper coverage, number of cell towers are increasing worldwide. Effects of Mobile Tower Radiations are seen in many countries. New studies suggest that mobile radiation might double the risk of developing cancer on the side of the head used, damage to nerves around ears, loss of calcium ions, DNA damage etc. Measurements have been carried out at various places near the cell towers and it has been found that the radiation levels are very high. So it becomes significant to find out precautions over this so that human life becomes safe and healthy. This paper studies different adverse effects of tower radiations and precautions that should be taken while survival with tower radiations. The goal of the paper is to raise awareness among the peoples and to make secure life.

Keywords: Tower, Radiation, Adverse Effects, Precautions, human body.

Introduction:

Now the many people has increasing the needs of cell phone communication number of cell towers getting installed is increasing every day .But many peoples are not aware about Mobile Phone & cell Tower Radiations which are very harmful due to electromagnetic radiations .The number of cell Phone and Cell Towers are increasing without giving due respective it's disadvantage. Now in India Currently there are nearly 7,36,654 lack towers of cell phone are available and 92,112 towers are used for 3G mobiles. The cell tower transmits in the frequency range of 869 - 894 MHz (CDMA), 935 - 960 MHz (GSM900) and 1805 – 1880 MHz (GSM1800). Also, 3G has been deployed in a few cities, whose tower transmits in the frequency range of 2110 – 2170 MHz. Majority of these towers are mounted near the residential and office buildings to provide good mobile phone coverage to the users [1].The tower Radiations are very dangerous for Human life. It can be developing cancer on the side of the head used, damage to nerves around ears, loss of calcium ions, DNA damage ,etc.

Radiation and Working of Towers

Radiation is the emission (sending out) of energy from any source. X-rays are an example of radiation, but so is the light that comes from the sun and the heat that is constantly coming off our bodies.

Figure 1: Mobile Tower showing radiation

Wireless telecommunications rely on a wide network of cell phone towers (base stations) to send and receive information. Cell phone towers consist of antennas and electronic equipment which serve as hubs for cell phones and local wireless networks. When you make a call with your cell phone, your phone and a nearby cell phone tower communicate back and forth using low-power radiofrequency (RF) energy.RF energy (sometimes called RF emissions, RF waves, or RF fields) is a part of the electromagnetic spectrum, which includes microwave radiation, visible light and X-rays. Health concerns are sometimes expressed by people who live or work near cell phone tower antennas located on towers, poles, water tanks or rooftops. Yet, the consensus of the scientific community is that RF energy from cell phone towers is too low to cause adverse health effects in humans.

Effect of Radiation of Human Body

(1) Hair

The losing of hair quickly and in clumps occurs with radiation exposure at 200 rems or higher.

(2) Brain

Since brain cells do not reproduce, they won't be damaged directly unless the exposure is 5,000 rems or greater. Like the heart, radiation kills nerve cells and small blood vessels, and can cause seizures and immediate death.

(3) Thyroid

The certain body parts are more specifically affected by exposure to different types of radiation sources. The thyroid gland is susceptible to radioactive iodine. In

sufficient amounts, radioactive iodine can destroy all or part of the thyroid. By taking potassium iodide, one can reduce the effects of exposure.

(4) Blood System

When a person is exposed to around 100 rems, the blood's lymphocyte cell count will be reduced, leaving the victim more susceptible to infection. This is often refered to as mild radiation sickness. Early symptoms of radiation sickness mimic those of flu and may go unnoticed unless a blood count is done.According to data from Hiroshima and Nagaski, show that symptoms may persist for up to 10 years and may also have an increased long-term risk for leukemia and lymphoma.

(5) Heart

Intense exposure to radioactive material at 1,000 to 5,000 rems would do immediate damage to small blood vessels and probably cause heart failure and death directly.

(6) Gastrointestinal Tract

Radiation damage to the intestinal tract lining will cause nausea, bloody vomiting and diarrhea. This is occurs when the victim's exposure is 200 rems or more. The radiation will begin to destroy the cells in the body that divide rapidly. These including blood, GI tract, reproductive and hair cells, and harms their DNA and RNA of surviving cells.

(7) Reproductive Tract

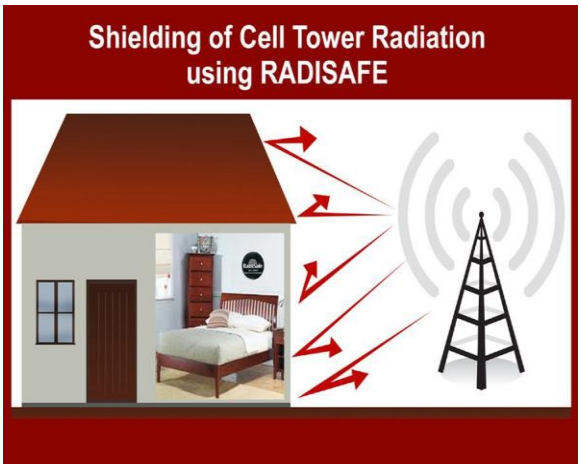
Because reproductive tract cells divide rapidly, these areas of the body can be damaged at rem levels as low as 200. Long-term, some radiation sickness victims will become sterile.

Biological Effects of microwave radiation

When a human body is exposed to the electromagnetic radiation, it absorbs radiation, because human body consists of 70% liquid. It is similar to that of cooking in the microwave oven where the water in the food content is heated first. Microwave absorption effect is much more significant by the body parts which contain more fluid (water, blood, etc.), like the brain which consists of about 90% water. Effect is more pronounced where the movement of the fluid is less, for example, eyes, brain, joints, heart, abdomen, etc. Also, human height is much greater than the wavelength of the cell tower transmitting frequencies, so there will be multiple resonances in the body, which creates localized heating inside the body. This results in boils, drying up of the fluids around eyes, brain, joints, heart, abdomen, etc. There are several health hazards associated with cell phones and cell towers.

Precautions

RadiSafe© is a small circular chip made of a unique combination of minerals that can absorb and neutralise electromagnetic waves, (also called cell phone radiation) and heat emitted by mobile phones when attached to your mobile phone .using this Radisafe Technology we can protect our health from Tower Radiations.



Conclusion

To the continuous radiation from cell towers ,there is radiations from cell towers, mobile, TV , laptop, FM towers, etc. it is dangerous for human body. Increased RF exposure will inevitably lead to more illness from compromised immune systems, nervous system, brain disorders, organ problems, tumors and cancer. so it is dangerous for human body.

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Impact of smart phone: A social Review.

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Abstract:

The intention of this study is to investigate how Smartphone's are impacting the society and also how Smartphone's are going to transform the culture, social life, technology landscape and other diverse aspects of modern society. The intention of this study is to understand all the positive and negative aspects of Smartphone on the society. The study will primarily focus on impact of Smartphone on business, education, health sectors, human psychology and social life. The paper will also recommend solutions, in order to reduce the negative impacts of Smartphone's and realizes more benefits of this exiting technology.

Keyword:- Smart Phone , Society, technology

Introduction:

Now we are living in the world surrounded by technology. Technology invents lots of different interesting devices for wellbeing of human[1]. Technology always works to make human life interesting and allow human to do every complex work with ease. Smart phone belongs to the same class of innovation. Now the craze and necessity of smartphone is such that we live without food for two days but not without smart phone and Internet. Smartphone's are going to transform our culture, social life.So we decided to work on this hot topic to understand all the positive and negative aspects of Smartphone on the society. The study will primarily focus on impact of Smartphone on business, education, health sectors, human psychology and social life [3-5]. Finally we discussed the solution to reduce the negative impacts of Smartphone's and realizes more benefits of this exiting technology.

Business	
❖ Advertising is an old concept but the features of Smartphone have made it more effective. ❖ Mobile application publisher, distributor and service provider are getting large revenue by providing ads as a part of mobile application	❖ Long dominated Microsoft and Intel alliance is experiencing bad times due to the rise of Smartphone's and tablets, and the pressure to gain market share in the mobile device market is causing fractures in long partnership.
Education	
❖ The growing demand of Smartphone, availability of the Internet and high speed mobile browsing is ready to provide an alternative channel to deliver education services. This will provide an opportunity to the users to utilize their smartphone to get educational benefits within their available time irrespective to their location. ❖ The Smartphone provide access to modern society a massive amount of educational and learning resources	❖ Smartphone's enables students to text, cooperate on social networking sites, check e-mails, play online games, and even watch TV channels. This is one of the sources of distraction. ❖ In addition, it wouldn't be easy for students to make calls during exams to cheat but it may be easy for pupils in a crowded classroom
Health	
❖ Several apps are available to track exercise, diet and blood pressure. This in turn enables the Smartphone's to play a key role in health sector ❖ The online health care education portal survey results show that apps such as Runkeeper, access health records electronically or participate in wellness programs have been taking benefit of mobile's health even without realizing it.	❖ Convenience of Smartphone access to health resources can be dangerous if patients start avoiding personal interactions with doctors for mandatory tasks. ❖ Disconnect kids from the true essence of social interaction. ❖ Excessive exposure of these devices in early age can cause poor eye sight for kids.
Psychological Impact	
❖ Smartphone enables users to interact with their friends and family as and when they get time. ❖ It enables the users to interact and stay up-to-date with the latest news and development in the political and	❖ ddiction to Smartphone (also known as communication addiction disorder), is a serious problem. ❖ The addiction to smartphone can be described as

social circles resulting in reducing work stress. ❖ The concept of "use it or lose it" principle in Psychology is very old and according to this concept the key to keep your brain functioning in its peak condition throughout your life lies in its smart use.	wanting to be in constant communication with people even though when there is no real need for communication. ❖ Smartphone addiction is not just a buzzword but researchers have recognized it as a serious psychic problem.

Conclusion:

It is true that Smartphone has a sizeable impact on society and other aspects of life. Clearly the enormous usage of these devices by consumers demonstrates the volume of this impact. Consumers are in process of traversing away from the use of conventional cell phone as the Smartphone‘s are beginning the norm of the society. Manufacturers and marketing can be blamed for this hype, but there is no doubt that Smartphone‘s are brining great features and capabilities to consumers. The key impacts like enable to be always-connected, addiction to phone, single device with all required features, business edge, convenient educational features, apps as new technology, entertainment, best utilization of time, disrespectful behaviour, privacy issues, impact on culture, distraction at work & at education Institutes and many more provide us both positive and negative sides of the Smartphone‘s. There are several initiatives from different vendors to combat the misuse of Smartphone at workplace and at Universities. SAP, Airwatch, MacAfee and many other vendors provide solutions to control the access of Smartphone within the workplace and Universities. Such measures are very useful in environments, where security of information is the top priority. These can also be useful in controlling the access of Smartphone‘s in Universities to minimize the use of social Websites, minimize the misuse of Smartphone‘s for cyber bullying, cheating in examinations and tests.

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STUDY OF EFFECTS OF MOBILE ON HUMAN BODY

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Abstract

Mobile telecommunications have seen tremendous growth. Near about equivalent to 96% of world population there are mobile subscriptions. Use of mobile in every one's life play a major role but with the same time mobile phone radiations have an adverse effect on human body. So, it becomes necessary to study effect of mobile radiations on human body. In this paper, we study the previous research work and present reviews and analysis of effect of mobile phone radiations. The aim of this review is to briefly describe and comment on the importance of life style

Keywords - Tower , Radiation, Mobile, Human body.

Introduction

India is the second-largest mobile phone user with over 900 million users in the world[1]. Mobile phones are damaging to our health after few or more days. The issue of possible health effects of mobile telephones and mobile telephone base stations is very much alive in the public's minds [2]. Mobile phones communicate with base stations using radio frequency (RF) radiation. If RF radiation is high enough, it has a 'thermal' effect. So it raises body temperature. The low levels of RF radiation emitted by mobile phones may cause health problems [3]. Parts of the radio waves emitted by a mobile telephone handset are absorbed by the body[4]. Over the last two decades, a large number of studies have been performed to assess whether mobile phones pose a potential health risk[5]. Motivated by these activities of mobile phone with the human body we have tried to pick up the best assumptions in this paper. Finally, we also have given some suggestions to avoid the side effects of mobile phones.

Reasons for increase in mobile use Communication

A mobile phone (also known as a cellular phone, cell phone, and a hand phone) is a device that can make and receive telephone calls over a radio link while moving around a wide geographic area. It does so by connecting to a cellular network provided by a mobile phone operator, allowing access to the public telephone network. By contrast, a cordless telephone is used only within the short range of a single, private base station.

Texting

The uptake has been so huge it is now included in an uncapped plan. The main uses of MMS for the SME market include member only offers and mobile coupons to redeem in store. The main use for MMS amongst friends and family has been the sending of pictures during important life events.

Surfthe internet

We had a phone than could access the internet and we were happy to pay ridiculous download and access fees you were 'cool'. Nowadays it's a basic feature, be it a Smartphone or a five year old Nokia.

Download and use applications

Three / four years ago mobile applications did not really exist, in fact they were called ODP (on device portals) and were usually pre-loaded by the manufacturer as added value. According to apple this year in 2013 the average downloads of Apple Applications is around 35 million per day, and for Nokia 1 million per day. There are approximately 250,000 Apple Apps and as of last week it was announce Apple are relaxing their policy on third partner developers, meaning this could jump to 500,000 in a matter of months.

Download and play games

This is dominated by two very different markets. The main markets are those under 20, male and female. The secondary market is, wait for it, females 40+, who stay at home. The majority of games are either played via application download or premium phone line.

Download and listen to music

Music comes in last at number five, but in actual fact it has the second fastest uptake after texting. Music downloads is a billion dollar game and as such has lead Apple, Nokia, Samsung and other leading brands to create their own stores and portals to purchase music and even upload your own.

Effect of Mobile on human body

Mobile telephone radiation had an effect on living tissue is heating. The rise in temperature on the surface of the brain caused by radio waves is 0.3 degrees at the most. This kind of temperature rise is not known to have biological significance. The temperature of the brain normally fluctuates by about one degree, and only after a five degree increase in temperature do cells become damaged.

Mobile telephone radiation could cause temporary changes in the functions of cells. These functions include the functions of genes, activation of proteins, and the internal chemical communication within cells. The trigger for these changes is unknown. It is only known that this phenomenon is not the result of excessive heating of tissue.

General population studies concerning the causal relation of possible tumour risk and mobile phone use

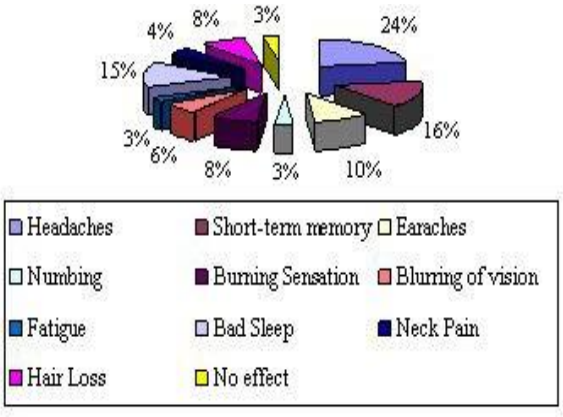
have been carried out. it is not possible to make such a conclusion that mobile phones would cause a health risk. An increased risk of brain tumour in people who have used a mobile phone for a long time[7]. .

Mobile phones communicate with base stations using radiofrequency (RF) radiation. If RF radiation is high enough, it has a 'thermal' effect, which means it raises body temperature. There are concerns that the low levels of RF radiation emitted by mobile phones could cause health problems such as headaches or brain tumours[2].

Radiation is a combination of electrical and magnetic energy that travels through space at the speed of light. It is also referred to as electromagnetic radiation (EMR). Radiation is classified into two types

- Ionising radiation (IR) – which is capable of causing changes in atoms or molecules in the body that can result in tissue damage such as cancer. Examples of IR include x-rays and gamma rays.
- Non-ionising radiation (NIR) – which doesn't cause these changes, but can prompt molecules to vibrate. This can lead to rises in temperature, as well as other effects. Examples of NIR include ultraviolet radiation in sunlight, visible light, light bulbs, infrared radiation, microwave energy and radiofrequency energy[2].

Survey Outcome



Above ig. shows the overall health effects of the mobile phone users. This diagram determines that among the 7650 respondents 24% claimed on headaches, 15% on bad sleep, 10% on earaches, 16% on short-term memory loss, 8% on hair loss, 8% on burning sensation, 6% on blurring of vision and 3% claimed no effects on health. Mobile phone may cause damage to human health to some extent. But it is not the only reason that is responsible for hazards[6].

Precautions

1. Limit phone calls to those that are absolutely necessary, and restrict these to 6 minutes maximum, which is the time the body needs to adjust. Use a hands-free kit and hold the phone more than 20/30cm away from your body in order to limit the impact of radiation on yourself.
2. Do not carry your phone directly on your body, even on stand-by, and do not use it less than one metre away from another person, in order to reduce the effect of 'passive' radiation
3. Do not use the phone while you are in a moving vehicle, including the train, bus, etc, since its antenna will be constantly scanning for contact using the maximum signal strength, and the radiation from both incoming and outgoing signal will be intensified.
4. Do not keep a mobile phone beside the bed at night switched on, because even when on stand-by it is in contact with the nearest phone mast and emits radiation at regular intervals.
5. Make as many phone calls as possible using landlines which emit no radiation, and which can often be used for free and for unlimited time via the Internet, even for phone calls abroad.
6. Limit the length of your calls on your cell phone.

Conclusion:

The use of mobile phone is increasing tremendously day-by-day but most of the people have no knowledge how the mobile phones impact on human health. It is almost clear from the research that the radiation from mobile phone is responsible for many diseases like brain tumor, headaches, short-term memory loss, different types of heart diseases etc.

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USES OF E-COMMERCE IN AGRICULTURAL DEVELOPMENT BANKS FOR PROMOTING VARIOUS SCHEMES.

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Abstract :

The National Bank for Agricultural and Rural Development (NABARD) is the organization with respect to all matters relating to policy, planning and operational aspect in the field of credit for the promotion of agriculture and allied activities in rural areas. They are also playing important role for disbursement of funds under different Government Schemes. This paper highlights the steps taken by banks which have contributed to the development of the role of NABARD and CBI as well as the agricultural Development of such step. The bank provides refinance to various bank for their term lending operation for the purpose of agricultural and rural development. A well organized banking system is the need of the day. Commercial banks are the most effective way to generate the credit flow of money markets. There is acute shortage of capital in India. The banks can play an important role in promoting capital formation, in controlling speculation in maintaining a balance between requirements and availabilities and in direct physical resources into desired channels. It has taken over the refinancing functions from Central Bank of India with respect of state Co-operative Banks and Regional Rural Banks.

Key words :- *Public sector Banks, private sector banks, agricultural credit.*

Introduction :-

With the introduction of liberalization, privatization and globalization the role of banking secor changed dramatically credit is one of the critical inputs for agricultural development. It capitalizes farmers to undertake new investments and adopt new technologies. The importance of agriculture in the Central Bank of India framework along with its significant role in poverty alleviation. Agricultural credit is considered as one of the most basic input for conducting all agricultural development programmes. In India there is an immense need for proper agricultural credit as the economic condition of Indian farmers are very poor. From the very beginning the prime source of agricultural credit in India was money lenders. After independence the Govt. adopted the institutional credit approach through various agencies like co-operatives, commercial banks, regional rural banks etc. to provide adequate credit to farmers, at a cheaper rate of interest. Moreover with growing modernization of agriculture during post-green revolution period of the requirement of agricultural credit has increased further in recent years.

Now a days the long term and short term credit needs of these institutions are also being met by National Bank for Agricultural and Rural Development (NABARD). It is the evolution of agricultural finance. It was established in the year 1982, with head office at Mumbai and 16 regional offices throughout the country. It has the objective of promoting the health and the strength of the credit institutions which are in the forefront of the delivery system namely, cooperatives, commercial banks and regional rural bank. It is in brief, an instituation for the purpose of refinance, with the complementary work of directing, inspecting and supervising the credit-flows for agricultural and rural development.

Objective of Study :

This study is to analyze steps taken by the Indian banking industry after nationalization and their impact on agricultural developments of rural India. It also attempts to suggest additional ways to enhance the role of banks in rural development.

Research Methodology :

The universe of this study is Indian baking sectors. Secondary data is used for this study, which is taken from the report published by Reserve Banks of India (RBI), National Banks for Agricultural & Rural Development (NABARD)

Need for Banking in Rural and Agricultural Areas :-

The rural population in India suffers from a great deal of indebtedness and is subject to exploitation in the credit market due to high interest rates and the lack of convenient access to credit. Rural households need credit for investing in agriculture and smoothening out seasonal actuations in earning. Since cash owes and saving in rural areas for the majority of household are small, rural households typically tend to rely on credit for other consumption needs like education, food, housing, household function, etc. Rural households need access to financial institution that can provide them with credit at lower rates and at reasonable terms than the traditional money-lender and thereby help them avoid debt-traps that are common in rural India.

1) Jalyukt Shivar Abhiyaan

Maharashtra Chief Minister Devendra Fadnavis today said that improving agriculture productivity and increasing capital expenditure are the focus areas of his government, which has completed 100 days in power. Maharashtra government has launched the project "Jalyukt Shivar Abhiyaan" in a bid to make Maharashtra a drought-free state by 2019. The project involves deepening and widening of streams, construction of cement and earthen stop dams, work on mullahs and digging of farm ponds. The mobile app, developed by MRSAC, is being used to map these locations. The mapped location can be monitored through this web page. The user will be able to download the application, view instruction manual and view mapping locations along with photographs. District-wise, taluka-wise, work-wise statistics is also available both in tabular and graphics form. The project aims to make 5000 villages free of water scarcity every year.

2) Credit Planning :-

Since April 1989 district Development Managers of NABARD in consultation with concerned departments of the Government, banks, other institutions and agencies formulate potential linked Credit Plan (PLPs) annually for all the districts in the country. The PLP identifies the potential available for development of primary, secondary and territory sector of the rural economy (agriculture, industries, business and service segments) in each district and projects the credit requirements, taking into account the long term physical potential, infrastructure available and planned, strength and capabilities of the Rural Financial Institution (Commercial, co-operative and regional rural banks in particular). The PLP serves as the resource document and provides sufficient insight to the lead District Manager to formulate Annual Action Plan (AAP) at the district level for all banks operating in the district, indicating quarterly physical and financial targets, bank-wise, block-wise and activity-wise under farm and non-farm sector. This ground level planning exercise facilitates each brach of the bank in the district to prepare a village level credit plan, develop strategy to implement the plan to achieve physical and financial targets, which are monitored by individual bank for all its branches and reviewed by the District level coordination committee quarterly block-wise, bank wise and activity wise. Now PLP and AAP also focus the action plan for inclusion of rural households who have been hitherto financially excluded. NABARD has included a new chapter on Financial. Inclusion in the district PLP to make it more contemporary.

3) **Financial Services :-**

NABARD provides refinance by way of loans and advance to RFIs for financing seasonal agricultural operational and investment activities in rural agreas grants loans to state Governments for developing critical infrastructure including social infrastructure in rural areas and strengthening cooperatives provides financial support for micro credit innovation of non-Governmental Organization (NGOs) and other formal and non-formal agencies co-finances with financial institutions and monitors and evaluates projects financed.

4) Seasonal Agricultural operation :-

RFIs based on the production-oriented system of lending provide short-term credit to farmers lending provide short-term credit to farmers to raise seasonal crops, which NABARD refinances at concessional rate of interest to State Co-operative Bank(SCBs) and (RRBs)

5) Refinance Support :-

NABARD extends refinance support for various activities to cooperative Bank for financing agriculture allied and marketing activities including marketing of crop Piciculture, industrial co-operative societies labour contract and forest labour co-operative societies including collection of minor forest product rural artisans including weaver members of functional societies viz. Primary agricultural Credit Societies (PACS), large size Adivasis (tribal) Multiple societies (LAMPS), farmers service societies (FSS) procurement of agricultural inputs (seeds, fertilizers, pesticides etc.) and Regional Rural Banks for financing marketing of crops pisciculture, production and marketing of activities of artisans and village/cottage finy sector industries persons belonging to weaker sections of the society engaged in trade/business/service activities including distribution of inputs for agriculture and allied activities.

6) Investment Credit Support :-

Investment credit leads to capital formation through asset creation. It stimulates technological up gradation resulting into increased production, productivity and incremental income to farmers and entrepreneurs NABARD, therefore, provides refinance support to its clients, such as SC & ST action plan.

7) Kisan Credit Card (KCC) scheme :-

NABARD introduced Kisan Credit Card (KCC), a loan product in August 1998 to facilitate banks in augmenting the ground level credit flow for crop loans by providing adequate, timely, cost effective and hassle free short term (ST) loans for Seasonal Agricultural Operation (SAO) to farmers. Subsequently, under a single window. In addition to short-term and term loans for agriculture and allied activities, KCC now also covers a certain component of loan for consumption needs as well as oral lessees, tenant farmers, sharecroppers. The KCC holders are covered under a Personal Accident Insurance Scheme (PAIS) against accidental death and permanent disability.

8) Watershed development :

NABARD has been actively supporting Watershed development as a comprehensive approach to enhance productivity of dry land through conserving soil, rainwater and vegetation. Watershed Development Fund (WDF) was set up in NABARD during 1999-2000 with a corpus of Rs.2,000 million contributed equally by Government of India and NABARD for creating replicable Watershed Development Models.

9) Relief Package for Distressed Districts :

NABARD is coordinating the implementation of watershed development proect for which the Prime Minister had announced a special financial package for 31 distressed districts in four states viz., Maharashtra,

Andhra Pradesh, Kartnataka and Kerala, in 2007. The special package envisages a massive watershed development covering annually an area of 15,000 ha for a period of three years in each of the distressed districts being financed out of full grant from Watershed Development Fund an area of 190,000 hectares was taken up for implementation taking the cumulative area to 588,000 hectares with total commitment of Rs.7,070 million.

10) Farmers' Clubs :-

NABARD launched Vikas Volunteer Vainer in November 1982 to promote voluntary adoption of five principles of "Development through Credit", viz Credit must be used in accordance with the most suitable methods of science and technology. The terms and conditions of credit must be fully respected work must be done with skill so as to increase production and productivity Apart of the additional income generated by credit, must be saved and Loan installments must be repaid in time and regularly so as to recycle credit.

11) NABARD-GTZ Rural Finance :-

NABARD in collaboration with GTZ, Germany formulated "Rural Finance Scheme", under which financial assistance is provided to a "family" as a unit for pursuing a multiple economic activities with the ultimate aim of generating employment and enhancing income through optimum utilization of family's assets & resources. The banks have been implementing the scheme since 2006-07 on a pilot basis in eight States & have covered 7127 families involving loan amount of Rs.401 million.

12) Agricultural Insurance : -

Agriculture Insurance company of India Ltd.(AICI) was established in December 2002 with an authorized capital of Rs.15,000 million. NABARD has subscribed the paid up capital of Rs.2000 million and the remaining by five public sector general insurance companies.

13) Credit Support :

The refinance products of NABARD cover the entire gamut of manufacturing, processing and service activities in the small and micro enterprises sector with focus on cottage, village and tiny industries, rural artisans and rural crafts. NABARD also provides refinance to Industries, Service and Business (ISB) components of Government sponsored programs. During 2008-09, NABARD provided refinance under RNFS to the tune of Rs.27,067.9 million including Rs.2,684.7 million for rural housing. As on 31 March 2009, the cumulative refinance support under RNFS stood at Rs.240,610 million.

14) E-banking in Rural Sector :-

In India, information Technology is playing a significant role in banking sector. Banking sector switching over from traditional paper based transactions to electronic means. Banks are using information technology (IT) to improve internal process and to facilitate their customers. IT also facilitates banks for their timely and accurate transaction. Major achievement in banking industry in India is increase in computerized branches. E-banking can be performed in various ways like.

Indian Banking Shaping the Rural Economy
Telephone Banking
Net Banking
ATM(Automated Teller Machine)
Debit/Credit Cards
EFT(Electronic Fund Transfer)
Maestro Cirrus and Visa Plus
AFT(Automated Fund Transfer)

Conclusion:

The Banking industry is playing vital role in rural development, despite this a large number of poor are not availing banking facilities. The problem of financial exclusion is very acute in India. There is lack of awareness of banking facilities, lack of financial literacy, lack of e-banking facilities in rural areas. The role of banks can be enhanced by the following means;-

1) Credit counseling centers should established in rural areas by the banks
2) Banks should also provide credit assistance to villagers to fulfill their social needs.
3) Provide credit to weaker section on lower interest rate.
4) Open zero balancing banks accounts of the people below poverty line.
5) Credit card facilities in rural areas.
6) Provide training to entrepreneurs for the use of credit it facilities.

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CLOUD COMPUTING : AN RESOURCE SHARING PARADIGM

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Abstract:
Resource sharing in a pure plug and play model that dramatically simplifies infrastructure planning is the promise of „cloud computing". The two key advantages of this model are ease- of-use and cost-effectiveness. Though there remain questions on aspects such as security and vendor lock-in, the benefits this model offers are many. This paper explores some of the basics of cloud computing with the aim of introducing aspects such as:

- *Realities and risks of the model*
- *Components in the model*
- *Characteristics and Usage of the model*

The paper aims to provide a means of understanding the model and exploring options available for complementing your technology and infrastructure needs.
Keywords:
Saas(Software as a service) , Paas(Platform as a service), Iaas(Infrastructure as a service)

Introduction

Cloud computing

Cloud computing is a computing paradigm, where a large pool of systems are connected in private or public networks, to provide dynamically scalable infrastructure for application, data and file storage. With the advent of this technology, the cost of computation, application hosting, content storage and delivery is reduced significantly.

Cloud computing is a practical approach to experience direct cost benefits and it has the potential to transform a data center from a capital-intensive set up to a variable priced environment.

The idea of cloud computing is based on a very fundamental principal of „reusability of IT capabilities'. The difference that cloud computing brings compared to traditional concepts of "grid computing", "distributed computing", "utility computing", or "autonomic computing" is to broaden horizons across organizational boundaries.

Forrester defines cloud computing as:

"A pool of abstracted, highly scalable, and managed compute infrastructure capable of hosting end- customer applications and billed by consumption."

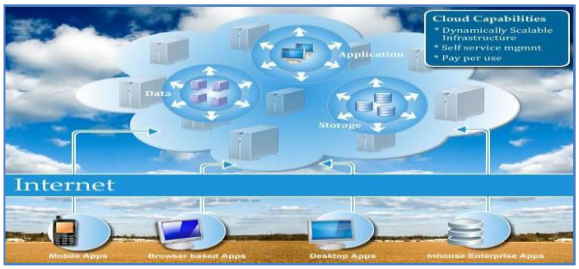


Figure 1: Conceptual view of cloud computing

CLOUD COMPUTING MODELS

Cloud Providers offer services that can be grouped into three categories.

1. **Software as a Service (SaaS):** In this model, a complete application is offered to the customer, as a service on demand. A single instance of the service runs on the cloud & multiple end users are serviced. On the customers‟ side, there is no need for upfront investment in servers or software licenses, while for the provider, the costs are lowered, since only a single application needs to be hosted & maintained. Today SaaS is offered by companies such as Google, Sales force, Microsoft, Zoho, etc.

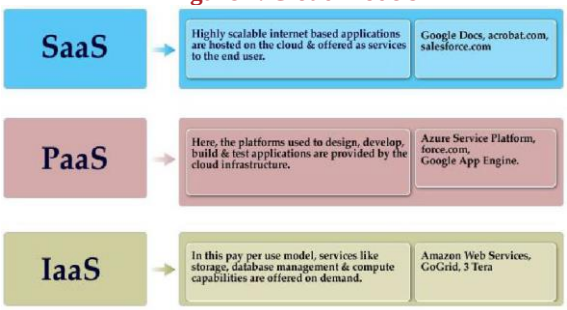
2.**Platform as a Service (Paas):** Here, a layer of software, or development environment is encapsulated & offered as a service, upon which other higher levels of service can be built. The customer has the freedom to build his own applications, which run on the provider's infrastructure. To meet manageability and scalability requirements of the applications, PaaS providers offer a predefined combination of OS and application servers, such as LAMP platform (Linux, Apache, MySql and PHP), restricted J2EE, Ruby etc. Google‟s App Engine, Force.com, etc are some of the popular PaaS examples.

3.**Infrastructure as a Service (Iaas):** IaaS provides basic storage and computing capabilities as standardized services over the network. Servers, storage systems, networking equipment, data centre space etc. are pooled and made available to handle workloads. The customer would typically deploy his own software on the infrastructure. Some common examples are Amazon, GoGrid, 3 Tera, etc.

UNDERSTANDING PUBLIC AND PRIVATE CLOUDS

Enterprises can choose to deploy applications on Public, Private or Hybrid clouds.

Figure 2: Cloud models



Cloud Integrators can play a vital part in determining the right cloud path for each organization.

Public Cloud: Public clouds are owned and operated by third parties; they deliver superior economies of scale to customers, as the infrastructure costs are spread among a mix of users, giving each individual client an attractive low-cost, "Pay-as-you-go" model. All customers share the same infrastructure pool with limited configuration, security protections, and availability variances. These are managed and supported by the cloud provider. One of the advantages of a Public cloud is that they may be larger than an enterprises cloud, thus providing the ability to scale seamlessly, on demand.

Private Cloud: Private clouds are built exclusively for a single enterprise. They aim to address concerns on data security and offer greater control, which is typically lacking in a public cloud. There are two variations to a private cloud:

-On-premise Private Cloud: On-premise private clouds, also known as internal clouds are hosted within one's own data centre. This model provides a more standardized process and protection, but is limited in aspects of size and scalability. IT departments would also need to incur the capital and operational costs for the physical resources. This is best suited for applications which require complete control and configurability of the infrastructure and security.

-Externally hosted Private Cloud: This type of private cloud is hosted externally with a cloud provider, where the provider facilitates an exclusive cloud environment with full guarantee of privacy. This is best suited for enterprises that don"t prefer a public cloud due to sharing of physical resources.

Hybrid Cloud: Hybrid Clouds combine both public and private cloud models. With a Hybrid Cloud, service providers can utilize 3rd party Cloud Providers in a full or partial manner thus increasing the flexibility of computing. The Hybrid cloud environment is capable of providing on-demand, externally provisioned scale. The ability to augment a private cloud with the resources of a public cloud can be used to manage any unexpected surges in workload.

CLOUD COMPUTING BENEFITS

Enterprises would need to align their applications, so as to exploit the architecture models that Cloud Computing offers. Some of the typical benefits are listed below:

1. Reduced Cost

There are a number of reasons to attribute Cloud technology with lower costs. The billing model is pay as per usage; the infrastructure is not purchased thus lowering maintenance. Initial expense and recurring expenses are much lower than traditional computing.

2. Increased Storage

With the massive Infrastructure that is offered by Cloud providers today, storage & maintenance of large volumes of data is a reality. Sudden workload spikes are also managed effectively & efficiently, since the cloud can scale dynamically.

3. Flexibility

This is an extremely important characteristic. With enterprises having to adapt, even more rapidly, to changing business conditions, speed to deliver is critical. Cloud computing stresses on getting applications to market very quickly, by using the most appropriate building blocks necessary for deployment.

Cloud Computing Challenges

Despite its growing influence, concerns regarding cloud computing still remain. In our opinion, the benefits outweigh the drawbacks and the model is worth exploring. Some common challenges are:

1. Data Protection

Data Security is a crucial element that warrants scrutiny. Enterprises are reluctant to buy an assurance of business data security from vendors. They fear losing data to competition and the data confidentiality of consumers. In many instances, the actual storage location is not disclosed, adding onto the security concerns of enterprises. In the existing models, firewalls across data centers (owned by enterprises) protect this sensitive information. In the cloud model, Service providers are responsible for maintaining data security and enterprises would have to rely on them.

2. Data Recovery and Availability

All business applications have Service level agreements that are stringently followed. Operational teams play a key role in management of service level agreements and runtime governance of applications. In production environments, operational teams support

- Appropriate clustering and Fail over Data Replication
- System monitoring (Transactions monitoring, logs monitoring and others) Maintenance (Runtime Governance)
- Disaster recovery
- Capacity and performance management

If, any of the above mentioned services is under-served by a cloud provider, the damage & impact could be severe.

3. Management Capabilities

Despite there being multiple cloud providers, the management of platform and infrastructure is still in its infancy. Features like „Auto-scaling" for example, are a crucial requirement for many enterprises. There is huge potential to improve on the scalability and load balancing features provided today.

4. Regulatory and Compliance Restrictions

In some of the European countries, Government regulations do not allow customer's personal information and other sensitive information to be physically located outside the state or country. In order to meet such requirements, cloud providers need to setup a data center or a storage site exclusively within the country to comply with regulations.

With cloud computing, the action moves to the interface — that is, to the interface between service suppliers and multiple groups of service consumers. Cloud services will demand expertise in distributed services, procurement, risk assessment and service negotiation — areas that many enterprises are only modestly equipped to handle.

Conclusion :

- The real value of cloud computing is that it makes your library related software and data available transparently and everywhere including in latest available smart phone devices.
- We are all aware, country like India faced problems like digital divide and off course very low internet bandwidth. So, benefit of new technology can be reached to limited area of educational area.
- Cloud computing is a powerful new abstraction for large scale data processing systems which is scalable, reliable and available.
- It is a new emerging architecture needed to expand the Internet to become the computing platform of the future.Cloud Computing is in a period of strong growth, but this technology is still has some issues of security and somewhat it is immature.
- But definitely, over a period of time Cloud Computing will become the most promising technology in next few years.

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WIRELESS CHARGING OF PORTABLE DEVICE (MOB PHONES) USING MICROWAVES: A REVIEW

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Abstract

Nowadays there is one basic need is added to our three basic needs that is Mobile phones. And is become important need of our life. It is the fastest and the easiest medium of communication. Battery life of mobile phone is always been a problem for manufacturers. People are complaining about their mobile's battery life, that they don't have long battery life and they have to charge their phone several times. The advantage of wireless charger is that it can wirelessly charge up the batteries which can save time and money in a long run for the general public Portable electronic devices are very popular nowadays. Existing communication network uses wireless nodes or devices for feasible and reliable communication. Charging these wireless devices I have prepared a review paper based on wireless charging.

Introduction:-

Wireless charging works on the principle of electromagnetic induction. Which uses microwaves. Coils of wire in the base station (the charging plate) create a magnetic field as the current passes through. This field can induce an electrical current in an adjacent coil of wire without actually touching it. If this wire is part of a battery charging circuit, then you have wireless charging. It's not as efficient as a direct cable connection between the batter and - wireless charging is around 60%-70% efficient and it is still recommend that booting a device from cold is done through a wired connection. But for day-to-day use, just lining up the coils and letting electromagnetism do the rest is the simple value proposition at the heart of wireless charging. Wireless charging is also known as inductive charging. Energy is sent through an inductive coupling to an electrical device, which can then use that energy to charge batteries or run the device. The two induction coils in proximity combine to form an electrical transformer. Greater distances between sender and receiver coils can be achieved when the inductive charging system uses resonant inductive coupling. Recent improvements to this resonant system include using a movable transmission coil i.e. mounted on an elevating platform or arm, and the use of other materials for the receiver coil made of silver plated copper or sometimes aluminum to minimize weight and decrease resistance due to the skin effect.

THEORY OF WIRELESS CHARGING:-

Tesla recognized that electrical energy can be projected outward into space & detected by a receiving instrument, in general vicinity of source without need for any interconnecting wires. He went on to development of two theories which are:

1) By using two grounded Tesla coil transmitter & receiver positioned at distant points on earth's surface, it is possible to induce a flow of electrical current between them.

2) By incorporating a portion of earth as part of powerful dual-elevated-terminal Tesla coil transmitter an electrical disturbance can be impressed upon the earth and detected at great distance or even all over surface of global [11].Nikola Tesla demonstrated illumination of wireless lamps by energy that was coupled to them through an alternating electric field[12]

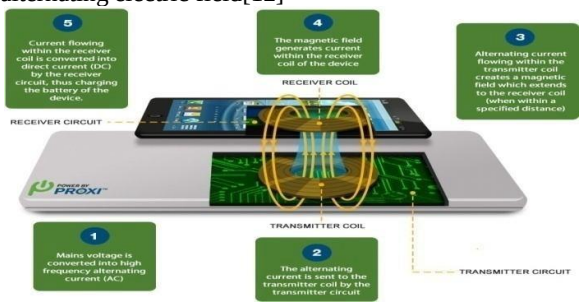

Fig:-1

Microwaves are radio waves (a form of electromagnetic radiation)with wavelengths ranging from as long as one meter to as short as one millimeter. The prefix "micro-" in "microwave" is not meant to suggest a wavelength in the micrometer range. It indicates that microwaves are "small" compared to waves used in typical radio broadcasting, in that they have shorter wavelengths.

Microwave technology is extensively used for point-to-point telecommunications (i.e., non-broadcast uses). Microwaves are especially suitable for this use since they are more easily focused into narrow beams than radio waves, allowing frequency reuse; their comparatively higher frequencies allow broad bandwidth and high data transmission rates, and antenna sizes are smaller than at lower frequencies because antenna size is inversely The main objective of this current proposal is to make the recharging of the mobile phones independent of their

manufacturer and battery make. In this paper a new proposal has been made so as to make the recharging of the mobile phones is done automatically as you talk in your mobile phone! This is done by use of microwaves. The microwave signal is transmitted from the transmitter along with the message signal using special kind of antennas called slotted wave guide antenna at a frequency is 2.45 GHz.[5]

Fig:-2

The two main concepts which are base of this technique:-

1.1 Electromagnetic Spectrum

As we know that when light shone through the prism it is divided in all the colors which we called rainbow, and technically it is called visible spectrum. So light is made of photons. Photons are bundle of energy. Light is traveling at the speed of 3,00,000km/hr So when light hit an object coming on its way it actually rebound from its surface.

And it comes in to our eyes and we can see the object. But color of the object is seen by us is depend how much amount of energy is rebound as photons from the object. But some theory can't be explained by taking the light as the bunch of photos. So some physicians assume that it is some kind of wave. They define an electromagnetic sanctum of different wave lengths which is divided in two parts. One is electric field and other is magnetic field.[6]

1.2 Microwave region

Microwaves are the radio wave which has the wave length range of 1 mm to 1 meter and the frequency is 3000 MHZto300 GHZ. Microwaves have wavelength that can be measured in centimeters microwaves are good for transmitting information from one place to another place because microwave energy can penetrate haze, light rain and snow, clouds and smoke. Microwave radiation is still associated with energy level that is usually considered harmless except for people with pace makers.[3]

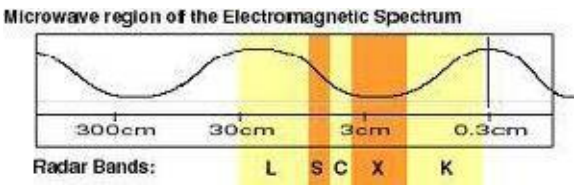

Fig:-3

2. WIRELESS POWER TRASMISSION

Nikolas Tesla is the father of wireless electricity transmission. Who first transmitted electricity without wire. Magnetic induction is the main principle behind the wireless power transmission. As we put one coil carrying current through it, it creates a magnetic field near to it. And if

we put other coil over there than it is induce by the first coil and it carry current from it! This is the simple principle behind it.

2.1 Wireless Power Transmission System

William C. Brown demonstrated how power can be transfer through space using microwaves. The concept of wireless power transmission is shown the block diagram.

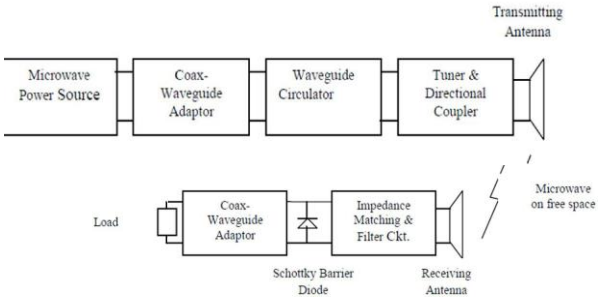

Fig:-4

Here as we can see there are two part. One is transmitting part and the other is the Receiving part. At the transmitting end there is one microwave power source which is actually producing microwaves.

2.2 Components of wireless power transmission system

The important components of this system are Microwave generator, Transmitting antenna, and the receiving antenna.

Microwave Generator:-

The Microwave Generator is the one which generates the microwave of preferred frequency. It generates the Microwave by the interaction of steam of elections and the magnetic field.

Transmitting Antenna:-

There are many kind of slotted wave guide antenna available. Like parabolic dish antenna, micro strip patch antenna are the popular type of transmitting antenna.[6]

Retina:-

A retina is a rectifying antenna, a special type of antenna that is used to convert microwave energy into direct current electricity. A simple retina element consists of a dipole antenna with an RF diode connected across the dipole elements. The current included by the microwaves in the antenna is rectified by the diode. Which powers a load connected across the diode. Schottky diodes are used because they have low voltage drop and high speed so that they have low power loss.[6]

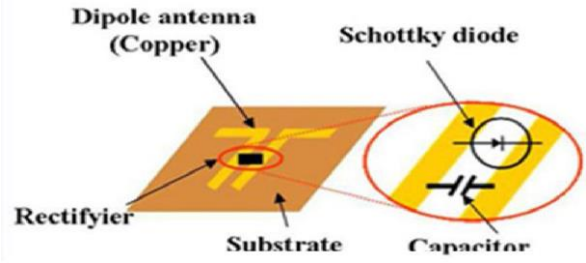

Fig:-5

3. System Design

The system designing of wireless charging of mobile phone using microwaves mainly consist of four parts as transmitter design, receiver design, the Process of Rectification, sensor Circuitry.[5]

A. Transmitter Design

A magnetron is a diode vacuum tube with filament in which filament act as the cathode shown in fig 3. Magnetron is actually behaved as an oscillator to produce microwaves. It can be done by putting magnet between the resonating chambers which is the center of the oscillator. These resonating chambers are named as anode in the magnetron. When electrons come out from the cathode and go direct towards the Anode, it passes through the magnetic field. It starts circulating in the resonating cavity and start producing waves according to its frequency. And the generated signal by this flow outside of the chamber.[5]

B. Receiver Design

We have to add a sensor and a Recteen at the receiver side. The retina actually convert the Microwave into the DC power. It's elements are usually arranged in a mesh pattern. A simple rectenna is constructed by using a schottky diode. Rectenna are very powerful to convert the Microwave in to the electricity. Actually the size of rectenna can be reducing using the Nano technology[3]

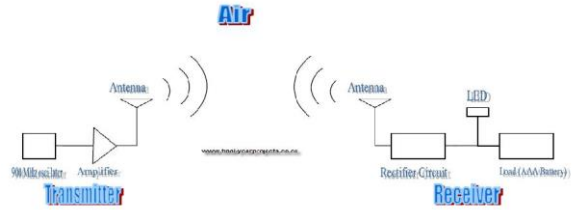

Fig:-6

C. The Process of Rectification

Microwave can easily travel through the media but it also loses some energy. So our key objec-tive is to rectify the circuit and to rectify the waves at the low cost. And also we have to make the detection more sensitive. As we know that bridge rectificationis more efficient than the single diode we use this for the better performance. We use the shottky diode to get the batter impedance.[5]

D. Sensor circuitry

The sensor circuitry is simple circuit, which detects if the mobile phone receives any message signal. this is required, as the phone has to be charge as long as user is talking. thus a simple F to V convertor would serve our purpose.[3]

4. ADVANTAGES:-

- Charge the phone by Bluetooth so low risk of electrical shock or shorting.
- The need of different type of chargers by different manufacturers is totally eliminated

5. DISADVANTAGES :-

- The transmitter and receiver also should be very powerful devices as the distance increases the charging is very slower.
- Wireless transmission of the energy cause some drastic effects to human body ,because of its radiation.
- It is more costly practical possibilities are not yet applicable in this field.

Conclusion:-

This paper successfully demonstrates a novel method of using the power of the microwave to charge the mobile phones without the use of wired chargers. The main advantage of this technique isthis that the mobile phone users to carry their phones any where even if the place is devoid of fa-cilities for charging. A novel use of the rectenna and a sensor in a mobile phone could proide anew dimension in the revelation of mobile phone.

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CLASSIFICATION AND IDENTIFICATION OF MARATHI AND ENGLISH NUMERALS USING BLOB AND SVM CLASSIFIER

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Abstract—

NLP (Natural Language Processing) is a field of computer science artificial intelligence and computational linguistics concerned with the interactions between computers and human(natural) languages. NLP is one of most intelligent processing. Numerals recognition remains one of the most important problem in pattern recognition. Very little work has been done in Marathi script as compare to non-Indian scripts like English, Latin, Chinese etc. The existing work is for recognition of either Marathi or English numerals. Here we propose a method to classify and identify Marathi and English numbers using blob and SVM. Here SVM and blob methods both are used independently in order to recognize and identify text numerals. In SVM features are extracted and in blob, circular shape and stems are extracted then by comparing test samples with dataset the number is identified.

Keywords—svm;blob;stem;classifier

I. INTRODUCTION

Marathi language is majorly spoken in the state of Maharashtra and English is a global language. Sometimes there is a situation of identifying the numerals like in Banks cheques, in government advertisement there are Marathi and English numbers executed in mixing form. At that time the propose system is used for classifying and identifying the numbers. English language mostly used in Computers' World. In collection of numerals of Marathi and English numerals the classification and identification of the tasks will be performed by using blob and SVM classifiers[2]. In this operation the features will be extracted from input data and it will compare with the standard dataset and then the number will be identified[5]. The recognition of numerals is more challenging due to the difficulty of character segmentation. The existing system's works are existed on classification and identification of either Marathi or English numbers. The proposed work is done on mixing numbers of Marathi and English numbers. The mixing numbers will be classified and then identified by using SVM classifier and blob. The current existed works are occurred on Chinese or only English or only Hindi languages[1].

II. RELATED WORK

The recognition method is considering with the numerals morphology. The full of page images consider as a topic image and the topic image will be character based. The Chinese text images are segmented by using the segmentation process[3]. At first the page image is recognized with a character based bi-gram language model[3]. For the text image recognition the n-gram language model is used for its robustness and convenience of information integration. the topic language model adaption for handwritten Chinese text recognition includes three steps.

Recognize text line image with GLM: it includes bi-gram model.GLM is character based bi-gram language.

Determine the topic of the current text: the feature will be determine by using the frequency distribution of the topic image.

Recognize text images with TLM: TLMs are trained respectively on corresponding corpus under MLE. TLM will get a larger matching score than GLM.

III. SUPPORT VECTOR MACHINE(SVM)

The support vector machine(SVM) is one of the part of artificial neural network. It is used as pattern recognition. The SVM is supervised learning method and which is used for classification and identification purpose. SVM is a multiclassifier which is used to classify and compare the different features and identifying the result. SVM is more powerful than Naïve Bayes classifier. SVM is classified into two types binary classifier and multiclass classifier. Here we use multi classifier.

IV. BLOB AND STEM CLASSIFIER

According to Liu et al(2003) handwritten digit recognition can be classified into two types offline handwritten character recognition and online character recognition[2]. In offline character recognition, the handwritten character is used for demonstration. This handwritten data remains in a image form. The blob means any filling a hole in a number image and without hole. The other structure present in the image is called as stem. This blob and stem is classified using a decision tree generation[2]. In this method the numbers are considers between 0 to 9 digits (0,1,2,3,4,5,6,7,8,9). At first we generate the two sub classes as with blob and stem as(0,4,6,8,9) and with only stem as(1,2,3,4,5,7).

Then according to decision tree the number will be categorized[2].

V. CLASSIFIER

The classifier is a mediator between input dataset and our user input data image. The SVM and Blob classifiers are used for this purpose. There are many classifiers are used for classification of the data. Here we will consider the SVM i.e. Support Vector Machine and Blob. the SVM is more powerful classifier than the Naïve Bayes classifier. Because the Naïve

Bayes classifier consists of only binary classification method. The SVM consists of multiclassifiers. The multiple features are considering for recognition purpose. Classification is performed on many areas like image processing, or soil recognition areas, seeds recognition, wheat recognition etc.

In the above areas the classification in done using many features suppose in wheat recognition the classification is done by using multiclassifier system by using SVM[6]. The images will be classified using many classifiers. The classification methods are used as binary or multiple criterion.

VI. FEATURE EXTRACTION

Feature extraction is a method in which the feature will be extracted from the input image and these extracted features will be compared with the feature standard dataset. the features are of any thing suppose in image processing the face, eyes, ears, these are the distinct part part of the face. The overall appearance of the distinct part of the face or other part of the body. A distinct attribute of the something. Suppose in the image processing the features are like nose eyes, ears, mouth etc. The features are extracted means the dimensionality reduction of the particular area like pattern recognition. Features like dark haired with strong is normal feature of the man.

The features are considering the normal things opposed of abnormal things. The comparison of the features with the standard dataset. This process is considering many algorithms or many techniques are used.

VII. THE PRPOSED SYSTEM

The proposed system consists of method which is used for classification and identification of the numbers.

We consider the Marathi and English numbers in mixing form and according to SVM and blob classifier, the system will classified first numbers as Marathi and English separated and then it will be identified; the number is of the form Marathi or English numbers.

A. Architectural System

The above fig.1 describes the architectural for classification and identification of number. At first the input is in number form image. It is either single image or full of page. Then segmentation process is performed on that image. By using segmentation processes the full page is divided into separate form. Then by using feature extraction method, the features will be extracted and then it will compared with features of standard dataset; and then the number will classified[5].

Fig. 1 proposed architecture

The classification of a number will be categorized as SVM or BLOB[2]. Then the number will go for identification process. In identification process, the number is either Marathi or English number. Then from the Marathi and English numbers data the number will identified. The identification process is done using again feature extraction method or blob. Here, CMATERdb 3.2.1 dataset will be consider for Marathi number identification. Results will be done on the basis of parameters as, comparative with method, feature extraction method, feature size, sample size and name of classifier.

VIII. CONCLUSION

Recognition of Marathi and English numerals by using SVM and blob classifiers. The better result will be expected these classifiers.

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RISK, FRAUD, HACKING, PHISHING IN BUSINESS SYSTEMS

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Abstract:

Information technology is playing a critical role in our business systems. If you own or manage a business that makes use of IT, it is important to identify risks to your data and systems, to reduce or manage those risks, and to develop a response plan in the event of an IT crisis. IT risks include hardware and software failure, human error, spam, viruses and malicious attacks, as well as natural disasters such as fires, cyclones or floods.

This guide helps you understand IT risks, frauds, hacking, phishing and provides information about ways to prepare for and respond to IT incidents.

Keyword: *Risk, fraud, hacking, phishing.*

Introduction:

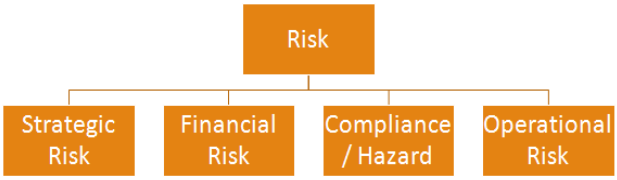
The world today is becoming more and more technology dependent. if you own or manage a business that makes use of computer and internet, it is identify risks to your data and business systems, to reduce or manage those risks and to develop a response plan in the event of any fraud, hacking or phishing. The security of personal information in today's world relies on far more than simply a locked door. Security today relies heavily on safe guards, procedures, and policies that are put into place and left to be. But are those measures enough to offer real security? so first step is to understand and explore types and probable causes of different kind of attacks like frauds, hacking and phishing on our business system.

Your Internet service is more than just a data communication link - it's a vital connection to customers, employees, and business services. A wide range of business practices are directly impacted by your company's effective use of the internet. All organizations are subject to fraud and risks. Large frauds have led to the downfall of entire organizations, massive investment losses, significant legal costs, incarceration of key individuals, and erosion of confidence in capital markets. Publicized fraudulent behavior by key executives has negatively impacted the reputations, brands, and images of many organizations around the globe.

1. Risk:

Risk is the potential of losing something of value. A probability or threat of damage, injury, liability, loss, or any other negative occurrence that is caused by external or internal vulnerabilities, and that may be avoided through preventive action.

1.1 Types of Risks:



- **Strategic risk:** A possible source of loss that might arise from the detection of an unsuccessful business plan. For example, strategic risk might arise from making poor business decisions, from the substandard execution of decisions, from insufficient resource allocation, or from a failure to respond well to changes in the business environment.
  Strategic risks are those risks associated top management decision about business strategy in a particular industry.
  They include risks arising from:
  - Merger and acquisition activity
  - Changes among customers or in demand
  - Industry changes
  - Research and development
- **Financial Risk**
  The probability of loss inherent in financing methods which may impair the ability to provide adequate return.
  Financial risks are associated with the financial structure of business, the transactions that are made in business and the financial systems that is in place.
  - the way **credit** is extended to new customers
  - Financers
  - Cashflows
  - Investments & interest rates
- **Compliance / Hazard**
  Compliance risks are those associated with the need to comply with laws and regulations. They also apply to the need to act in a manner which investors and customers expect, for example, by ensuring proper corporate governance.
- **Operational Risk**
  Probability of loss occurring from the internal inadequacies of a firm or a breakdown in its controls, operations, or procedures.

Operational Risk is connected with Internal resources, Supply chain, **Systems & IT** Employees

1.2 Risk Evaluation

Risk evaluation allows you to determine the significance of risks to the business and decide to accept the specific risk or take action to prevent or minimise it.

To evaluate risks, it is worthwhile **ranking** these risks once you have identified them.

This can be done by considering the **consequence** and **probability** of each risk. Many businesses find that assessing consequence and probability as high, medium or low is adequate for their needs.

Compare with business plan - to determine which risks may affect your objectives plot on a **risk map** the significance and likelihood of the risk occurring.

1.3 Risk Management

Risk management is the identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities.

There are four ways of dealing with, or managing, each risk that you have identified. You can:

accept it, transfer it, reduce it and eliminate it.

2. Fraud

"fraud" is described as:

Inducing a course of action by deceit or other dishonest conduct, involving acts or

omissions or the making of false statements, orally or in writing, with the object of

obtaining money or other benefit from, or of evading a liability to, the Commonwealth.

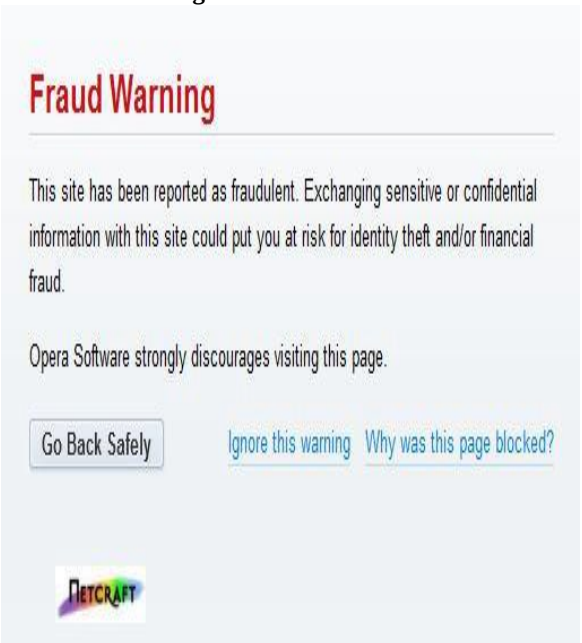
Example: Employee embezzlement fraud -

An employee of a large software services company in India was able to steal the password of the bank account of the company and embezzle an amount in excess of US$4 million.

2.1 Type of Frauds

- **Intellectual property infringement fraud**- An employee of a software development company in India sold off the source code of the new software developed by the company to its competitors.
- **Forex fraud**- An employee of a leading software company in India without proper authorization hedged the foreign exchange receivable by the company outside the normal course of the company's hedging process, which resulted in a loss of US$20 million to the company.
- **Data theft**- An employee of a Gurgaon (India)-based BPO company is believed to have sold a CD, which is suspected to contain some confidential data pertaining to the customers of a British bank.
- **Refund fraud-** Two employees working in a Chennai (India)-based BPO misused their authority and created 30 dummy customer e-mail IDs and embezzled more than US$91,000, which was supposed to be paid as refund for dissatisfied customers.
- **Procurement fraud-** Two employees of a Bangalore-based technology company were sacked for allegedly showing preference to certain vendors/service providers and demanding favors from certain other vendors in lieu of the timely processing of their invoices/bills and the renewal of contracts.
- **Recruitment fraud-** The entire recruitment team at the Indian subsidiary of a large IT company was sacked for allegedly accepting bribes from prospective employees and recruitment consultants.
- **Payroll fraud-** An employee of a Hyderabad-based company drew salary even after six months of leaving the company.
- **Misappropriation of funds-** Few employees from the Pune center of a large Indian BPO opened several dummy accounts to transfer the customer funds to these fictitious accounts.

2.2 Fraud Warning



3. Hacking:

Illegal intrusion into a computer system or network. Act committed towards breaking into a computer and/or network. Hackers write or use ready-made computer programs to attack the target computer. They possess the desire to destruct and they get the kick out of such destruction. Hot Targets-Government websites, due to the press coverage, it receives. Hackers enjoy the media coverage. Hackers may be motivated by a multitude of reasons, such as profit, protest, challenge or enjoyment.

3.1 Types of Hackers

- White Hat
- Breaks security for non-malicious reasons, perhaps to test their own security system or while working for a security company which makes security software. The term "white hat" in Internet slang refers to an ethical hacker
- Black hat
- Black hat hackers break into secure networks to destroy data or make the network unusable for those who are authorized to use the network. Black hat

hackers are also referred to as the "crackers" within the security industry and by modern programmers

- Gray Hat
- A grey hat hacker is a combination of a black hat and a white hat hacker. A grey hat hacker may surf the internet and hack into a computer system for the sole purpose of notifying the administrator that their system has a security defect

3.2 Hacking Example:

- **Sony's PlayStation Network**
  Date: April 20, 2011
  Impact: 77 million PlayStation Network accounts hacked; Sony is said to have lost millions while the site was down for a month.
- **Monster.com**
  Date: August 2007
  Impact: Confidential information of 1.3 million job seekers stolen and used in a phishing scam.
- **TrueCaller hacked, 1 million Indians' data at risk**
  Date: July 19, 2013

Impact: Global phone directory app TrueCaller has been hacked by hacktivist group Syrian Electronic Army (SEA). The hacking group announced this in a post on Twitter, along with an image that showed details of some users of the app.
Syrian Electronic Army broke the news via a tweet saying, "Sorry@TrueCaller, we needed your database, thank you for it." The hackers openly released TrueCaller's database host ID, username and password via another tweet.
TrueCaller app is available on Android, iOS, Windows Phone, BlackBerry and Symbian platforms. The app's databases have access codes to Facebook, Twitter, LinkedIn and Gmail accounts of millions of users globally. Reports say that TrueCaller website went down for a while but is now back online. In June this year, TrueCaller announced that its user base has touched the 20-million mark, representing growth of 100% in a period of five months. It said that it has 1 million users in India in March.

4. Phishing

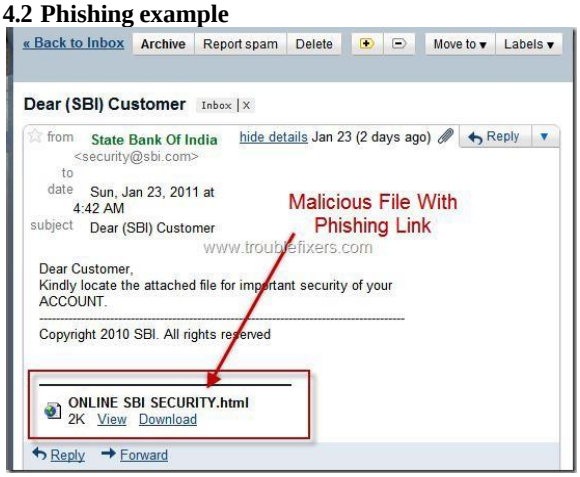
The word has its Origin from two words "***Password Harvesting***" or fishing for Passwords . Phishing is an online form of ***pretexting****, a kind of deception* in which an attacker pretends to be someone else in order to obtain sensitive information from the victim.Uses of ***'spoofe°d'*** e-mails and fraudulent Web sites that look very similar to the real ones thus fooling the recipients into giving out their personal data. Uses fraudulent emails claiming to be from a trusted sender, such as a bank, to 'fish' for information. Use various tricks to attract recipients to click on image or executable.Most phishing attacks ask for credit card numbers, account usernames and passwords.

4.1 Phishing Types:

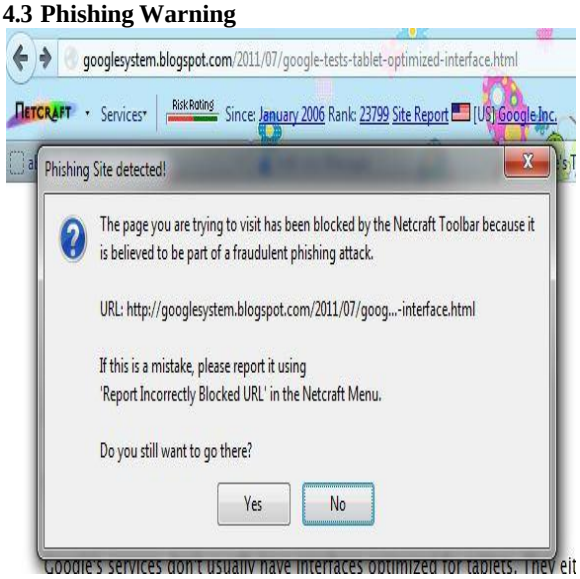
- **Deceptive Phishing:**
  - A phisher sends bulk email with a message. Users are influenced to click on a link
- **Malware-based Phishing?**
  - Running malicious software on the user's machine.
  - The malware can be introduced as an email attachment or as a downloadable file exploiting security vulnerabilities
- **Key-loggers and Screen-loggers?**
  - It is Malware, who tracks the inputs from keyboard and send the output to phisher
  - They can embed themselves into the user's browsers as small utility programs.
- **Session Hijacking?**
  - User's activities are monitored clearly until they log into a target account like the bank account and establish their credentials.
  - Takes control and can undertake unauthorized actions
- **Web Trojans:**
  - Web Trojans pop up when the users attempt to log in to an important website or performing any transaction.
  - They collect user's credentials locally and transmit them to the phisher.
- **System Reconfiguration Attacks?**
  - The settings on a user's PC are modified with bad intentions.
  - For example: a financial institution's website URL may be changed from "icicibank.com" to "icicibnak.com".
- **Data Theft**
  - Malicious code running on a user's computer to steal data like password, documents, design, keys
- **DNS-Based Phishing?**
  - The requests for URLs or name service return a bogus address after DNS resolution
  - And subsequent communications are directed to a fake site when the hackers tamper a company's host files or domain name.
- **Content-Injection Phishing?**
  - It means inserting malicious content into a legitimate website.
  - The malicious content can redirect to other websites or may install malware on a user's computer
  - Also it insert a frame of content that will redirect data to the phishing server.
- **Man-in-the-Middle Phishing?**
  In these attacks hackers sit between the user and the website or the system
  - They record the information being entered by the user till completion of transactions.
  - Later, they sell or use the information which may be credentials, credit card details, and bank account details.
- **Search Engine Phishing?**
  - Phishers develop e-commerce websites with attractive offers.
  - Later these sites are indexed legitimately with different search engines.
  - When users search for products or services, these sites are shown by the search engine.

- For example: Iphone5 or Samsung Galaxy S5 in Rs.999/-

4.2 Phishing example



4.3 Phishing Warning



Conclusion:

This paper explains the types of risks, frauds and hacking for incorporating security in your internet services.

Risk, fraud and hacking is significant problem for accessing of internet and services. Many business systems required data of public so they are used many techniques to accessing of unauthorized data by using hacking, fraud etc. For today's consumers, merchants, and financial institutions, fraud is inevitable.

Phishing is a growing crime and one that we must be aware of. Although laws have been enacted, education is the best defense against phishing. Being a bit suspicious of all electronic communications and websites is recommended.

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APPLICATION OF CONSORTIA IN COLLEGE LIBRARY

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Abstract

The increasing price of electronic journals, indexing and abstracting databases along with the traditional published print subscriptions has forced library community to explore alternative means of subscription. The emergence of library a very promising development in this direction. The Phenomenon of consortia or group of libraries maintaining information resources together has become very common these days, In India, during last few years we witnessed many consortia based subscription. This paper briefly discusses the concept, need, advantages and also the major consortia initiatives in India.

Keywords : Library Consortia/ E-Journals / INFLIBNET / UGC-INFONET / ERNET / CSIR/ FORSA/ HELNET/ IIM

1 INTRODUCTION

No library, however big it may be, is able to satisfy all the needs of its clientele due to various constraints. It is because of this phenomenon that the concept of resource sharing has developed. Initially the term used for resource sharing activities was library cooperation. Though cooperation theoretically could embrace almost all library activities, practically it was confined to inter-library loan of library documents. But due to physical distance and other reasons even this limited system of cooperation was not being practiced widely. However, with the advent of ICT and its application in library activities, new opportunities opened up for greater cooperation among libraries. At the global level Internet and at the national and local level several library networks came in vogue and databases created for information sharing. In recent years availability of information resources in digital or electronic medium has further facilitated exchange of information resources among libraries, thus creating favorable condition for increased resource sharing. Emergence of library consortia is a very promising development in this direction.

Introduction :

It is not possible for one library or information centers to hold the full stock of information resources or to procure all information, which may be in demand by its clientele. Even not a single library or information center can meet the thrust of knowledge of all the readers from its holdings. To solve this problem, library cooperation started long ago, such as Inter-library loan, document delivery, library networks, etc. At present, the more accepted system of resource sharing is called library consortia. Consortia approach is one of the many ways of maintaining cooperation and coordination among the libraries and in fact, it has emerged as the 'state of the art' in library cooperation in recent years. The aim of the consortia is to achieve what the member of the group cannot achieve individually. A consortium is said to be "a cooperative arrangement among group of institution," or " an association or society" (American Heritage Dictionary). Consortia are commonly formed to increase the purchasing power of the collaborating institutions to expand the resource availability and to offer automated services . The idea of consortium is not new. There were instances of several libraries coming together voluntarily for the mutual benefit of respective users just like cooperatives, it was the earliest stage of library cooperation. In the second stage, computerized networks come into vogue for sharing of resources. Till this period, the library resources were mainly in traditional printed format. The networks created their bibliographical databases. The users of the participating libraries could get the required documents from other libraries through document delivery services. With the advent of e-resources, the concept of consortia has been mooted mainly for acquisition of e-journals. As the resources that are procured today through the consortium are mainly e-resources, it has become possible for the users to access and download the required materials without even going through the elaborate process of inter library lending. Though library consortia have been created with narrow purpose, these can be turned into efficient instruments for sharing all types of library resource.

Consortium

The word consortia are the plural of the word consortium. The term "consortia according to Oxford Dictionary means temporary association of a number of countries, companies, bands etc for a common purpose. In the context of library organization it means temporary association of a number of libraries for a common purpose of sharing the resources and meeting the information needs of their users.

Concept of Consortia

The Encyclopedia of library and Information Science puts libraries in the frame of social psychology and derives close relationship between a structure and its supporting environment. As applied to libraries the ever increasing demand for services, which often times leads to the creation of library, that administers the services demanded such administering organizations have been referred to as systems of 'consortia' Generally in practice, library cooperatives are referred to as systems and those formed by academic libraries as consortia.

Library Consortia

Library consortia is a generic term to indicate any group of libraries that are working together towards a common goal, whether to expand cooperation of traditional library services (such as collection development) or electronic information services. The term is now used perhaps (such as incorporated or governmental agencies) to informal groups that come together solely to achieve better pricing for purchasing electronic information a library consortium is a group of libraries that are established as a separate entity by incorporation under societies act, the companies act or a memorandum of agreement among member . Library systems incorporated under the libraries act are not considered consortia. Consortia must have a budget and a staff member responsible for coordinating the activities of its members and act as the contact for its members.

Thus a library consortium is the association of libraries to achieve a common goal that is beyond what an individual library could achieve on its own. Structure of governance and can as a corporate body on behalf of all its members.

Definitions of Library Consortia

" Library consortia" refers to the cooperation, co-ordination and collaboration between and among libraries for the purpose of sharing information resources

3.1 Types of Consortia

Library consortia function in different ways. During the last three decades, libraries have developed a variety of organizational models. At one end of the spectrum are the loosely affiliated buying clubs where libraries come together primarily to share a discounted rate on electronic journals and databases, while on the other end are consortia that are tightly integrated organizations sharing a variety of resources which require a long term commitment and collaborative decision making at all levels. [3]. Theoretically, consortia may be of following types depending on their characteristics.

From the point of view of type of libraries forming the *consortium there can be two types of consortia:*

Consortia of multi-type libraries: In this type of consortium participating libraries are of different types, such as public, academic and special.

Consortia of same type of libraries : The members of such a consortium are of same type, such as consortium of public libraries, consortium of academic libraries, etc. CSIR E-Journals Consortium is such a consortium.

From the point of view of geographical region of coverage, the consortia may be of following types:

Local level consortia : This consists of libraries situated in a particular city, town of district, e.g. BOSLA (Bombay Science Librarians' Association), which was possibly the first library consortium of the country.

State level consortia : In such a consortium libraries of one particular state participate. There is perhaps no such consortium in the country at present.

National level consortia : Libraries belonging to a country are its members. INDEST is a national level c consortium, but covering only libraries of scientific and technical institutions.

Regional level consortia : In such a consortium libraries of a particular region participate.

International level consortia: In this consortium libraries belonging to different countries participate. This may be formed either by individual libraries, such as OCLC, or by bringing different national consortia under one umbrella. Such federation of consortia is known as Meta Consortia, such as International Coalition of Library Consortia, which comprises of nearly 150 library consortia from around the world .

From the point of view of subject or area of coverage *there can be two types of consortia:*

Single discipline oriented consortia: In such a consortium organizations dealing with same or similar disciplines join hand, such as FORSA (Forum for Resource Sharing in Astronomy and Astrophysics).

Multi-discipline oriented consortia : Such a consortium deals with resources in multiple disciplines. UGC sponsored INFONET is such a consortium, which deals with multiple subjects.

Again from the organizational point of view, there can be two types of consortia.

Loosely knit federation : In such a consortium there is no central body of dedicated staff to look after the consortium activities. Some libraries join hand for some immediate gain for a particular purpose. It is often not of permanent nature.

Tightly knit organization : Such a consortium is of permanent type, having a central body with membership of participating libraries for guiding the activities of the consortium and also some dedicated staff for performing the consortium activities.

Further, from the point of view of basis of formation there are two types of consortia:

Non-sponsored consortia: Such a consortium is formed voluntarily by participating libraries by sharing the expenses. FORSA again is such a consortium.

Sponsored consortia : This type of consortium is sponsored by a central organization and the major expenses are borne by it. Here sometimes the sponsoring body itself carries out the major activities of the consortium. UGC-INFONET is such a consortium.

Obviously, the above categories are not mutually exclusive. Most of the existing consortia naturally fall in more than one category.

DEVELOPMENT OF CONSORTIA

The term 'consortium' literally means "temporary cooperation of several powers or large interests to effect some common purpose" [1]. A library consortium is " a community (a cooperative) of two or more information agencies which have formally agreed too ordinate, cooperate in, or consolidate certain functions to achieve mutual objectives" [5]. More specifically, it is "a group of libraries that agree to pool their resources by allowing the users of each Institution some type of access to the resources of all other

institutions, either through inter-library loan or borrowing Privileges" [4]. In fact "library consortium is a community of value creating Entities, generating value through an aggregation of library units within and across organizations. The value creation could be enhanced through resource sharing processes, products and service offerings of the participating library units in a consortium" [2]. As indicated, the idea of consortium is not new. There were instances of several libraries coming together voluntarily for the mutual benefit of the respective users just like cooperatives. It was the earliest stage of library cooperation. In the second stage computerized networks came into vogue for sharing of resources. Till this period the library resources were mainly in traditional printed format. The networks created their bibliographical databases. The users of the participating libraries could get the required documents from other libraries through document delivery service. With the advent of e-resources, the concept of consortia has been mooted mainly for acquisition of e-journals. The term was originally being used in commercial and political worlds, which has now been imported in our field. As the resources that are procured today through a consortium are mainly e-resources, it has become possible for the users to access and download the required materials remotely without even going through the elaborate process of inter-library lending. Though library consortia have been created with a narrow purpose, these can be turned into efficient instruments for sharing all types of library resources.

Need of Library Consortia :

Academic and research users can now hope to have access to their learned journal articles in electronic form as electronic access is

Role of Consortia For Library

A Modern library is not a collection of printed books and printed journals. Its is much than other materials. Today the library involves the fast changing e-environment of publishing. So the librarian are facing a lot of problem due to static budget and exponential price hike of library collection and need of user for information is also increased day by day. There is rapid and dynamic change in the new generation library with the emphasis of e-resources. Consortia can become an excellent way in the process of collection, digitalizing organizing and making excess

of the electronic resources. A consortium is essential among libraries to cope limited budget, rising price for subscribing periodical and ever growing user information need. E-journal consortium is nothing but evolving a form of cooperation among the libraries which com together to share journals electronically. These revolutionary steps are providing scholarly resource including peer reviewed journals, database abstracts, proceedings etc.

Benefits of consortia : Consortia based subscription to E-resources provide access to wider number of E-resources at substantially lower cost.

The research productivity of all institutions is expected to improve with increased access to international databases and full text resources.

The consortia is proposed to be an opened proposition wherein other institutions can join and get the benefit of not only highly discounted subscription rates but also the favorable terms of licenses.

The consortia have been offered better terms of licenses for use, archival access and preservation of subscribed E-resources, which would not have been possible for any single institution; and Since the subscribed resources would be accessible online in electronic format, the beneficiary institutions would have less pressure on space requirements for storing and managing print-based library resources. moreover all problems associated with print media such as their wear and tear location, shelving, binding, organizing etc., would not be an issue for E-resources 141 a statewide basis Library This task is very difficult for a single library. However, by forming a consortium among libraries, it becomes possible to purchase information in stabilized and reasonable prices.

Historically, the common platform of library co-operation was the sharing of union catalogue, document delivery services, storage facilities, collection development and human resources at local, national and regional level. Another form of co-operation was based on inter library loan services where co-operating libraries agree to share their resources among the member libraries. This form of co-operation enabled libraries to borrow books, periodicals and other reading materials which were

Role Of Consortia In The Library Development

These are the features of library consortia following below.

It provides each organizations and institutions with the capacity to share their resources without sacrificing the individuality of each member library.

The collections of the Consortium libraries enable each member library to support scholarly research for its users.

Cooperative research and development in application of information communication and technology enhances service and realizes cost effectiveness.

Staff development and interaction with quality of service.

It is the cooperative task to reduce the cost of purchase consortia. As a result, end users can take benefits of more resources than would be available through one library.

To advance library services are provided with an emphasis on access to new E- resources including databases and services offered through the internet and www.

To expanding inter library searching at less cost is possible.

Uncertainties in legal issues are handled with more confidence

Advantages of Consortia

Some of the important advantages of the library consortium are as following below.

Consortia-based subscription to electronic resources provides access to wider number of electronic resources at substantially lower cost;

Optimum utilization of funds.

Facilities to build up digital libraries

Helpful to provide better library services like CAS and SDI

Cost Sharing for Technical and training support

Electronic Journals demand neither library space nor shelling costs nor can they be stolen from the library

The consortium have been offered better terms of licenses for use, archival access and preservation of subscribed electronic resources, which would not have been possible for any single institution; and Available 24/7.

Less economy expansion.

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A REVIEW: GREEN COMPUTING FROM CURRENT TO FUTURE TRENDS

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Abstract

Green computing is now a day's becoming a research problem and many scientists are focusing their attention to do research on various issues related to this discipline. During recent years, attention in 'Green Computing 'has moved research into energy-saving techniques for home computers to enterprise systems' Client and Server machines. Saving energy or reduction of carbon footprints is one of the aspects of Green Computing. The research in the direction of Green Computing is more than just saving energy and reducing carbon foot prints. This study provides a brief account of Green Computing. This paper is on current trends in Green Computing; challenges in the field of Green Computing and the future trends of Green Computing.

Keywords—*Energy consumption, e-waste recycling, Green Computing, Green IT.*

Introduction

Green computing, the study and practice of efficient and eco-friendly computing resources, is now under the attention of not only environmental organizations, but also businesses from other industries[1]. Green computing concentrates on energy efficiency reducing recourse consumption. In many organization IT department is generally consumed a lot of power Green computing is environmentally responsible use of computing. As computer system increasing so the amount of energy conservation and the carbon contents are increasing in atmosphere. Measure being taken to reduce the problem superficially called "green computing". Green Computing is practice of designing manufacturing, using and disposing of computer server and associated sub system such as monitors, printer's storage devices networking and communication system efficiently and effectively with no impact on environment[2]. Green computing shows how to use resources efficiently and how to reduce the waste Green computing is the requirement to save the energy with the expenses . In recent years, companies in the computer industry have come to realize that going green is in their best interest. In 1992, the U.S. Environmental Protection Agency launched Energy Star, a voluntary labeling program that is designed to promote and recognize energy-efficiency in monitors, climate control equipment, and other technologies. This resulted in the widespread adoption of sleep mode among consumer electronics. Green Computing is also defined as the study of designing, manufacturing/engineering, using and disposing of computing devices in a way that reduces their environmental impact. One of the main objectives of Green Computing is about improving computing performance and reducing the energy consumption & carbon footprints

First and most conclusive research on computing shows that Carbon Dioxide (CO2) and other emissions are causing global climate and environmental damage. Preserving our beloved planet is a main and legitimate goal because it aims to preserve life. It has given extreme attention by researchers and professionals to minimize e-waste and use of non-toxic materials in preparation of e-equipments[3]. The very first and most conclusive research shows that CO2 and other emissions are causing global climate and environment a huge damage. Therefore it is the top most priority and challenge for Green Computing technologist to preserve our beloved planet. On the other hand a study by "The Climate Group"entitled Smart 2020 http:// www.theclimategroup.org/ programs/ict/) predicts that, greenhouse gas emissions from the Internet industry will raise to approximately 1.3 Giga-tons of CO2, and the combined impact of smart grid; smart logistics; smart buildings; and video conferencing could reduce emissions by approximately 7.8 tons.

CURRENT TRENDS

Current trends of Green Computing are towards efficient utilization of resources. Energy is considered as the main resource and the carbon footprints are considered the major threads to environment. Therefore, the emphasis is to reduce the energy utilization & carbon footprints and increase the performance of Computing. There are several areas where researchers are putting lots of efforts to achieve desired results:

A. Energy Consumption

Organizations are realizing that the source and amount of their energy consumption significantly contributes to Greenhouse Gas (GhG) emissions. In 2005, the company introduced the VIA C7-M and VIA C7 processors that have a maximum power consumption of 20W at 2.0GHz and an average power consumption of 1W. These energyefficient processors produce over four

times less carbon during their operation and can be efficiently embedded in solarpowered devices.

B. Solar Computing

Amid the international race toward alternative-energy sources, VIA is setting its eyes on the sun, and the company's Solar Computing initiative is a significant part of its green-computing projects. For that purpose, VIA partnered with Motech Industries, one of the largest producers of solar cells worldwide. Solar cells fit VIA's power-efficient silicon, platform, and system technologies and enable the company to develop fully solar-powered devices that are nonpolluting, silent, and highly reliable. Solar cells require very little maintenance throughout their lifetime, and once initial installation costs are covered, they provide energy at virtually no cost. Worldwide production of solar cells has increased rapidly over the last

few years; and as more governments begin to recognize the benefits of solar power, and the development of photovoltaic technologies goes on, costs are expected to continue to decline.

C. e-Waste Recycling

Based on the Gartner estimations over 133,000 PCs are discarded by U.S. homes and businesses every day and less than 10 percent of all electronics are currently recycled. Majority of countries around the world require electronic companies to finance and manage recycling programs for their products especially under-developed Countries. Green Computing must take the product life cycle into consideration; from production to operation to recycling. Recycling computing equipment such as lead and mercury enables to replace equipment that otherwise would have been manufactured. The reuse of such equipments allows saving energy and reducing impact on environment, which can be due to electronic wastes [3].

D. Data Center Consolidation & Optimization

Currently much of the emphasis of Green Computing area is on Data Centers, as the Data Centers are known for their energy hunger and wasteful energy consumptions. United State Department of Energy (DoE) reported in its study in 2006 that United States data centers consumed 1.5% of all electricity and their demand is increasing by 12% per year and cost $7.4 billion per year by 2011. According to DoE's current report in July 2011 Data Centers are consuming 3% of all US electricity and this consumption will double by 2015 [3].With the purpose of reducing energy consumption in Data Centers it is worthwhile to concentrate on following :

- **Information Systems** – efficient and right set information systems for business needs are a key in building Green Data Centers. As per green computing best practices efficient servers, storage devices, networking equipments and power supply selection play a key role in design of information systems.
- **Cooling Systems** – it is suggested by the researchers that at the initial stage of design process for data center cooling systems, it is significant to consider both current and future requirements and design the cooling system in such a way so it is expandable as needs for cooling dictates[2].
- Standardized environment for equipment is must for Data Center Air Management and Cooling System.
- Consider initial and future loads, when designing & selecting data center electrical system equipment.

E. Virtualization

One of the main trends of Green Computing is virtualization of computer resources. Abstraction of computer resources, such as the running two or more logical computer systems on one set of physical hardware is called virtualization. Virtualization is a trend of Green computing it offers virtualization software as well as management software for virtualized environments . One of the best ways to go towards green and save enough space, enough resources, and the environment is by streamlining efficiency with virtualization. This form of Green Computing will lead to Server consolidation and enhance computer security[6] . Virtualization runs fewer systems at higher levels of utilization. Virtualization allows full utilization of computer resources and benefits in:

- Reduction of total amount of hardware;
- It is the use of software to simulate hardware. In the data center stand alone server system replaced with virtual server that run as software on a small number of larger computer via a virtualized server we can efficiently use computer resources[2].
- Reduction in total space, air and rent requirements ultimately reduces the cost[13].

Green Hardware Deployment (Server Virtualization)

F. IT Products and eco-labeling

There are several organizations in the world which support "eco-label" IT products. These organizations provide certificates to IT products based on factors including design for recycling, recycling system, noise energy consumption etc[3].

In the United States, a product registry called the Electronic Product Environmental Assessment Tool (EPEAT) has begun to establish itself as a major force in Green IT procurement. EPEAT is a federally sponsored initiative that uses 51 environmental product compliance requirements that were developed through an industry group led by the Institute of Electrical and Electronic

Engineers (IEEE). Under the program, suppliers can register their desktop, laptop and monitor products in 23 mandatory and 28 optional categories. Products that meet the appropriate combinations of mandatory and optional criteria can then be registered in either the basic, bronze, silver or gold rating categories[4].

Challanges

According to researchers in the past the focus was on computing efficiency and cost associated to IT equipments and infrastructure services were considered low cost and available. Now infrastructure is becoming the bottleneck in IT environments and the reason for this shift is due to growing computing needs, energy cost and global warming. This shift is a great challenge for IT industry. Therefore now researchers are focusing on the cooling system, power and data center space. At one extreme it is the processing power that is important to business and on the other extreme it is the drive, challenge of environment friendly system, and infrastructure limitations. Green Computing challenges are not only for IT equipments users but also for the IT equipments Vendors. According to researchers of Green Computing following are few prominent challenges that Green computing is facing today.

- Equipment power density / Power and cooling capacities.
- Increase in energy requirements for Data Centers and growing energy cost.
- Control on increasing requirements of heat removing equipment, which increases because of increase in total power consumption by IT equipments.
- Equipment Life cycle management – Cradle to Grave.
- Disposal of Electronic Waste.

FUTURE TRENDS

Because of growth in computing needs, energy cost and global warming and this shift is great challenge for IT industry. The future of Green Computing is going to be based on efficiency, rather than reduction in consumption[1]. The primarily focus of Green IT is in the organization's self interest in energy cost reduction, at Data Centers and at desktops, and the result of which is the corresponding reduction in carbon generation. The secondary focus of Green IT needs to focus beyond energy use in the Data Center and the focus should be on innovation and improving alignment with overall corporate social responsibility efforts. This secondary focus will demand the development of Green Computing strategies. The idea of sustainability addresses the subject of business value creation while ensuring that long term environmental resources are not impacted. There are few efforts, which all enterprises are supposed to take care of[3].

A. Certifications

There are several organizations providing certificates to green technology. Vendors are based on their product quality, material, life of the product and recycling capabilities. In future such certifications together with recommendations and government regulations will put more pressure on vendors to use green technology and reduce impact on environment.

B. Cloud Computing

Cloud Computing has recently received significant attention , as a promising approach for delivering Information and Communication Technology services by improving the utilization of Data Center resources. In principle, cloud computing is energy-efficient technology for ICT provided that it's potential for significant energy savings that have so far focused on only hardware aspects, can be fully explored with respect to system operation and networking aspects also. Cloud Computing results in better resource utilization, which is good for the sustainability movement for green technology[7].

C. Product Longevity

As per Gartner and Fujitsu reports on product life cycle it is obvious that the product durability and/or longevity are one of the best approaches towards achieving Green Computing objectives . Long life of product will allow more utilization of products and it will put a control on unnecessary manufacturing of products. It is obvious that government regulations will push the products vendors to make more efforts to increase the product life[8].

D. Power Management Tools

Power management is proving to be one of the most valuable and clear-cut techniques in near future to decrease energy consumption. IT departments with focus on saving energy can decrease use with a centralized power management tool. Compiling data from Energy Star case studies for 7 deployments of 11,000 - 499,000 machines, it was found that sleep scheduling was able to save between $10.75 and $95 per computer per year. These deployments used a combination Windows built-in sleep function, group policies, different software systems, such as PC Power-down, EZ GPO Tivoli systems, BigFix etc[9].

E. Leveraging Unused Computer Resource

One of the exiting areas where Green Computing can grow is the share and use efficiently the unused resources on idle computers. Leveraging the unused computing power of modern machines to create an environmentally proficient substitute to traditional desktop computing is cost effective option. This makes it possible to reduce CO2 emissions by up to 15 tons per year per system and reduce electronic waste by
up to 80% [10].

F. Data Compression

In enterprise, huge amount of data that is stored is someway or other duplicated information. Information System backups are true example of such duplicated data. Intelligent compression techniques can be used to compress the data and eliminate duplicates help in cutting the data storage requirements.

G. Applications

Green Computing is a diverse field and due to its nature and priority from all fields of life Green Computing has applications in every sector of computing as the goal is to save the environment and ultimately the life. The current main applications of Green Computing are covering following computing sectors :

- Equipment design.
- Equipment recycling.
- Data Center optimization and consolidation.
- Virtualization.
- Paper free environment.
- Application Architecture.
- Power Management

Recent implementations of Green Computing

A. Blackle :Blackle is a search-engine site powered by Google Search. Blackle came into being based on the concept that when a computer screen is white, presenting an empty word or the Google home , your computer consumes 74W. When the screen is black it consumes only 59W.Based on this theory if everyone switched from Google to Blackle, mother earth would save750MW each year. This was a really good implementation of Green Computing. The principle behind Blackle is based on the fact that the display of different colors consumes different amounts of energy on computer monitors[12].

B Fit-PC: a tiny PC that draws only 5w: Fit-PC is the size of a paperback and absolutely silent, yet fit enough to run Windows XP or Linux. fit-PC is designed to fit where a standard PC is too bulky, noisy and power hungry. If you ever wished for a PC to be compact, quiet and green then fit- PC is the perfect fit for you. Fit-PC draws only5 Watts, consuming in a day less power than a traditional PC consumes in 1 hour. You can leave fit-PC to work 24/7 without making a dent in your electric bill.

C. Zonbu Computer: The Zonbu is a new, very energy efficient PC. The Zonbu consumes just one third of the power of a typical light bulb. The device runs the Linux operating system using a1.2 gigahertz processor and 512 meg of RAM. It also contains no moving parts, and does even contain a fan. You can get one for as little as US$99, but it does require you to sign up for a two-year subscription[12].

D. Sunray thin client: Sun Microsystems is reporting increased customer interest in its Sun Ray, a thin desktop client, as electricity prices climb, according to Subodh Bapat, vice president and chief engineer in the Eco Responsibility office at Sun. Thin clients like the Sun Ray consume far less electricity than conventional desktops, he said. A Sun Ray on a desktop consumes 4 to 8 watts of power, because most of the heavy computation is performed by a server. Sun says Sunrays are particularly well suited for cost-sensitive environments such as call centers, education, healthcare, service providers, and finance. PCs have more powerful processors as well as hard drives, something thin clients don't have. Thus, traditional PCs invariably consume a substantially larger amount of power. In the United States, desktops need to consume 50 watts or less in idle mode to qualify for new stringent Energy Star certification[11].

E. The Asus Eee PC and other ultra portables: The "ultra-portable" class of personal computers is characterized by a small size, fairly low power CPU, compact screen, low cost and innovations such as using flash memory for storage rather than hard drives with spinning platters. These factors combine to enable them to run more efficiently and use less power than a standard form factor laptop. The Asus Eee PC is one example of an ultraportable. It is the size of a paperback, weighs less than a kilogram, has built-in Wi-Fi and uses flash memory instead of a hard drive.It runs Linux too[12].

CONCLUSION

Technology is not a passive observer, but it is an active contributor in achieving the goals of Green Computing. IT industry is putting efforts in all its sectors to achieve Green computing. Equipment recycling, reduction of paper usage, virtualization, cloud computing, power management, Green manufacturing are the key initiatives towards Green computing. Current challenges to achieve Green Computing are enormous and the impact is on computing performance. Efforts of Governments and Non-Government Organizations (NGOs) are also appreciate-able. Government regulations are pushing Vendors to act green; behave green; do green; go green; think green; use green and no doubt to reduce energy consumptions as well. All these efforts are still in limited areas and currently efforts are mainly to reduce energy consumption, e-Waste but the future of Green Computing will be depending on efficiency and Green products. Future work in Green Computing discipline will also rely on research work in academics since this is an emerging discipline and there is much more need to be done. There is need for more research in this discipline especially within academic sector. The features of a green computer of tomorrow would be like: efficiency, manufacturing & materials, recyclability, service model, self-powering, and other trends. Green computer will be one of the major contributions which will break down the 'digital divide'.

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WEB TECHNOLOGIES: A REVIEW

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Abstract:

The Hypertext Transfer Protocol (HTTP) is an application protocol for distributed, collaborative, hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web. Hypertext is structured text that uses logical links (hyperlinks) between nodes containing text web server is an information technology that processes requests via HTTP, the basic network protocol used to distribute information on the World Wide Web. The term can refer either to the entire computer system, an appliance, or specifically to the software that accepts and supervises the HTTP requests. A Web service communication between two electronic devices over a network. It is a software function provided at a network address over the Web with the service always on as in the concept of utility computing

Introduction

The relationships among HTTP, Web Server and Web Services are a complicated set of functionalities and exchanges of information. Each component plays an important role in the thousands of functions users can access and utilize on the Internet. HTTP allows users to interact with Web Servers and access information via the Internet. Web servers serve data and files to users who request them. Web Services allow cross-system, cross-language communication among various kinds of machines and enable inter-business transaction. Although each technology works on its own and performs many useful functions, it is the combination of these technologies that has created the dynamic functionalities of the Web that are available today. The inter-relationships between HTTP, Web Servers and Web Services technologies that have facilitated the functionalities and convenience of the Web.

HTTP

HTTP, or Hypertext Transfer Protocol, is the standard protocol currently used to access the Internet. It is a very simple protocol that allows raw data to be transferred across the Internet. HTTP is the underlying protocol used by World Wide Web technology. HTTP defines how messages are formatted and transmitted, and what actions Web server and browser should take in response to various commands. For example, when you enter a URL in your browser, this actually sends an HTTP command to the Web server directing it to fetch and transmit the requested Web pages.The other main standard that controls how the World Wide Web works is HTML, which covers how Web pages are formatted and displayed. From this simple data transfer protocol, users of the Internet can easily perform functions and give commands to the Web Servers through a graphic user interface (GUI) the as a Web page viewed through a browser and not worry about the specific details of how the command is going to be transferred or interpreted by the computers involved. HTTP allows such exchange of information between the user's computer and the Web Server to take place rapidly and efficiently. HTTP functions as a request-response protocol in the client server computing model. A web browser, for example, may be the *client* and an application running on a computer hosting a web site may be the *server*. The client submits an HTTP *request* message to the server. The server, which provides *resources* such as HTML files and other content, or performs other functions on behalf of the client, returns a *response* message to the client. The response contains completion status information about the request and may also contain requested content in its message body.

Some of the improvements are:

- "Faster response, by allowing multiple transactions to take place over a single persistent connection.
- Faster response and great bandwidth savings, by adding cache support.
- Faster response for dynamically-generated pages, by supporting chunked encoding, which allows a response to be sent before its total length is known.
- Efficient use of IP addresses, by allowing multiple domains to be served from a single IP address".

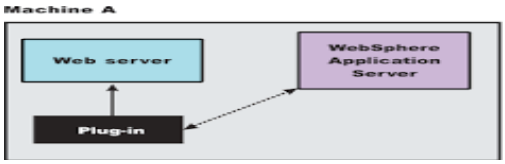
A. Web Servers

A server is "a computer or device on a network that manages network resources", There are many different kinds of servers: the dial-up server that serves as a gateway for the user to access the rest of the Internet; the printer server that manages one or more printers connected to the network, allowing users to access various printers remotely; and Web Servers that stores web pages and other data and information that are provided to users upon request.

A Web server is a program that uses HTTP (Hypertext Transfer Protocol) to serve the files that form Web pages to users, in response to their requests, which are forwarded by their computers' HTTP clients. Dedicated computers and appliances may be referred to as Web servers as well. A web server is an information technology that processes requests via HTTP, the basic network protocol used to distribute information on the World Wide Web. The term can refer either to the entire computer system, an appliance, or specifically to the software that accepts and supervises the HTTP requests.

A Web Server is the central nervous system of Web Site. It is the Web Server that hosts both the components of a Web page such as the actual Web page HTML files, CSS files and templates and all other essential technologies that make a Web

site function the way it does. Although all Web servers function similarly, the set up and the way a server could be set can vary drastically.



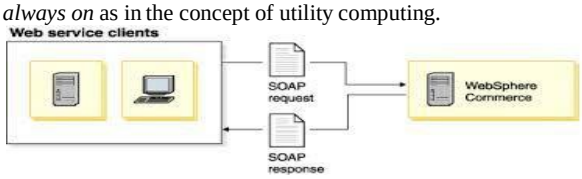
There are two common ways to setting up Web Servers: P2P and Client-Server. P2P, or Peer-to-Peer, indicates a direct connection of individual computers to one another where each computer can specify what data it is willing to share. This kind of network is very easy and cheap to set up. Furthermore, the speed of file transfer in a P2P network is not constrained by the capability of any single server/computer. Since each computer in the network is capable of becoming a server on its own, a file could be shared and transferred from multiple servers at the same time, thus increasing the file transfer rate. However, since each computer in the network is a server, each computer on the network needs to be set up individually. The responsibility of managing the system lies in the hands of every single owner of every single computer that is connected to the network. Consequently, the management of a P2P network is extremely difficult. Due to the decentralized management of the network, servers with a P2P connection are susceptible to virus

B. Web Services

Web services are open standard (XML, SOAP, HTTP etc.) based Web applications that interact with other web applications for the purpose of exchanging data. Web Services can convert your existing applications into Web-applications. In this tutorial you will learn what exactly Web Services are and Why and How to use them.

The term "Web services" describes a standardized way of integrating Web-based applications using the XML, SOAP, WSDL and UDDI open standards over an Internet protocol backbone. XML is used to tag the data, SOAP is used to transfer the data, WSDL is used for describing the services available and UDDI lists what services are available.

A Web service is a method of communication between two electronic devices over a network. It is a software function provided at a network address over the Web with the service *always on* as in the concept of utility computing.



Extensible Markup Language (XML) is the universal markup language that all machines are capable of understanding. In the process of inter-machine communication via Web services, XML is used to tag the data involved. Web Services Description Language (WSDL), on the other hand, is being used for describing the services available. Then Universal Description, Discovery and Integration (UDDI) lists the services available from that particular machine. Lastly, Simple Object Access Protocol (SOAP) is used to transfer data for each exchange of information between machines and servers, which typically involve "HTTP with an XML serialization in conjunction with other Web-related standards. While serving a similar function as the Web, Web Services do have some significant differences. The most prominent difference between Web services and the Web is that instead of a user interface, Web Services functions via application interfaces. In other words, the machines communicate with each other application to application. Such exchanges limit possible user errors and thus increase the efficiency of the exchange.

C. How HTTP, Web Servers and Web Services Work Together

The interaction among HTTP, Web Servers and Web Services is simple: HTTP is a simple protocol browsers use to communicate with Web Servers. Web Servers, on the other hand, fulfill users' requests and store the information users provide. Meanwhile, Web Services allow different Web Servers to communicate and interact with one another in order to process the request and/or commands of the user.

A good example of how the interconnectivity among the three technologies works would be a user trying to buy a plane ticket online. The user would access a travel agency's Web page to query for the availability of seats, date and time of the flight and prices of the plane ticket. In this querying process, HTTP acts as the language that users end up using to communicate with the Web server that actually can access the information of flight date, time, seat availability and prices from the airlines database. According to the values users input into the Web page (i.e. GUI) and transmitted to the Web server via HTTP, the Web server performs the command of search by sending out commands of this query to each individual airline's flight schedule databases using an application to application interface, i.e. Web services. Web services translate whichever markup language the Web server uses into the universally understood XML that gets relayed to the databases of all the airlines. When the XML is received by the airline databases, Web services then translates the XML into whatever programming language that each database is using so that the database would be able to understand the command the Web server sent out. After the query has been completed, the result would be transmitted back to the Web server through Web services again. Then the Web server would relay these search results to the user via HTTP which would present the information to the user through an HTML file that could be interpreted by a browser. In sum, the simple function of querying for flight schedules and seats requires all three technologies, HTTP, Web server and Web services, to work together. Without any of these technologies, the query would fail or the scope of the search would be drastically limited.

D. Conclusion

The functionalities that HTTP, Web Servers and Web Services provide dramatically changed the way companies, as well as individuals, conduct business online. While each technology was created for one specific purpose, it is the combination of these technologies that has greatly enhanced the transfer of information online. The example of users purchasing plane tickets online shows how critically important a role each technology plays in one of the most common tasks users can accomplish on the Internet today. Without any one of these technologies, e-commerce would not have boomed and the convenience users enjoy would not have existed today.

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COMPARATIVE STUDY OF SEQUENTIAL PATTERN MINING APPROACHES

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Abstract :

In this paper, Sequential Pattern Mining approaches like Apriori based, Pattern growth, Constraint based, Closed sequential, Multidimensional and Incremental sequential mining approaches were studied. With the help of dataset, researcher obtain results using apriori based, pattern growth and Closed sequential mining algorithms through SPMF open source for comparative study of an algorithms.

Keywords: *Sequential Pattern, Constraint, Incremental Seqential mining, closed sequential mining*

Introduction :

Sequential Data Mining was first introduced by Rakesh Agrawal and Ramakrishna Srikant in 1995. The problem was first introduced in the context of market analysis. It aimed to retrieve frequent patterns in the sequence of product purchased by customers through time order transaction. Sequential pattern mining are used in Telecommunication, Network detection, DNA research, Web log analysis, customer purchase behavior analysis, medical record analysis etc. applications.

Terminology :

Let I = {i_1, i_2 , …….i_m } be a set of items. An item-X is a subset of items i.e. X ⊆ I. A sequence S is an ordered list of item-sets (elements) or events. The number of instances of items in a sequence is called the length of sequence. A sequence with length 1 is called 1-sequence. For example, ABBCA is a 5-sequence. S = <a(bd)(cf)d(ec)) is a sequence which consists of 6 different items and 5 elements. Length of a sequence is 8. If sequence Sx is contained in a sequence Sy , Sx is called a subsequence of Sy and Sy is a super sequence of Sx.

A sequence database (SDB) consist of set of tuples (sid,S), where sid is a sequence identifier and S is a sequence. Let α is a subsequence of S. The number of tuples in sequence database containing sequence α is called the support of α denoted as sup(α). To find a frequent sequential pattern, a support threshold min_sup is defined by a user. A sequence with support greater than min_sup is called a frequent pattern. A sequential pattern with length K is called K pattern.

Approaches:

A sequential pattern mining is a task to find frequent subsequences from a given sequence database. Different approaches are used to find huge number of subsequences is hidden in database. Sequential pattern mining approaches are as -

A. Apriori Based
B. Pattern Growth Based
C. Constraint based
D. Multidimensional
E. Incremental Sequential Pattern Mining

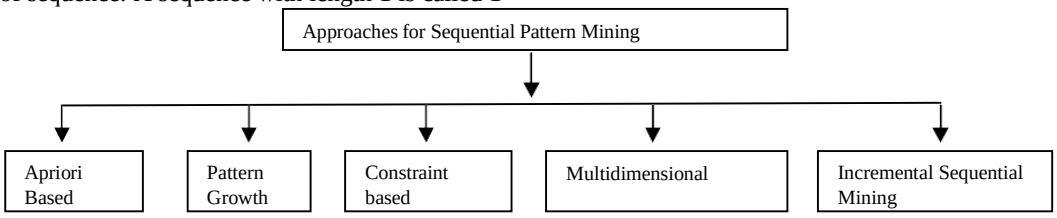

Fig (a) Sequential Pattern ining Approaches

A. Apriori Based Algorithms :

Apriori [Agrawal and Srikant 1994] algorithm for mining frequent itemsets for association rules. Apriori-generate join procedure to generate candidate sequences.

Apriori algorithm is an iterative approach called as level wise search, where k-itemset are use to explore (k+1) itemsets. First, 1-itemset is found by scanning the database to accumulate the count for each item, and collecting those item that satisfy minimum support. The resulting set called L1. From L1, the set of 2-itemset is found called L2, from L2, the set of 3-itemset is found and so on until k-itemset. To improve efficiency of generation of frequent itemsets Apriori property is used. It helps to reduce search space.

Apriori property: "All nonempty subsets of a frequent itemset must also be a frequent".

Apriori algorithm consists of two step process :-

1. Join Step : To find L_k, a set of k-itemsets generated by joining L_{k-1} with itself.
2. Prune Step : prune itemset using apriori property.

It is described as antimonotonic (or downward closed) in that if a sequence cannot pass the minimum support test, its entire super sequences will also fail the test.

Apriori algorithms are classified as per database format. Two types of database format used in apriori algorithms –

1. Horizontal database format
2. Vertical database format

1. **Horizontal Database Format**

GSP algorithm: (Generalized Sequential Patterns) (Srikant & Agrawal, 1996)

In GSP algorithm first finds all the length-1 candidates (using one database scan) and orders them with respect to their support ignoring ones for which support is < min sup. Then for each level (i.e. sequences of length –k) the algorithm scan the database to collect support count for each candidate sequence and generate candidate length (k+1) sequences from length –k frequent sequences using Apriori. This is repeated until no frequent sequence or no candidate can be found. The drawbacks of GSP algorithm are: GSP generate very large set of candidate sequences, it scan database multiple times and inefficient for long sequential patterns.

GSP also generalized with time constraint. For time constraints, maximum gap and minimum gap are defined to the specified the gap between any two adjacent transactions in a sequence.

2. Vertical database format :

2.1 Vertical database format with id-list

SPADE : (Sequential PAttern Discovery using Equivalence classes)(M.J.Jaki,2001).

The sequence database can be transformed into a vertical format consisting of items' id lists. It decomposes the mining problem into smaller sub problems using lattice-theoretic approach. It completes the mining in three passes of database scanning. B.F.S. and D.F.S. search strategies are used. SPADE minimizes I/O cost by reducing database scan and computational costs by using efficient search methods. Additional computation time is required to transform a database of horizontal layout to vertical format, which also requires additional storage space.

2.2 Vertical database format in binary SPAM algorithm (Sequential PAttern Mining)(J.Ayres, J.Flan ick, J.Gehrke and T.Yiu, 2002)

This algorithm is especially efficient when the sequential pattern in the database is very long. Transactional data is store using a vertical bitmap representation. It traverses the sequence tree in depth first search manner and check support of each sequence-extended or item set-extended child against min-sup recursively for efficient support counting. SPAM it uses bitwise operations.

SPIRIT:

- Use R.E. as flexible constraint specification tool. It involves a generic user specified regular expression constraint on the mined patterns.

B. Pattern Growth Algorithms :

This algorithms avoids the candidate generation step. It is based on the methodology developed in FP-Growth algorithm for mining frequent pattern. Pattern Growth algorithms are classified as

1. Projected database
2. Tree projection based

Algorithms :

1. FREESPAN : (Frequent pattern projected Sequential pattern mining) (Han, Pei, Asl, Chen, Dayal, & Hsu, 2000)

FreeSpan reduce candidate generation and testing of Apriori. It uses frequent items to recursively project the sequence database into smaller projected databases. While doing so it grows into subsequence fragments in each projected database. Each projection partitions the data and set of frequent pattern that confines further testing to progressively smaller projected database.

2. **PREFIXSPAN : (Prefix-projected Sequential pattern mining) (Jian Pei, Jiawei Han, Behzad Mortazavi-Asl, Helen Pinto,2001)** which explores prefix projection in sequential pattern mining. It is the pattern growth methodology, which finds the frequent items after scanning the sequence database once. Divide and Conquer strategy is used to projected database according to frequent items into several smaller databases. Prefix projection reduces the size of projected databases and support efficient processing. The cost of memory space is high due to creation and processing huge number of projected databases.

There are two kinds of database projection used in PrefixSpan algorithm :

a. Level by level projection
b. Bi level projection

Bi level projection reduce the number and size of projected databases by constructing S-Matix(Sequence match Matrix). To construct S matrix, it first scan S (sequence database) to find the length-1 sequential patterns. Instead of constructing projected databases for each length-1 sequential patterns, S matrix is constructed. The matrix registers the support of all the length-2 sequences from length-1 sequences. For example, the cell M[a, b] = (4,2,1) means support (<ab>) = 4 , support(<ba>) = 2 and support(<(ab)>) = 1.

The major cost of PrefixSpan is projection. The cost of projection is reduced by pseudo projection. In projected databases, postfixes of a sequence often appear repeatedly in recursive projected databases. Pseudo projection use pointer to the sequence in database and offset of the postfix in the sequence, when database held in main memory. Pseudo projection avoids physically copying postfixes. Thus, it is efficient in terms of both running time and space. However it is inefficient when it is used in disk based accessing.

3. WAP-MINE

This algorithm based on pattern growth and tree structure mining technique. It uses its WAP tree structure. The scalability of WAP-mine algorithm is better than GSP. It scans the database only twice. It can avoid the problem of generating explosive candidates as in apriori-based methods.

Comparison of Apriori based and Pattern growth approaches

	Strategy Used	Approach	Search	Database Representation
Apriori	Candidate Generate and Test	BFS	Bottom up	Horizontal / Vertical (id-list, Bitmap)
Pattern Growth	Divide and Conquer	DFS	Top down	Projected / Tree based

Comparative table of apriori and pattern growth algorithms

Char/Algorithm	GSP	SPRIT	SPADE	SPAM	FREESPAN	PREFIXSPAN	WAPMINE
Apriori	√	√	√	√			
Pattern Growth					√	√	√
Horizontal DB	√	√					
Vertical DB Id-list Bitmap			√	√			
Projected DB					√	√	
Tree based DB							√
Single pass					√	√	
Multiple pass	√	√	√(3)	√			√ (2)
Recursive					√	√	√
Antimontone	√	√	√	√			
Prefix Monotone					√		

C. Constraint based algorithms :

Constraint based sequential mining is to find the complete set of sequential patterns satisfying a given constraint. In constraint sequential mining, user specified constraints can be used to discover sequence patterns. For example, An item constraint specify subset of items to search into the patterns. Length constraint specifies length of patterns to discover sequential patterns. Gap constraint in which the pattern derived contains only consecutive subsequences or subsequences with very small gap. In duration constraint each transaction in every sequence has a time stamp.

SPIRIT(Sequential Pattern mInIng with Regular expressIon consTraints)(Garofalakis, Rastogi & Shim, 2002).

- Use R.E. as flexible constraint specification tool. It involves a generic user specified regular expression constraint on the mined patterns.

Mining Sequential Patterns: Generalizations and Performance Improvements (Ramakrishnan Srikant and Rakesh Agrawal,) generalized with time constraint. For time constraints, maximum gap and minimum gap are defined to the specified the gap between any two adjacent transactions in a sequence.

DELISP : Efficient Discovery of Generalized Sequential Patterns by Delimited Pattern-Growth Technolgy (Ming-Yen Lin, Suh-Yin Lee, Sheng-Shun Wang, 2002) This approach reduces the size of sub-databases by bounded and windowed projection techniques. Bounded projections keep only time-gap valid sub-sequences and windowed projections save non-redundant sub-sequences satisfying the sliding time window constraint. Furthermore, the delimited growth technique directly generates constraint-satisfactory patterns and speeds up the growing process. It has good linear scalability and outperforms the well-known GSP algorithm in the discovery of generalized sequential patterns.

GTC(Graph for Time Constraints)(Masseglia, Poncelet & Teisseire, 2003) proposed an approach called GTC for mining time constraint based patterns in very large databases. In this algorithm time constraints are taken into account in traditional level wise approaches.

A new algorithm for gap constrained sequence mining (Salvatore Orlando, Raffaele Perego & Claudio Silvesttri, 2004) describe CCSM (Cache-based Constraint Sequence Miner) uses k-way intersections method to compute the support of candidate sequence. This method use effective cache that stores intermediate IDlist for future reuse. The intermediate results reduce actual number of join operations performed on IDlist.

An algorithm for the estimation of time period of two sequence (Manish Joshi, Pawan Lingras, Virendra Bhavsar, 2009) is an algorithm to estimate a time period between sequential events and generate a list of sensible patterns that eventually results into inter transaction association rules.

Algorithms that use pre specified time window to discover sequential patterns has three major difficulties as follows:

1. **Algorithm returns a huge set of candidate sequences.**

2. **Multiple scan of database needed to obtain sequential patterns.**
3. **It is inefficient to obtain long sequential patterns.**

These problems are avoided in this approach.

Closed Sequential Pattern Mining :

Closed frequent sequential pattern is a pattern such that it is not strictly included in another pattern having the same support.

Clospan(Closed Sequential Pattern Mining)(Yan,Han & Afshar,2003) generates a complete closed subsequence set which is smaller than that generated by PrefixSpan. It generates the LS set, a superset of closed frequent sequences and store it in prefix sequence lattice and it does post pruning to eliminate non closed sequence. Clospan uses commonPrefix, backward sub-pattern and backward super pattern pruning. Clospan outperform PrefixSpan.

BIDE(BI-Directional Extension)(Jianyong Wang, Jiawei Han, Chun Li, 2007) discovering the complete set of frequent closed sequences. This algorithm mine closed sequences without candidate maintenance called BI-Directional Extension. The forward directional extension is used to grow the prefix patterns and backward directional extension can be used to both check the closure of prefix pattern and prune the search space. The BI-Directional Extension pattern closure checking scheme and the BackScan pruning method are used to speed up the mining. The BI-Directional Extension closure scheme check if it is close in order to generate the complete set of no redundant frequent sequences. BackScan pruning is based on semimaximum periods instead of maximum periods.

ClaSP(Closed Sequential Pattern Algorithm) (Antonio Gomariz, Manuel Campos, Roque Marin, and Bart Goethals, 2013) is an algorithm for mining frequent closed sequential patterns. ClaSP has two main phases: The first one generates a subset of FS (and superset of FCS) called Frequent Closed Candidates (FCC), that is kept in main memory; and the second step executes a post-pruning phase to eliminate from FCC all non-closed sequences to finally obtain exactly FCS.

It uses lexicographic sequence tree to store pattern in memory. There are two main different changes added in ClaSP with respect to SPADE: (1) the step to check if the subtree of a pattern can be skipped and (2) the step where the remaining non-closed patterns are eliminated. The pruning phase is implemented by two methods: 1) Backward sub-pattern checking and 2) Backward super-pattern. This algorithm uses vertical database format strategy. This algorithm is inspired on the Spade algorithm using a vertical database format strategy and uses a heuristic to prune non-closed sequences inspired by the CloSpan algorithm. ClaSP outperforms Clospan.

D. Multidimensional Sequential Pattern Mining

Multidimensional sequential pattern mining integrates the multidimensional analysis and sequential data mining.

Multi-dimensional Sequential Pattern Mining (Pinto, Han, Pie, Wang, Chen & Dayal, 2001) introduce two methods i) Integration of efficient sequential pattern mining and multidimensional analysis methods (SeqDim and Dim-Seq) ii) embedding multidimensional information intot sequences and mine the whole set using uniform sequential mining method(Uni-Seq).

E. Incremental Data Mining Approach :

Many real life sequence databases, such as customer shopping sequences, medical treatment sequences, etc., grow incrementally. It is undesirable to mine sequential patterns from scratch each time when a small set of sequences grow, or when some new sequences are added into the database.

Incremental algorithm should be developed for sequential pattern mining so that mining can be adapted to frequent and incremental database updates, including both insertions and deletions. However, it is nontrivial to mine sequential patterns incrementally, especially when the existing sequences grow incrementally because such growth may lead to the generation of many new patterns due to the interactions of the growing subsequences with the original ones.

ISM(Parthasarathy, Zaki, Ogihara, & Dwarkadas, 1999) an incremental mining algorithm, called ISM, based on SPADE by exploiting a concept called negative border. However, maintaining negative border is memory consuming and not well adapted for large databases.

IncSpan (Incremental Mining of Sequential Patterns)(Cheng, Yan, & Han, 2004)

There are two kinds of database updates in applications: (1) inserting new sequences (INSERT) and (2) appending new item-sets/items to the existing sequences (APPEND). Let DB be the old database, Δdb be the change and DB' be the new database. Thus, DB' = DB ∪Δdb. IncSpan uses the technique of buffering semi-frequent patterns. The authors also mention two optimization techniques, reverse pattern matching and shared projection to improve the performance. It outperform the non-incremental algorithm(prefixSpan) and ISM.

1) ADMiner: An Incremental Data Mining Approach Using a Compressed FP-tree (Chien-Min Lin, Yu-Lung Hsieh, Kuo-Cheng Yin, Ming-Chuan Hung, Don-Lin Yang, 2014) It use data structure of a compressed FP-tree to mine frequent item sets with greater efficiency. This method can minimize the I/O overhead. It can also perform incremental mining without rescanning the original database. It requires less memory and performs incremental mining more efficiently.

Experimental Results:

The data set consist of four main attributes namely invoice number, customer number, date of transaction and product_id. It consist of records of one year transactions. For experimentation, Original data set is transformed into Sequence dataset using java program. Sequence dataset consist of transaction of 200 customers with 3909 products. This database is converted into SPMF open source database format and obtain results by giving data inputs with min support 0.02%.

Algorithm	Total Time (ms)	Sequence Pattern Count	Maximum Memory (mb)
GSP	9991	474	135.82
SPADE	65	474	153.41
SPAM	210	468 (withmax.pattern length 4)	169.09
PrefixSpan	624	1789 (withmax.pattern length 4)	8.50
Clasp	153	398	154.36
Clospan	166	398	135.07
BIDE+	288	391	169.97

Conclusion :

In this paper, we studied and compared existing pattern mining approaches. This investiogation can be useful to use efficient data stuctures and techniques to find sequential patterns and to propose efficient approach.

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GREEN COMPUTING

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Abstract:

Green computing, the study of efficient and eco-friendly computing resources is under the attention of environmental organizations, and businesses from other industries. Green computing, also called green technology, is the environmentally sustainable to use of computers and related resources like - monitors, printer, storage devices, networking and communication systems - efficiently and effectively with minimal or no impact on the environment. Green computing whose goals are to reduce the use of hazardous materials, maximize energy efficiency during the product's lifetime, and promote the recyclability or biodegradability of defunct products and factory waste energy and resources saves money . Computers today not only used in offices but also at homes. We use Green Computing because it-reduced energy usage from green computing techniques translates into lower carbon dioxide emissions, stemming from a reduction in the fossil fuel used in power plants and transportation, Conserving resources means less energy is required to produce, use, and dispose of products ,Saving changing government policy to encourage recycling and lowering energy use by individuals and businesses.

Keywords:

Green Computing, Electronic-waste, Save Mother Earth, Recycling

Introduction

Green technology focuses on reducing the environmental impact of industrial processes and innovative technologies caused by the Earth's growing population. Green computing is the practice of using computing resources efficiently. Modern IT systems rely upon a complicated mix of people, networks, and hardware, as such, a green computing initiative must be systemic in nature, and address increasingly sophisticated problems. Green computing is the utmost requirement to protect environment and save energy along with operational expenses in today's increasingly competitive world. This means creating fully recyclable products, reducing pollution, proposing alternative technologies in various fields, and creating a center of economic activity around technologies that benefit the environment.

How To Go Green

- Turn off your computer when not in use, even for an hour.
- Use power saver mode.
- Don't print unless necessary and you are ready take printout back to back.
- Enable standby/Sleep mode.
- Switching from a locally hosted email system to a cloud based email system.

Green Computing:*"Future of computer"*

The Green computing initiative, stewards of the industry standards EFGCD(Eco Friendly Green Computing Definition)

Eco friendly green computing is the study and practice of the design, development, implementation, utilization and disposal of IT infrastructure efficientlyand effectively with low or zero impact on the environment whilst reducing operating costs.

It includes implementation of energy-efficient central processing unit(CPU's),server and peripherals as well as reduced resource consumption and proper disposal of electronic waste (e-waste)

6 Steps to Green Computing

1. Develop a sustainable green computing plan:
Computing best practices and policies should cover power usage, reduction of paper consumption, as well as recommendations for new equipment and recycling old machines. Organizational policies should include communication and implementation.

Fig(1)

Fig(2)

2. Reduce Paper Consumption:

There are many easy, obvious ways to reduce paper consumption-mail, electronic archiving, use the "track changes" feature in electronic documents, rather than redline corrections on paper. When you do print out documents, make sure to use both sides of the paper, recycle regularly, use smaller fonts and margins, and selectively print required pages.

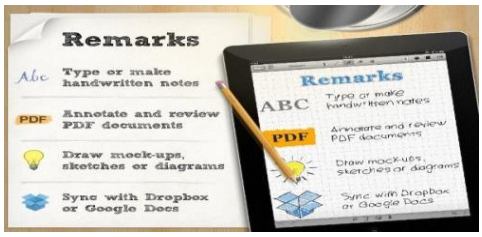

Fig (3)

3. Recycle:

Discard used or unwanted electronic equipment in a convenient and environmentally responsible manner.

r Computer monitors (CRTs) contain an average of 4 lbs. of lead, a lot of reusable glass, chromium and mercury. All of these elements can be extracted and reused. For example,our recycler takes the glass from old monitors,& sends them to Samsung for use on flat screen monitors & TVs.

r CDs/DVRs contain gold, glass, plastic, nickel and other elements that are completely recoverable and reusable.

• Batteries – everything from the batteries that power your phone, laptop, and mouse can be recycled, whether single-use or rechargeable.

4. Reuse Computer Resources :

Current Technology :

If your computer has slowed down, think about your options before you throw it out the door and rIush to by a new one.

Off to the mechanic:

A software 'tune-up' may help to improve your computer's performance. Your local Computer Troubleshooter can remove unnecessary temporary files and fine tune settings to help your computer run more efficiently.

Bits and pieces:

You may be able to upgrade some of the individual components inside your computer, instead of needing to purchase a new, complete system. Extra memory (RAM) or a faster processor may make a significant difference and be cheaper on your wallet.

Software versus hardware:

Software like Microsoft's "Terminal Services" may allow you to run newer, more intense software programs on older computers, without needing to upgrade them. There are some considerations to this (for example, you will need a Server computer) but it could be worthwhile if you have a significant number of older desktop computers.

One person's trash:

Who else can use your old technology? If you have to replace your hardware to keep up with the latest version of your business software, it might be perfectly suitable for a student who wants to write documents and browse the internet. See if there are any groups in your area who clean up old computers and redistribute them to people who need them.

Papers :

How many more uses can you find for your waste paper before it ends up in a rubbish bin?

5. Conserve Energy.

Turn off your computer when you know you won't use it for an extended period of time. Turn on power management features during shorter periods of inactivity. Power management allows monitors and computers to enter low-power states when sitting idle. By simply hitting the keyboard or moving the mouse, the computer or monitors awakens from its lowpower sleep mode in seconds. Power management tactics can save energy and help protect the environment.

Fig (4)

6. Make environmentally sound purchase decisions.

Purchase Electronic Product Environmental Assessment Tool registered products. EPEAT is a procurement tool promoted by the nonprofit GreenElectronics Council to:

•Help institutional purchasers evaluate, compare and select desktop computers, notebooks and monitors based on environmental attributes

•Provide a clear, consistent set of performance criteria for the design of products

•Recognize manufacturer efforts to reduce the environmental impact of products by reducing or eliminating environmentally sensitive materials, designing for longevity and reducing packaging materials.

Advantages:

Reduced energy usage from green computing techniques translates into lower carbon dioxide emissions, stemming from a reduction in the fossil fuel used in power plants and transportation.

- Conserving resources means less energy is required to produce, use, and dispose of products.
- Saving energy and resources saves money.
- Green computing even includes changing government policy to encourage recycling and lowering energy use by individuals and businesses.
- Reduce the risk existing in the laptops such as chemical known to cause cancer, nerve damage and immune reactions in humans.

Disadvantages :

- High startup cost
- Some computers that are green may be considerably underpowered.
- Rapid technology change

Approaches to Green Compting:

- Algorithmic efficiency
- Power management
- Vedio cards
- Display
- Material recycling
- Telecommuting
- e-waste management
- Make low power using machines

Conclusion:

Green computing represents a responsible way to address the issue of global warming. By adopting green computing practices, business leaders can contribute positively to environmental stewardship—and protect the environment while also reducing energy and paper costs

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STUDY PAPER ON E-BANKING

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Introduction

E-Banking refers to electronic banking. It is like e-business in banking industry. E-Banking is also called as "Virtual Banking" or "Online Banking".

E-bank is the electronic bank that provides the financial service for the individual client by means of Internet. E-banking involves information technology based banking. Under this IT system, The Banking Services are delivered by way of a Computer –Controlled System. This System involves direct interface with the customers. The customers do not have to visit the bank's premises.

For years, financial institutions have used powerful computer networks to automate million of daily transactions; today, often the only paper record is the customer's receipt at the point of sale. Now that their customers are connected to the Internet via personal computers, banks envision similar advantages by adopting those same internal electronic processes to home use.

E-Banking (or Internet banking or online banking) allows customers of a financial institution to conduct financial transactions on secure website operated by the institution. To Access a financial institutions online banking facility, a customer having personal Internet access must register with the institution for the services, and set up some passwords for customer verification. The password for online banking is not as same as for telephone banking. Also Customer numbers are normally not the same as account numbers, because a number of accounts can be linked to the customer number.

Definition of E-Banking:--

E-banking is defining as the automated delivery of new and traditional banking products and services. This is directly to customers through electronic, interactive communication channels.

Customers access e-banking services using intelligent electronic devices, such as a personal computers (PC), personal digital assistant (PDA), automated teller machine (ATM), or touch tone telephone.

History of E-Banking:--

The precursor for the modern home online banking services were the distance banking services over electronic media from the early 1980s. The term 'Online' became popular in the late '80s and referred to the use of a terminal, keyboard and TV (or monitor) to access the banking system using a phone line. 'Home banking' can also refer to the use of a numeric keypad to send tones down a phone line with instructions to the bank. Online services started in New York in 1981 when four of the city's major banks (Citibank, Chase Manhattan, Chemical and Manufacturers Hanover) offered home banking services using the videotext system.

E-Banking In India:--

Internet banking both as a medium of delivery of banking services and as a strategic tool for business development, has gained wide acceptance internationally and is fast catching up in India with more and more banks entering the fray.

India can be said to be on the threshold of a major banking revolution with net banking having already been unveiled. A recent questionnaire to which 46 banks responded, has revealed that at present, 11 banks in India are providing Internet banking services at different levels, 22 banks propose to offer Internet banking in near future while the remaining 13 banks have no immediate plans to offer such facility.

Banking Services through Internet:--

1. The Basic Level Service is the banks' web sites which disseminate information on different products and services offered to customers and members of public in general. It may receive and reply to customer's queries through e-mail;

2. In the next level are Simple Transactional Web sites which allows customers to submit their instructions, applications for different services, queries in their account balances,.etc.

Services Provided Under E-banking:—

- **ATM (Automated Teller Machines): –-**

An ATM card also known as a Bank Card, Client Card, Key Card or Cash Card.It is a card issued by a financial institution, such as a Bank, credit union or building society that can be used in an Automated Teller Machine (ATM) for Transactions such as: Deposits, withdrawals, obtaining account information, and other types of transactions often through interbank networks.

- **Credit Card:–-**

A **credit card** is a payment card issued to users as a system of payment. It allows the cardholder to pay for goods and services and purchase any item like clothes, jewelry, and railway or air tickets etc. The issuer of the card creates a revolving account and grants a line of credit to the consumer (or the user) from which the user

can borrow money for payment to a merchant or as a cash advance to the user.Pay bills for dining in a restaurants or boarding and lodging in hotel. Avail of any service like car rental, etc.

- **Debit Card :–-**

A debit card (also known as a bank card or check card) is a plastic payment card that provides the cardholder electronic access to his or her bank account(s) at a financial institution. Some cards have a stored value with which a payment is made, while most relay a message to the cardholder's bank to withdraw funds from a payee's designated bank account. The card, where accepted, can be used instead of cash when making purchases. In some cases, the primary account number is assigned exclusively for use on the Internet and there is no physical card.

- **Smart Card :–-**

A **smart card**, **chip card**, or **integrated circuit card** (**ICC**) is any pocket-sized card with embedded integrated circuits. Smart Cards have a built-in microcomputer chip, which can be used for storing and processing information. For example, a person can have a smart card from a bank with the specified amount stored electronically on it. As he goes on making transactions with the help of the card, the balance keeps on reducing electronically. When the specified amount is utilized by the customer, he can approach the bank to get his card validated for a further specified amount. Such cards are used for paying.

- **Electronic Funds Transfer(EFT) system:--**

Electronic funds transfer (EFT) is the electronic exchange, transfer of money from one account to another, either within a single financial institution or across multiple Institutions, through Computer-based systems.

- **Cheques Truncation Payment System:--**

Cheque Truncation System (CTS) or Image-based Clearing System . CTS is basically an online image-based cheque clearing system where cheque images and Truncation means, stopping the flow of the physical cheques issued by a drawer to the drawee branch. The physical instrument is truncated at some point en route to the drawee branch and an electronic image of the cheque is sent to the drawee branch along with the relevant information like the MICR fields, date of presentation, presenting banks etc..

- **Mobile Banking:--**

Mobile banking is a system that allows customers of a financial institution to conduct a number of financial transactions through a mobile device such as a mobile phone or personal digital assistant.

SMS banking is a type of mobile banking, a technology-enabled service offering from banks to its customers, permitting them to operate selected banking services over their mobile phones using SMS messaging. The earliest mobile banking services were offered over SMS, a service known as SMS banking. With the introduction of smart phones with WAP support enabling the use of the mobile web in 1999, the first European banks started to offer mobile banking on this platform to their customers. Mobile banking has until recently (2010) most often been performed via SMS or the mobile web. Apple's initial success with iPhone and the rapid growth of phones based on Google's Android (operating system) have led to increasing use of special client programs, called apps, downloaded to the mobile device.

- **Person-to-Person Payments:--**

Electronic person-to-person payments, also known as e-mail money, permit consumers to send "money" to any person or business with an e-mail address. Under this scenario, a consumer electronically instructs the person-to-person payment service to transfer funds to another individual. The payment service then sends an e-mail notifying the individual that the funds are available and informs him or her of the methods available to access the funds including requesting a check, transferring the funds to an account at an insured financial institution, or retransmitting the funds to someone else.

Fully Electronic Transactional System:--

This system allows bi-directionalcapabilities. Transactions can be submitted by the customer for online update.This system requires high degree of security and control. In this environment,web server and application systems are linked over secure infrastructure. Itcomprises technology covering computerization, networking and security,inter-bank payment gateway and legal infrastructure. It includes the followings,

- ATM
- DEBIT CARDS
- SMART CARDS
- MOBILE BANKING.

Advantages and Disadvantages:--

Advantages:-

- **Very convenient**. Online banking is a totally easy thing to do. In the comfort of your home or offices, you can do whatever monetary transactions you wish to do with your bank.
- **Unlimited service day and night**. The services and various features of your bank are always available seven days a week and 24 hours daily. The most interesting thing here is that, everything can happen at just one click of your mouse.
- **No time constraint**. Online banking is also stress free because it never closes unlike the traditional banking that has cut-off time.
- **Easy to access via PC**.Using your personal computer, you can easily do various transactions with your bank in view of your business or any other personal or financial matters.
- **Easy way of payment**. Bill payments can also be handled properly and smartly. Instead of waiting for certain due dates, you can easily pay all your transactions using your computer and in coordination with your bank.

Disadvantages:--

- First is the **slow processing** from the moment you entered a financial transaction with your bank via the computer. Usually the bank will require you to submit certain documents like an identification card, signature and the like.

- Another disadvantage is the so-called **learning curve**. This means, banking online especially in locating the sites may be complicated and hard to find.
- Another disadvantage is **bank site changes**. If this occurs, the bank will require you to re-enter all your information again and other related data.
- Finally is the **trust aspect**. Online banking should be entered very carefully if you wish to enjoy your financial life.

Securities in E-banking:-

The internet has played a key role in changing how we interact with other people and how we do business today. as a result of the internet, electronic commerce has emerged, allowing businesses to more effectively interact with their customers and other corporations inside and outside their industries. The current focus of securityof information transfer is on the session layer protocols and the flaws in end to end computing. A secure end to end transaction requires a secure protocols to communicate over untrusted channels don't really exist in most of the environment, especially since we are dealing with linking to the average consumers. The solutions to the security issues requires the use of software based systems or hardware based systems or a hybrid of the two.

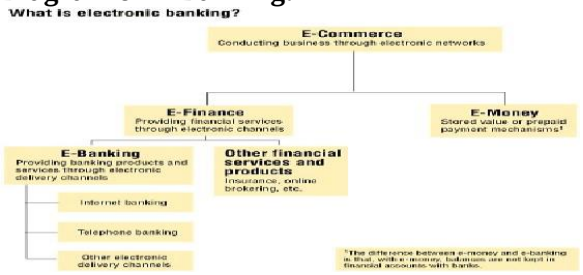
SSL(secure socket layer)

Secure sockets layer communication or SSlis a technologyused on many website where security is necessary from paypal to chase online banking and secure your data by using a handshaking procedure.It works like this.

A client connects to SSL server requesting a secure connection. The client presents a list of supported ciphers of which the server chooses the most secure and send the clients its digital certificate , ensuring thet it is who it says it is.

You can tell that you are on a SSL website if the web addresss begins with "https://" rather than "http:

Diagram of E-Banking:--



Conclusion:-

E-banking has become a necessary survival weapon and is fundamentally changing the banking industry worldwide. Today, the click of the mouse offers customers banking services at a much lower cost.

Banks have come to realize that survival in the new e-economy depends on delivering some or all of their banking services on the Internet while continuing to support their traditional infrastructure. The rise of E-banking is redefining business relationships and the most successful banks will be those that can truly strengthen their relationship with their customers. Without any doubt, the international scope of E banking provides new growth perspectives and Internet business is a catalyst for new technologies and new business processes. With rapid advances in telecommunication systems and digital technology, E-banking has become a strategic weapon for banks to remain profitable The Indian experience of E-banking is gradually merging with its international counter parts. While the private sector and foreign banks have been fast in adopting Internet technology in client servicing, there is a gradual.trend for the major public sectors and numerous cooperative units to move in the same direction. A mix of policy support and security assurance should propel further E-banking adoption in India.

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REVIEW ON CRM INTEGRATION AND ITS IMPLEMENTATIONS

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Abstract

This paper focuses on research in CRM integration and implementation of CRM system. Initially we discuss basics of CRM integration its importance for corporate performance on the enterprise or project level. Afterwards give reasons for failures of CRM projects. Integration is complex term which does not have common definition and its perception differs as authors from different domains. To make integrating CRM into your existing structure as easy and efficient as possible, various tools are available. CRM can be integrated with ERP systems such as SAP, inventory or document management and HR systems in a pain free way. But unfortunately there are no applicable theories of the firm used as platform to explain what CRM integration is. In conclusion CRM integration model is proposed that offers a combination and consolidation of research results and also platform for theory based and real assessment of CRM integration issues. This paper recommends that for ensuring the successful adoption and implementation of any CRM initiative, organization should understand the different levels of CRM process and the integrated activities among the CRM processes at each level.

Keywords: *CRM, TCE, Cross-functional Processes, Process Model.*

Introduction

Customer Relationship Management (CRM) concept relates to establishment, development, maintenance and optimization of long-term, mutually valuable relationships between customers and organizations. Though for realization of profitability we require customer orientation and CRM, pure existence of CRM is not completely responsible for positive effect on customer profitability. Adequate integration and implementation give rise to successful CRM. We define CRM integration as the mutual (performance-oriented) reconciliation of CRM-specific strategies, processes, systems and cultures within an enterprise and between companies. Complexity and multidisciplinary of this task may be cause of failure of CRM

The next section analyzes the related literature on CRM integration with reference to relevant theories of the firm. We then review selected research results in the context of CRM integration. We will show that those results form a comprehensive view on intra- and inter-organizational CRM integration. Therefore we propose a CRM integration model that combines the previously identified characteristics. The paper concludes by proposing directions for future research. Actually prime reason behind failure of CRM projects is lack of alignment and underestimation of its complexity.

CRM Integration

With reference to [1], [2] and [3] we can define CRM as processes and technologies that support the planning, execution and monitoring of coordinated customer, distributor and influencer interactions through all channels resulting in mutually rewarding relationships with customers. To integrate marketing, sales, and service activities, CRM requires detailed business processes which can be distinguished among three categories [4]:

• *CRM delivery processes* which mainly consist of processes with direct customer contact to cover part of the customer process (service management, sales management, complaint management etc.).

• *CRM support processes* which include processes with direct customer contact that are *not* designed to cover part of the customer process, but to fulfill supporting functions within the CRM context (market research, loyalty management).

• *CRM analysis processes* which combine and analyze customer knowledge that has been collected in other CRM processes. The analysis results are passed on to the CRM delivery and support processes as well as to the service innovation and service production processes to improve their effectiveness.

CRM integration is a important factor for CRM success. The fundamental changes towards customer-focused organizations and, consequently, the implementation of CRM processes requires considerable investments and changes in operational and organizational structures. However, we discovered that only a limited number of scientific papers actually focus on the all embracing implementation of CRM in concern with adequate project management and appropriate performance measurement. The following section will show that integration can be viewed as a multi-faceted organizational task. The theoretical aspects of this task can be studied applying different theories of the firm. We

therefore will discuss the most popular theories of the firm and analyze whether our findings can be leveraged by their results.

Integration in general

The term integration has different meaning in different disciplines. For example, Information system research integration deals with combination of different systems and data sources. We define three dimensions as structuring elements in following sections.

i. **Integration layers.** According to different definitions and approaches integration can be viewed as cross-functional, inter-functional co-operation and process overlap also. To provide these three types, they propose four mechanisms namely strategy, process, technology and organization. Most of the authors follow this layered approach of strategy, processes and systems. Some of the authors suggest the layer which is called social, or cultural or behavioral.
Recently intra-organizational integration between company functions is extended upto inter-organizational level like integration with emergence with e-commerce and intensive co-operative activities between companies.

ii. **Integration characteristics.** There are three basic ways to integration characteristics: The literature is either depends on communication-like interactions, or on collaboration in terms of resource and goal sharing [5]. A third stream of literature discusses a composite of those views on integration as proposed by [5]. These authors describe inter-departmental integration and differentiate between a focus on interaction and an emphasis on collaboration. [7] defines integration according to three different aspects that he calls characteristics, scope, and elements. Characteristics comprise the co-operation and communication between internal teams and functions, the co ordination of knowledge across functional boundaries as well as the co-ordination of cross-functional processes that fulfill stakeholders' expectations. Scope means the integration of one function with one or more others, such as strategic business units etc. Elements are organization, scarce resources, control mechanisms, and intangible resources.

iii. **Performance impact.** [5] provide evidence that good integration contributes to successful marketing as well as to company-wide initiatives. [8] further more propose that the "integration of internal and external sources is positively associated with successful technology commercialization". They differentiate between formal and informal integration [8]. Both appear to be strong contributors to success. Other authors stress that a focus on integration positively influences the performance of systems, functional units and organizations [6]. [7]also reports on the positive effects of integration in respect of better responses to market changes and better relationship with customers and suppliers. Nevertheless, there is little empirical research on the extent to which this positive effect is quantitatively measurable.

CRM types:

CRM types are based on the behavior of CRM as organization. CRM can be categorized in three levels: strategic, analytical, and operational ([10]-[12]). The strategic type of CRM deals with the creation of customer-centric business culture by which a better value over competitors is created through taking decisions of where to better invest the organization's resources. The operational type deals with customers' processes automation including marketing automation, sales-force automation, and service automation. Operational CRM deals with automation and streamlining workflow at the front office which includes collecting data, processing transactions, and controlling workflow at the sales, marketing, and services ([9],[11],[15]-[17]).

Another type of CRM form is collaborative CRM. Actually collaborative CRM works at operational level so many of the researchers consider it as a subtype of operational CRM. Collaborative CRM focuses on interaction of customers with organization using various technologies. Collaborative technologies may include email, phone calls, fax and website pages.

CRM Processes:

The process can be defined as the way in which things are done within organization. The CRM processes can be defined as "the activities performed by the organization concerning the management of the customer relationship and these activities are grouped according to a longitudinal view of the relationship". According to [13] and [16] the goal of CRM process is to form perceptions of an organization and its products through identifying customers, creating customers knowledge and building customers relationships. With Reference to [10] CRM processes are categorized into vertical and horizontal processes, front-office and back-office processes, and primary and secondary processes. He articulated that vertical processes refer to the processes that are placed completely within business functions like customer acquisition process while, horizontal processes refer to the cross-functional processes like product development process. Front-office processes refer to the customer facing processes like complaint management process while, back-office processes refer to the hidden and non-facing processes from customers like the procurement process. The primary processes are the processes that have major cost or revenue implications for organizations like the logistics process in courier organization and claims process in insurance organizations while, the secondary processes are the processes that have minor cost or revenue implication for organizations. With reference to [19] there are three levels of CRM processes (a) customer facing level, (b) functional level and (c) company-wide level.

I. Customer-facing level CRM processes

With reference to [] customer-facing level process can be defined as 'systematic process to manage customer

relationship initiation, relationship maintenance and termination. This indicates that there three processes at customer-facing level CRM such as **initiation** process refers to activities that take place before or in the early stages of relationship means identifying potential customers, **maintenance** includes activities that manage normal customer relationships like cross-selling, up-selling or retention programs.

II. Customer-oriented CRM processes

Customer oriented process includes the customer activities performed to satisfy a need or to solve a problem. Customer-oriented process is semi-structured and knowledge intensive. In addition, they have differentiated among three kinds of customer-oriented CRM processes; (i) CRM delivery processes, (ii) CRM support processes, and (iii) CRM analysis processes. CRM delivery processes are the processes of direct contact with customer and are considered as art of the customer process including campaign management process, sales management process, service management process, and complaint management process. CRM support processes deal with accomplishing supporting purposes through the market research process and loyalty management process while, CRM analysis processes concentrate on combining and analyzing the collected customer knowledge in other CRM processes, including the processes of customer scoring and lead management, customer profiling and segmentation, and, feedback and knowledge management.

III. Cross-functional processes

There are five generic cross functional processes depending upon (i) the strategy
development process, (ii) the value creation process, (iii) the multichannel integration process, (iv) the information management process, and (v) the performance assessment process. These four CRM processes are allocated to CRM forms: strategic, analytical, and operational. How they interact with each other is shown in following figure.

IV. CRM Macro-level processes

CRM macro-level processes refers to the undertaken activities of an organization to create market intelligence that the organization can leverage to build and sustain a profit-maximizing portfolio of customer relationships through two sub-processes; knowledge management process are highly dependent on the technological and management process and interaction management process The knowledge management process and the interaction human resources of the organization. Knowledge management process is defined from CRM perspective by as the process that "is concerned with all of the activities

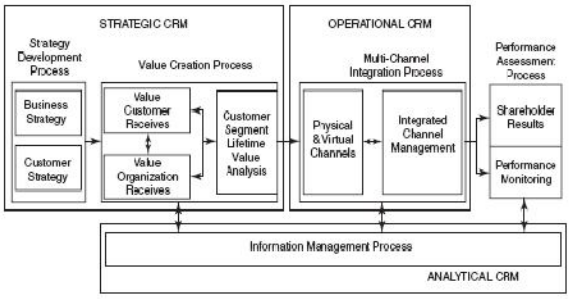

Fig (a). The interrelated CRM forms and processes

directed towards creating and leveraging the market intelligence that firms need to build and maintain a portfolio of customer relationships that maximizes organizational profitability". The knowledge management process can be sub-divided into three processes; data collection, intelligence generation, and intelligence dissemination. Data collection refers to the capture of information related to the market and customers. The intelligence generation refers to the conversion of the captured information into actionable intelligence witch needs to be disseminated in the intelligence dissemination process across the organization to all employees who have a direct contact with the customer or working on the marketing activities of the organization.

CRM Implementation Process

i. ERP Selection

Since there were two different ERP systems in the company, with one mail system, it was difficult for the company to choose the right CRM system. In the end, a relatively unknown system called Relavis was selected as the preferred ERP system. Relavis was chosen because it tightly integrated with IBM Lotus Notes which is the common infrastructure across the whole enterprise. Relavis is a small company. The product is more economical than a Seibel, SAP or Oracle. The system has modules to cater to eMarketing, eSales and eService.

ii. Scoping

The scope covered sales and marketing processes and followed the **'service platform'** approach. A service platform integrates multiple applications from multiple business functions (in this case, sales, marketing, and engineering), business units or business partners to deliver a seamless experience for the customer, employee, manager or partner. As shown in following figure, the new system (Relavis) was implemented to gain integrated information from marketing and sales departments to provide input to the ERP and Data warehousing applications and finally create analytical reports to make better business decisions.

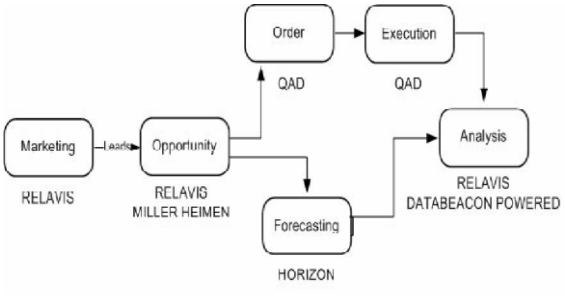

Fig (b). Enterprise's CRM Implementation Overall Process Flow

Design

A "gap analysis" was conducted since the CIO (chief information officer) wanted a successful "business" implementation of the system vis-à-vis a technical implementation, the sales and marketing process was mapped. The "as-is" process described the cradle-to-grave aspects of the process. The "to-be" process incorporated Relavis, together with other tools like Miller Heiman eforms, The Horizon system for forecast, MFG/PRO system for order execution and Data warehouse Cubes for analysis. Relavis was customized to include "Business Intelligence" – a piece of software extracting account specific information from past sales through the Cubes.

iii. Implementation

Implementation involved reviewing the resource requirements and availability, both in terms of hardware and software.

Applications of CRM

1. Call centers

As well as tracking, recording and storing customer information, CRM systems in call centers codify the interactions between company and customers by using analytics and key performance indicators to give the users information on where to focus their marketing and customer service. The intention is to maximize average revenue per user, decrease churn rate and decrease idle and unproductive contact with the customers. CRM software can also be used to identify and reward loyal customers over a period of time.

Growing in popularity is the idea of gamifying customer service environments. The repetitive and tedious act of answering support calls all day can be draining, even for the most enthusiastic customer service representative. When agents are bored with their work, they become less engaged and less motivated to do their jobs well. They are also prone to making mistakes.

2. Business-to-business

According to a Sweeney Group definition, CRM is "all the tools, technologies and procedures to manage, improve, or facilitate sales, support and related interactions with customers, prospects, and business partners throughout the enterprise". It assumes that CRM is involved in every B2B transaction.

Despite the general notion that CRM systems were created for the customer-centric businesses, they can also be applied to B2B environments to streamline and improve customer management conditions. For the best level of CRM operation in a B2B environment, the software must be personalized and delivered at individual levels.

The main differences between B2C and B2B CRM systems are as follows:

- B2B companies have smaller contact databases than B2C.
- The volume of sales in B2B is relatively small.
- In B2B there are less figure propositions, but in some cases they cost a lot more than B2C items.
- Relationships in B2B environment are built over a longer period of time.
- B2B CRM must be easily integrated with products from other companies. Such integration enables the creation of forecasts about customer behavior based on their buying history, bills, business success, etc.
- An application for a B2B company must have a function to connect all the contacts, processes and deals among the customers segment and then prepare a paper.
- Automation of sales process is an important requirement for B2B products. It should effectively manage the deal and progress it through all the phases towards signing.
- A crucial point is personalization. It helps the B2B company to create and maintain strong and long-lasting relationship with the customer.

3. Social media

2) Some CRM systems integrate social media sites like Twitter, LinkedIn and Facebook to track and communicate with customers sharing their opinions and experiences with a company, products and services.

3) Enterprise Feedback Management software platforms such as Confirmit, Medallia, and Satmetrix combine internal survey data with trends identified through social media to allow businesses to make more accurate decisions on which products to supply.

4. Other types

4) Some CRM software is available as a software as a service (SaaS), delivered via the internet and accessed via a web browser instead of being installed on a local computer. Businesses using the software do not purchase it, but typically pay a recurring subscription fee to the software vendor.

5) For small businesses a CRM system may consist of a contact manager system which integrates emails, documents, jobs, faxes, and scheduling for individual accounts. CRM systems available for specific markets (legal, finance) frequently focus on event management and relationship tracking as opposed to financial return on investment (ROI).

6) Customer-centric relationship management (CCRM) is a nascent sub-discipline that focuses on customer preferences instead of customer leverage. CCRM aims to add value by engaging customers in individual, interactive relationships.

Conclusion

The implementation of CRM initiatives and programs has faced failure over different industries and businesses. The understanding of CRM and its different aspects like definition, scope, processes, and technology is still limited. Organizations face considerable challenges in implementing large-scale integrated systems such as ERP and CRM. Implementation of a CRM system was identified as a critical need to align with the overall business strategy of selling solutions, instead of products. The implementation was driven by the business users, with IT playing a facilitating role, thereby making sure that users derive maximum value from implementation. After successful implementation, the CRM system may get into an impact mode, which may challenge business strategy.

The understanding of the expected benefits of the CRM program and the enabling of the organization to measure the influence and implication on the organizational performance of the CRM program are other two important dimensions of the benefits of understanding CRM processes.

This paper suggests an important step before the implementation of CRM programs /systems, which is the creation and communication of customer-oriented culture within the organizational. The purpose of this step is to be as a pre-implementation plan for CRM programs /systems in which, a better understanding of the concept of CRM and the sense and awareness of the CRM program/system are created within the organization.

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EFFECTIVE USE OF K-MEAN ALGORITHM TO MINIMIZE DROPDOWN RATIO OF STUDENTS

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Abstract:-
K-mean algorithm is work based on clustering, which create cluster for each of value k in which all elements are near to k. Dropdown students are those students which goes away from their education at second year or onward. Consider number of years, student was year drop or backlog. Also consider figure of maximum number of year of dropdown or year drop to be consider as a dropdown. Create clusters of regular students, dropdown student and backlog. Institute or university may concentrate on students from dropdown cluster.
Keywords*: - K-mean, cluster, WEKA dropdown, backlog,.*

Introduction:-

If we consider a professional educational institute or organization, which run on fees collected from students. Mostly if volume of students is too large at entry point and volume become small at final state or middle state due to dropdown of students. It is important to find number of students drop down, if amount is too large, need to give more concentration to minimize dropdown and helpful to improve volume of students at middle as well as final level.

We will consider k-mean algorithm which create clusters of different k-values. We have consider k=3, Third cluster k=2 regular student, second k=1 for dropdown student which have number of year drop greater than of equal to n let n=4. First cluster k=0 for backlog student whose number of year drop less than n and greater than 1. This way we shall create 3 clusters using k-mean. University may concentrate on second cluster that is k=1. Even particular institute may also concentrate on second cluster of their dropdown students.

K-mean algorithm:-

Algorithm *k*-means (*k*, *D*)

1 choose *k* data points as the initial centroids (cluster centers)
2 **repeat**
3 **for** each data point **x** ∈ *D* do
4 compute the distance from **x** to each centroid;
5 assign **x** to the closest centroid
// a centroid represents a cluster
6 **endfor**
7 re-compute the centroid using the current cluster memberships
8 **until** the stopping criterion is met

Fig. 1.1 The *k*-means algorithm

Problem:-

Consider students of university or an educational organization or institute, we are interested to find and followed by minimize dropdown ratio of students. For that we will construct clusters of different categories of students for example cluster of regular students, cluster of backlog students and cluster of dropdown students whose number of year drop is more then or equal to n (we may consider n=4).

Methodology:-

we will consider all students of institute or university. for each student we will consider entry year or learning year at first year (lyfy), expected year at second year (eysy), expected year at third year (eyty), learning year at second year(lysy), learning year at third year(lyty), also consider maximum number of year student may be year drop i.e. n, if n>=4, consider that particular student as a dropdown student, if n is greater than 1 and less than 4 may be consider as a backlog student, otherwise regular student. Construct cluster for each of backlog student, dropdown student and regular student as shown bellow.

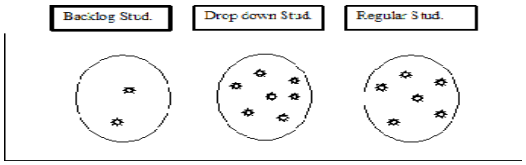


Fig 1.2 Clustering of elements

If it is found that number elements in drop down cluster is more it is essential to concentrate on drop down students as in above figure number of drop down students are 07 out of 15.

To perform this analysis we have used tool WEKA, We have consider a sample example of 15 students and experiment using WEKA tool, result of which is given as below.

Experiment:-

Databases:-

clu

Field Name	Data Type
sname	Text
lyfy	Number
eysy	Number
lysy	Number
result	Text

clu				
sname	lyfy	eysy	lysy	result
marathe	2011	2012	2016	d
patil	2011	2012	2012	r
jain	2011	2012	2013	b
agrawal	2011	2012	2015	d
koli	2011	2012	2014	b
patole	2011	2012	2016	d
mone	2011	2012	2015	d
panchbhai	2011	2012	2015	d
maheswari	2011	2012	2012	r
chaudhari	2011	2012	2015	d
patel	2011	2012	2015	d
chavan	2011	2012	2012	r
bhoi	2011	2012	2012	r
pawar	2011	2012	2012	r
bide	2011	2012	2012	R

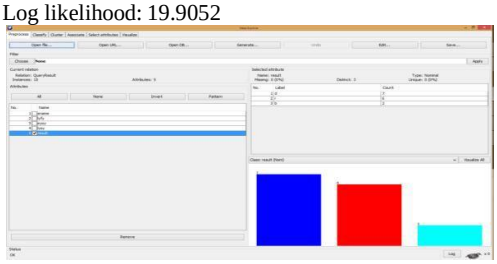
Database Connect using DSN Name:-
Jdbc: odbc: dsnname

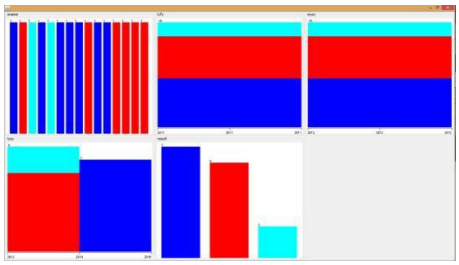
=== Run information ===

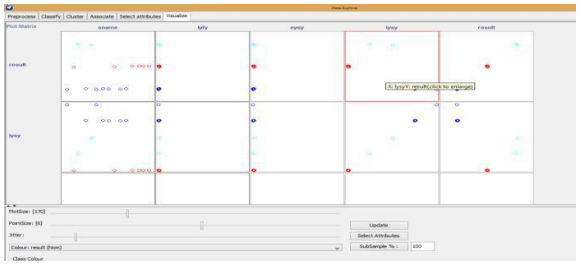
Scheme:weka.clusterers.EM -I 100 -N 3 -M 1.0E-6 -S 15
Relation: QueryResult
Instances:15
Attributes:5
sname
lyfy
eysy
lysy
result
Test mode:evaluate on training data
=== Model and evaluation on training set ===
EM==
Number of clusters: 3

Attribute	Cluster 0 (0.13)	1 (0.46)	2 (0.41)
sname			
marathe	1.0002	1.9972	1.0026
patil	1.0127		
jain	1.9058	1	1.0942
agrawal	1.004	1.992	1.004
koli	1.9329	1.0122	1.0549
patole	1.0002	1.9972	1.0026
mone	1.004	1.992	1.004
panchbhai	1.004	1.992	1.004
maheswari	1.0127	1	1.9873
chaudhari	1.004	1.992	1.004
patel	1.004	1.992	1.004
chavan	1.0127	1	1.9873
bhoi	1.0127	1	1.9873
pawar	1.0127	1	1.9873
bide	1.0127	1	1.9873
[total]	16.9348	21.9667	21.0985
lyfy			
mean	2011	2011	2011
std. dev.	0	0	0
eysy			
mean	2012	2012	2012
std. dev.	0	0	0
lysy			
mean	2013.4639	2015.2845	2012.0468
std. dev.	0.5906	0.455	0.3044
result			
d	1.0202	7.9546	1.0253
r	1.0759	1	6.9241
b	2.8387	1.0122	1.1491
[total]	4.9348	9.9667	9.0985

Clustered Instances
0 2 (13%)
1 7 (47%)
2 6 (40%)
Log likelihood: 19.9052







Conclusion:-

K-mean algorithm is helpful to solve problem which attempt to solve by creating cluster followed by concentrating on a particular cluster. Once interested cluster is obtain one can take a remedial action to resolve problem.

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4G:WIRELESS TECHNOLOGY

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Abstract

With the rapid growth of user demands, and the limitations of third generation (3G) mobile communication systems, it is expected that fourth generation (4G) mobile systems are likely to reach the consumer market in another 4-5 years. 4G systems are expected to become a platform capable of providing increased bandwidth, higher data rates, and greater interoperability across communication protocols, and user friendly, innovative, and secure applications. This system will primarily focus on seamlessly integrating the existing systems like GSM, wireless LAN, and Bluetooth. This paper describes modulation scheme, different technologies, and network architectures that support 4G mobile systems. Challenges and some applications will also be presented.

The evolution from 3G to 4G will be driven by services that offer better quality (e.g. video and sound) thanks to greater bandwidth, more sophistication in the association of a large quantity of information, and improved personalization. Convergence with other network (enterprise, fixed) services will come about through the high session data rate. It will require an always-on connection and a revenue model based on a fixed monthly fee. The impact on network capacity is expected to be significant. Machine-to-machine transmission will involve two basic equipment types: sensors (which measure parameters) and tags (which are generally read/write equipment).

Introduction:

4G, short for fourth generation, is the fourth generation of mobile telecommunications technology, succeeding 3G and preceding 5G. A true 4G system must provide capabilities defined by ITU in IMT Advanced. Potential and current applications include amended mobile web access, IP telephony, gaming services, high-definition mobile TV, video conferencing, 3D television, and cloud computinng.The main reason 4G is faster than 3G is because of Orthogonal Frequency-Division Multiplexing (OFDM). It sounds complicated, but it's the same technology used in Wi-Fi, ADSL broadband, digital TV and radio.

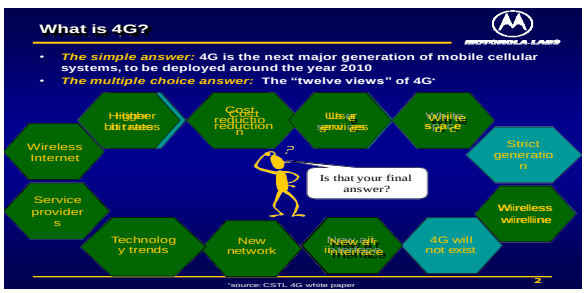
4G is the abbreviation of the fourth generation of wireless telecommunication. Fourth generation provides the best speed for internet access and high speed data transmission. Provides support high definition videos. It was deployed in year 2010.Two 4G candidate systems are commercially deployed: the Mobile WIMAX standard (first used in South Korea in 2007), and the first-release Long Term Evolution (LTE) standard (in Oslo, Norway and Stockholm, Sweden since 2009). It has however been debated if these first-release versions should be considered to be 4G or not, as discussed in the technical definition section below.

In the United States, Sprint (previously Clear wire) has deployed Mobile WIMAX networks since 2008, while Metro PCS became the first operator to offer LTE service in 2010. USB wireless modems were among the first devices able to access these networks, with WIMAX smart phones becoming available during 2010, and LTE smart phones arriving in 2011. 3G and 4G equipment made for other continents are not always compatible because of different frequency bands. Mobile WIMAX is not available for the European market as of April 2012.

1 What is 4G?

4G is known as beyond 3G,stands as an acronym for Fourth-Generation Communications System. It is used to describe the next step in wireless communications. A 4G system will be able to provide a comprehensive IP solution where voice, data and streamed multimedia can be given to users on an \Anytime, Anywhere" basis, and at higher data rates than previous generations. There is no formal denition for what 4G is; however, there are certain objectives that are projected for 4G.

These objectives include: that 4G will be a fully IP-based integrated system. This will be achieved after wired and wireless technologies converge and will be capable of providing between 100 Mbit/s and 1 Gbit/s speeds both indoors and outdoors, with premium quality and high security.



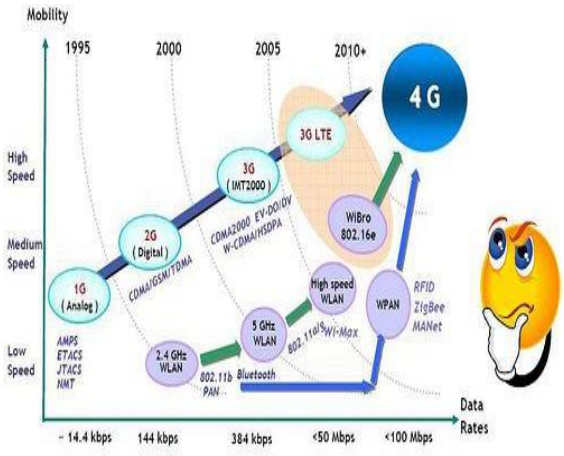
2. Devices Using 4G

4G wireless service may utilize modems, mobile phones, and other devices like laptop computers. Mobile hotspots offer wireless connections for multiple devices, including computers, tablets, and handheld gaming systems; with 4G technology, users may be able to simultaneously and use large applications on each device. A 4G "netbook" or tablet device could operate similarly to a laptop, but with smaller memory and fewer drives, offering instant Internet access and real-time web communications.

3. Evolution of Wireless technology

('Fourth Generation :4G- Long Term Evolution'), provides substantial performance improvements over previous mobile technologies, and offers the promise that connectivity will no longer be a barrier to realizing the benefits of enterprise mobility. Safaricom launched its LTE Advanced 4G LTE network making it the first mobile operator in the Sub-Saharan region to launch the 4G Technology. The technology formally known as LTE Advanced is the most advanced version of the 4G

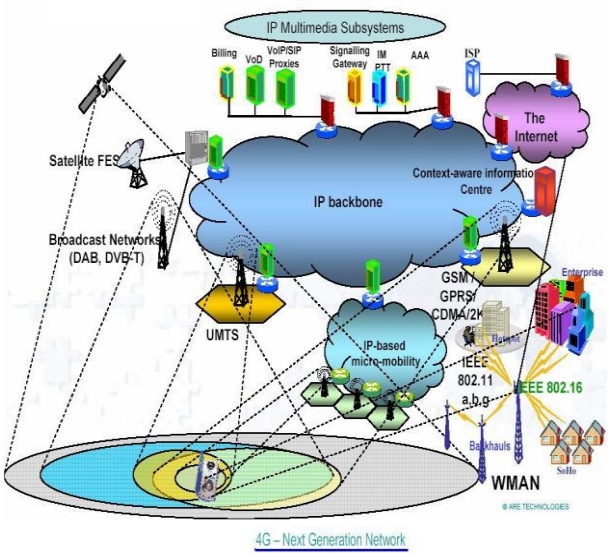
The first three generations of mobile networks are conventionally defined by air interfaces and transport technologies. However, it is worth noting that each generation clearly provided an increase in functionality to the mobile user, and could therefore be defined in those terms, rather than in transport technology terms.



Why 4G Is Required ?

1.4G is the next generation of wireless technology which will replace 3G in future

2. Today 's multimedia services utilizes 2 Mbps, but demand of more downlink
3. Capacity of 3G unable to complete the requirement hence
   4G come in existence.
4. Thus there is a need of an emerging new technology and 4G meets the needs.



4G Wireless System

- 4G is a research item for next-generation wide-area cellular radio, where you have 1G, 2G, 3G and then 4G.
- 4G is a conceptual framework and a discussion point to address future needs of a high speed wireless network
- It offer both cellular and broadband multimedia services everywhere

Expected to emerged around 2010 - 2015

- 4G should be able to provided very smooth global roaming service with lower cost
- Theoretically, 4G is set to deliver 100mbps to a roaming mobile device globally, and up to 1Gbps to a stationary device. With this in mind, it allows for video conferencing, streaming picture perfect video (i.e. tele-medicine, tele-geo processing application etc.)
- 4G will bring almost perfect real world wireless or called ?www: World wid wireless Web

Characteristics of 4G

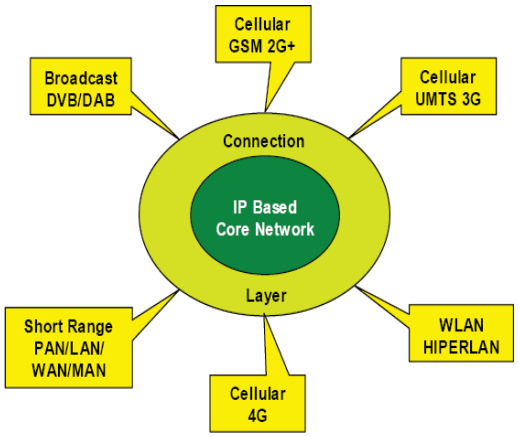
- Data transfer rate
- Interoperability
- Bandwidth
- Networking
- Convergence area
- Scalability
- Cost

- Smart Antennas
- Power consumption

Features of 4G Networks

- 4G networks are all-IP (Internet Protocol) based heterogeneous networks
- This will allow users to:
  1. Select any system at any time and any where
  2. Use Multiple systems at the same time
- A wide range of applications using only one 4G integrated terminal.
- Support interactive multimedia services: teleconferencing, wireless Internet, etc.
- Wider bandwidths, higher bit rates.
- Global mobility and service portability.
- High customer satisfaction.

Conclusion



Wireless systems becoming an important infrastructure in our society. A virtual global system is a good solution that can efficiently connect many dedicated wireless systems including 1G to 4G cellular systems, wireless LAN, broadcasting systems, etc.

This paper presented a brief description of path to 4G networks, WiMAX and LTE Network architecture and OFDMA technology. It has been observed that the number of wireless broadband subscribers have passed the number of fixed broadband subscribers. So in a world going wireless, the technologies with higher throughputs get importance day by day. For a successful 4G network, coverage and capacity are essential parts. LTE-Advanced and WiMAX 802.16m The possible candidates for a successful 4G deployments are LTE-Advanced and WiMAX 802.16m. So the technology is, it must be affordable in cost and worth deploying in throughput, coverage and capacity. The key concept behind 4G systems is integrating their capacities with all of thee xi sting mobile technologies through advanced technologies.

This paper presented a brief description of path to 4G networks, WiMAX and LTE network architecture and OFDMA technology. It has been observed that the number of wireless broadband subscribers have passed the number of fixed broadband subscribers. So in a world going wireless, the technologies with higher throughputs get importance day by day. For a successful 4G network, coverage and capacity are essential parts. LTE-Advanced and WiMAX 802.16m The possible candidates for a successful 4G deployments are LTE-Advanced and WiMAX 802.16m. So the technology is, it must be affordable in cost and worth deploying in throughput, coverage and capacity.

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RE-USE OF E-WASTE MATERIAL

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Abstract:
E-waste is term for electronic products that have reached their end of life. Throwing electronic and electrical items into the dustbin is not the proper disposal of electronic equipment which has attained obsolescence as per your judgment. E-waste, which creates problems for the ecology in general and directly or indirectly for the living beings around there through air, water and soil pollution. People tend to forget that properly disposing of or reusing electronics can help prevent health problems, create jobs, and reduce greenhouse-gas emissions.

Keywords:
E-waste, Hazardous materials, E-waste management, recycling,

Introduction

E-waste is defined as waste electrical and electronic equipment that is dependent on electric currents or electromagnetic fields in order to function, including all components, subassemblies and consumables which are part of the original equipment at the time of discarding. They include:

- Consumer/entertainment electronics (e.g. Televisions, DVD players and tuners).
- Devices of office, information and communications technology (e.g. Computers, Laptops, Telephones and Mobile phones).
- Household appliances (e.g. Fridges, Washing machines and Microwaves, Grinders).
- Lighting devices (e.g. Desk Lamps).
- Power tools (e.g. Power drills) with the exclusion of stationary industrial devices.
- Devices used for sport and leisure including toys (e.g. Fitness machines and Remote control cars).
- Networking devices (e.g. Routers, Hub, Gateways, Switch)

Growth of e-waste

E-waste is growing exponentially because the rapid growth of technology in markets. These products are produced are also growing rapidly as many parts of the world cross over to the other side of the 'Digital Divide'. For example, an estimated 50 million tons of E-waste are produced each year [1] . The Environmental

Protection Agency estimates that only 15-20% of e-waste is recycled, the rest of these electronics go directly into landfills and incinerators [2] [3].

Fig.(1)

Fig.(2)

According to a research report, the E-waste market in India is expected to grow at a Compound Annual Growth Rate (CAGR) of 26 per cent during 2015-2019, while the E-waste management services market is forecast to grow at a CAGR of 19.41 per cent over the period 2013-2018[4].

Rapid changes in technology like in media (tapes, software, MP3), Display units (CRT, LCD, LED monitors), processors (CPU, GPU, or APU chips), memory (DRAM or SRAM), falling prices have resulted in a fast-growing surplus of electronic waste around the globe. Processors are most frequently out-dated (by software no longer being optimized) and are more likely to become "e-waste", while display units are most often replaced while working without repair attempts.

The Problem with e-waste

E-waste comprises of a multitude of components, some containing toxic substances that can have an adverse impact on human health and the environment if not handled properly. E-waste management assumes greater significance not only due to the generation of its own e-waste but also because of the dumping of e-waste from developed countries. Televisions and computers contain hazardous materials such as lead, cadmium and mercury, which need to be managed in a safe manner. Despite this many computers and televisions are disposed with household rubbish and end up in landfill. Disposal of unwanted televisions, computer products and other electrical or electronic devices in an environmentally responsible way is becoming an increasingly important issue due to the increase in consumption of raw materials, taking up of landfill space and disposal of hazardous substances in areas where they could leach into soil and water. Over 2014-15, an estimated 29 million televisions and computer [4] reached their end-of-life. Those dumped in landfill contain valuable materials that can be recycled and re-used, as well as substances which are hazardous to humans and the environment when disposed of inappropriately.

Collecting and Sorting Of E-Waste:

Waste collection is a part of the process of waste management. It is the transfer of solid waste from the point of use and disposal to the point of treatment or landfill. Waste collection also includes the curbside collection of recyclable materials that technically are not waste, as part of a municipal landfill diversion program.

Waste sorting is the process by which waste is separated into different elements. Waste sorting can occur manually at the household and collected through curbside collection schemes, or automatically separated in materials recovery facilities or

mechanical biological treatment systems. Hand sorting was the first method used in the history of waste sorting.
Waste can also be sorted in a civic amenity site.
Waste segregation means dividing waste into dry and wet. **Dry waste** includes wood and related products, metals and glass. **Wet waste**, typically refers to organic waste usually generated by eating establishments and are heavy in weight due to dampness. Waste can also be segregated on basis of biodegradable or non-biodegradable waste.

Fig.(3) **E-waste collection**


Fig.(4) **Sorting**

Landfills are an increasingly pressing problem. Less and less land is available to deposit refuse, but the volume of waste is growing all time. As a result, segregating waste is not just of environmental importance, but of economic concern, too.

E-waste recycling

Fig.(5)

For example, the glass in CRT televisions contains a high concentration of lead and needs to be crushed in a contained environment, separated and cleaned. The recycled lead can be used as flux material to remove slag from newly mined lead and the glass can be used in the manufacture of new televisions and computers. Circuit boards can be shredded down to a fine powder and separated into plastics and precious metals which are able to be used for items ranging from jewellery to computer chips. Plastic casings can be turned into pellets and used for resins for new products or fuels. Scrap metals are melted down to form new metal based components.

Televisions and computers also contain valuable non-renewable resources including gold, steel, copper, zinc, aluminum and brass. Computer and television recycling entails the breaking down of the product into its various components (i.e. plastics, metals, glass etc), where 95-98% (by weight)[6] these materials can be fully recycled for future use. Many e-waste products also contain hazardous waste that requires special handling.


Fig.(6)


Fig.(7)

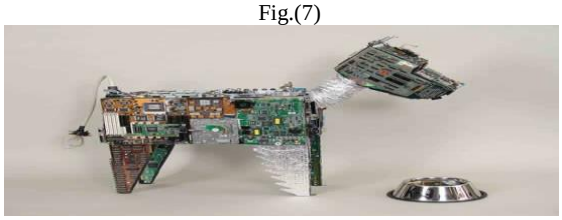
Fig.(8)

Recyclers in the street with old computers

One of the major challenges is recycling the printed circuit boards from the electronic wastes. The circuit boards contain such precious metals as gold, silver, platinum, etc. and such base metals as copper, iron, aluminum, etc. One way e-waste is processed by melting circuit boards, burning cable sheathing to recover copper wire and open- pit acid leaching for separating metals of value [5]. Conventional method employed is mechanical shredding and separation but the recycling efficiency is low. Alternative methods such as cryogenic decomposition have been studied for printed circuit board recycling [6] and some other methods are still under investigation.

Conclusion

The hazardous nature of e-waste is one of the rapidly growing environmental problems of the world. The ever-increasing amount of e-waste associated with the lack of awareness and appropriate skill is deepening the problem. Therefore, there is an urgent need to plan a preventive strategy in relation to health hazards of e-waste handling. For e-waste management many technical solutions are available, but to be adopted in the management system, prerequisite conditions such as legislation, collection system, recycling and manpower should be prepared. This may require operational research and evaluation studies.

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DEVELOPMENT ANDROID-SERVLET INTERFACING FOR MOBILE BASED LITERATURE INFORMATION SYSTEM

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Abstract-

Mobile based Information Systems are the most recent offshoot of information technology. Availability of information on walk using hand held wireless device like mobiles is one of the highly sought research application. In this scenario using Information Retrieval principles for information access on mobiles has listed number of application domains. Agriculture, health, education, banking and government sector are the major of them.

We find no significant work for literature access of Indic languages on mobiles. We have developed an Indic Literature Information System using Android client and JAVA Server. The Java server maintains the knowledge base using Vector Space Model. Android application supports user with a suitable client interface to retrieve literature information by sending a flexible query in natural language. It allows you to use Romanized transliteration form of Indic language.

This article is about the development of this Android-Java Servelet model in our work. It also discusses the data structure used in our model.

Keywords- JAVA Servelet, Vector Space Model, Information system, Android Application

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1. Introduction.

Today's generation is using mobiles like a life line. Name the problem and youngsters will pick up their mobile phones to look for its solution. Songs, Games, Pictures, Meaning of a word, Definition of a term, Recipe of a delicious dish, all this information is available on their smart phones. 3G, 4G technology has narrowed the differences in personal computers and mobile phones. Operating environment of modern mobile systems is advancing with enhanced internal, external memory, high data rates, enhanced bandwidth and multimedia operating systems. The web based information systems are now accessible on these smart phones.

SMS technique is the basic feature of mobile technology mainly used for chatting. Number of fruitful applications are under progress using SMS. GSM based automated remote controlling systems and SMS based information systems are the upcoming applied research fields[13]. SMS based information system is used for many applications in education [15][16] , medicinal [11] , tourism [10], governance [9], agriculture [12], banking sectors [11] in major.

Our literature survey [8] reveals that "SMS based information systems using natural language query" is a dynamic and challenging research extension to the existing Information Retrieval area of ICT (Information and Communication Technology). Most of this development is related to Information Systems in English language. No significant work is reported in the field of "Literature Information Access in Indic languages on mobiles". Present internet facility is not sufficient if a user is mobile and wants to search information like "Who is author of certain poem?" or "What is the title of a song sung by *certain* singer of *certain* film*?"*.

2. Methodology.

We focus to develop a Mobile based literature information system for Indic languages. In our work we have developed a model using Android application as client with suitable interface. This allows user to send a flexible query using transliterated Indic language. We have deliberated this model for Marathi and Hindi languages. A knowledge base is constructed using one thousand Marathi and Hindi literature documents in suitable transliteration format called ITRANS [8]. A document parser is devised to process these documents and separate and identify the tokens [5] in two categories. These categories are Tag Tern such as "singer", ,"writer", "lyrics", "starring" and Value Terms like "lataa", "bahinaabaai", "khebuDkar", "hemaa", "maalini" etc. Vector Space Model [5][6] is specially designed in JAVA to build this knowledge base in the form of inverse document term index [1].

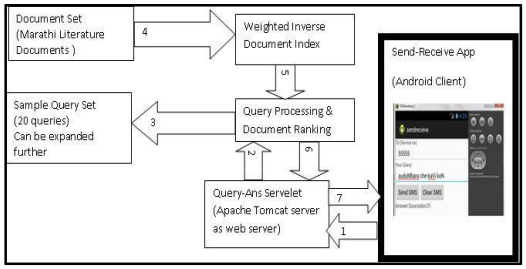

Figure 1: Functional Model of the System

As shown in the functional model Figure-1

1) The android client allows user to sent transliterated query to the Servelet.
2) The servelet hands over this query to next module of Query Processing and Document Ranking.
3) The processed query is saved in query list.
4) Document set is preprocessed by the ITRANS document parser to construct weighted inverse document index.
5) Query term vector is matched with the document term vector using cosine similarity as vector distance formula.
6) Document ranking is generated based on the similarity score assigned to the documents for the query.
7) Top ranked document list is send to android client.

The model of this functional module is depicted in Figure-1. The algorithm is elaborated below.

Algorithm- JAVA Server for Request-Receive-Respond
(Uses Vector Space Model to construct knowledge base)
i. Read Query: (eg. Lataa ne gaayaa r d barman kaa sa.ngeet diya aa.nkho pe gaanaa)
ii. Construct Query Term Vector:(Lataa gaayaa r d barman sa.ngeet diya aa.nkho gaanaa)
iii. Terms are identified by document term vector index: (Lataa r d barman aa.nkho)
This goes through the steps -
a. Compute Cosine Similarity Score.
b. Apply it on all documents and sort in descending order of Cosine Scores.
c. Produce ranked document list.
d. Deliver top five documents to user.
iv. Refine Query : (using XML based structure knowledge)
[Lataa r d barman sa.ngeet aa.nkho] [singer music stitle]
←----------User query terms--------→ ←----Tag terms --- →
v. Apply probability relevance model (PRM) to rerank the documents and generate relevance order .
(cost(t,v) is assigned to each Tag (t) , Value (v) pairs by applying this PRM.
<singer Lataa > <singer r> <singer d> <singer barman> <singer aa.nkho>
<music lataa> <music r> <music d> <music burman> <music aa.nkho>
<stitle lataa> <stitle r> <stitle d> <stitle burman> <stitle aa.nkho>
vi. Produce this improved ranked document list to user again and use it to acquire the respective snippets from the knowledge base.
vii. Repeat this and wait for next query.

3. Android Application.

Android is a convenient technology for mobile based information systems [ ]. As we have already developed the server side knowledge base using JAVA platform, we have chosen Android as the compatible mobile technology in our problem. We have used JDK-7 platform for server side development and Android 4.2 for client side development.

The android client is under development considering different activities performed by users in information retrieval paradigm. It can access relevant answer by sending a flexible natural language query to the server. A set of servelets are developed to take care of the underline user-system interaction. These servelets are activated by an apache server. These interactions mainly includes user registration, authentication and the query based information access mechanism. The android client sends the user query using http-client request. The servelet responds with http-response after processing the http-request. A suitable data structure is build at server site to maintain the query log of all users. The query from the query log is processed to acquire suitable ranked document list. If the query matches with any query already answered by the system with a certain threshold distance value the system sends the respective answer to the user otherwise sends the ranked document list. In this case the user is supposed to react with an implicit relevance feedback [6]. The system improves the relevance order by applying

probability relevance model [4] and sends the top one/five documents to user.

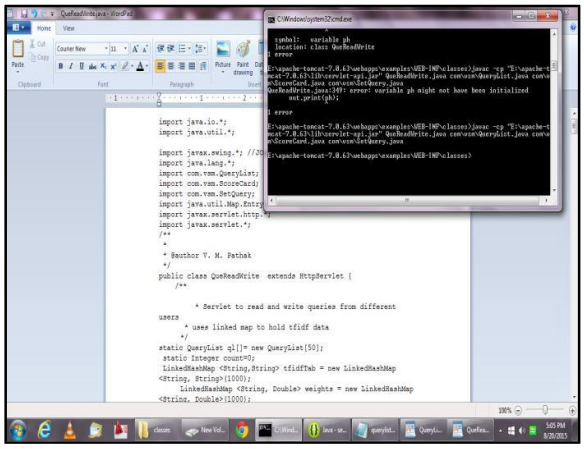

Figure 2:Query Read - Response Write Servelet

4. Data Structure.

The screen shot of a Java Servelet Class definition that handles user query and maintains the query list with suitable data structure is depicted in Figure-2. In order to implement our model we have used LinkedHashMap data structure for query term vector as well as document term vector. This the Map type of Java Collection Class [17]. It is combination of HashMap and LinkedList data structures. As the HashMap it maintains the key value pairs. As a linked-list it gives a iteration order in which the keys are inserted. This feature is useful as we can maintain the terms in the order of their insertion when the documents are parsed. We have used LinkedHashMap < Key, Value> where "Key" is the document term and "Value" is the sequence of triplets forming a string. Each triplet is <weight, doc#, tag#>. The weight is TF-IDF score, doc# is corresponding document, and tag# is the term id of the tag term associated with the key term. This index is thus don't need to maintain the id of each term separately.

5. Results and Conclusion.

In our experiment we have collected twenty sample queries for the collection of hundred and fifty documents. Total number of terms collected is around twenty thousand. In first iteration a ranked order list is send to the users consisting of ten top ranked documents in the decreasing order of their relevance scores. To measure system performance we have used the Precision-Recall as the standard measure for these results. The average values of precision and recall are measured over all 50 documents to measure performance of the system. The result of one of the sample query is shown in Figure-4. We have achieved average precision 60% precision value in our problem without application of relevance feedback. Applying probabilistic relevance the ranking order is modified to produce improved result to achieve 72% precision. The average recall value is improved from 55% to 62%. The recall is poor as some of the queries are not receiving precise documents in first ten ranked documents. We are experimenting over the term mapping function to improve this result so that more relevant terms and hence the relevant documents would surface out at the top rank

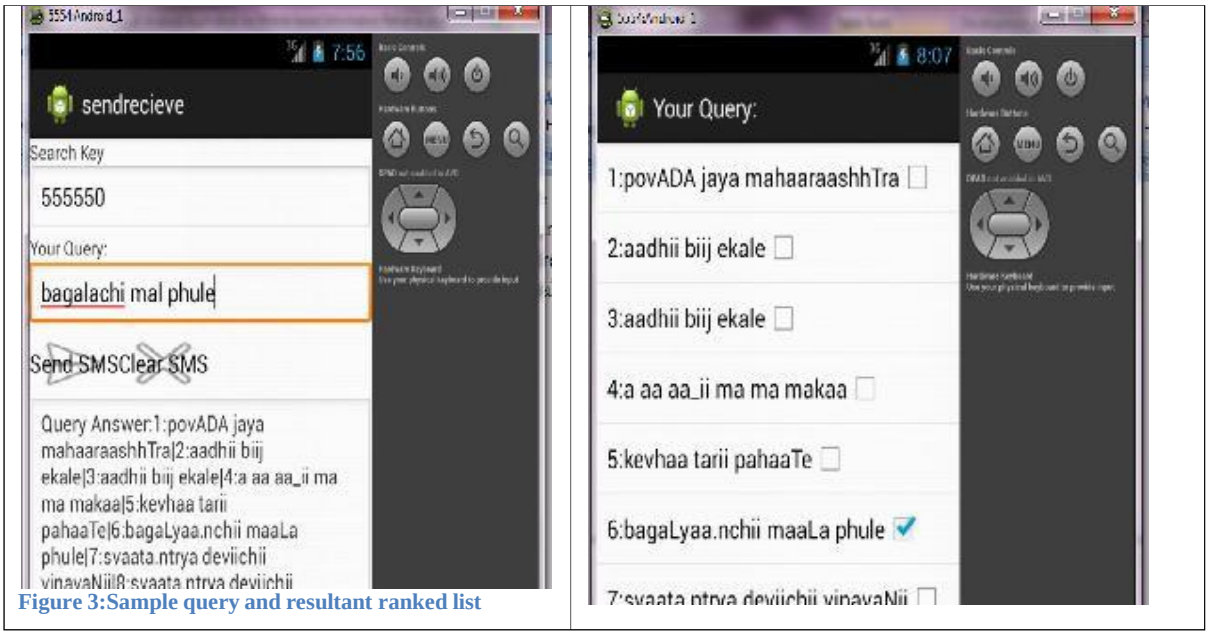

Figure 3:Sample query and resultant ranked list

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