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Bone Defect Detection using Histogram Normalization and Matching technique

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Abstract—**The objective of this paper is to detect defect in bones of human using x-ray images. The digital image processing techniques used are normalization, Histogram creation and histogram correlation. We add our research to the research made by R.Senthilkumar, Dr. M. Senthilmurugan in their paper "TRIAD HISTOGRAM TO ENHANCE CHEST X-RAY IMAGE" published in November 2014. The final result is then displayed along with a standard image from our database and histograms created for both the images plus, the final conclusion the software is programmed to output. Also fuzzy logic implementation is used in order to increase the accuracy of the bone defect detection software.**

Keywords—digital image processing, histogram creation, histogram matching, image normalization, fuzzzy logic.

I. INTRODUCTION

Whenever a person faces a health issue, he/she is always doubtful about the opinion given by a doctor. This software is designed to help the patient get a second opinion and avoid being misled for any sceptical reasons in the patients mind. The software consists of a standard database which has various x-ray images of human bones with attributes of age and BMI. In this research, we have narrowed our scope down to right hand and right leg along with age parameter of 25-40 years. The software requires the user to upload the x-ray image in JPEG format along with his age and BMI. If the user is unaware of his BMI then a BMI calculator will also be provided to the user. Once the parameters required are satisfied by the user, the user can proceed to check his result. The software picks up the standard image from the database based on the parameters provided by the user. Both the images are converted to 8-bit images which has 256 grey levels. The images are normalized in the range [0, 1]. Based on the normalized images, the histograms are created using histogram creation digital image processing technique. Both the histograms are compared using histogram correlation techniques. Here we have implemented fuzzy logic in order to increase the accuracy of the software. The final result is then displayed to the user with both the images along with their respective histograms and the conclusion our software is programmed to output. The entire software will be implemented using Matlab.

II. MATERIALS AND METHODS

A. BMI calculation:

If the user is unaware of his/her BMI, we intend to provide a BMI calculator. Using this calculator, the user can calculate his/her BMI and feed it to our software. We calculate BMI using the following equation:

BMI= (weight in kilograms/(height in meters * height in meters))

B. Image conversion

Both the images are converted to 8 bit in order to avoid image frequency matching problems. The 8 bit image will contain 256 grey levels. Once the images have been successfully converted, we can then readily proceed to the next step. The image conversion is done by referring to the following code snippet in matlab.

$$I1=im2uint8(I2)$$

Where I2 is the input image to be converted to 8 bit. If it is already 8 bit, the output image I1 will be same as input image. If I2 is not 8 bit, it will be converted to 8 bit by the function which returns the equivalent image of class uint8, rescaling and offsetting the data as necessary.

C. Image Normalization

Once the conversions have been carried out, both the images are normalized in the range [0, 1]. Another suitable technique implemented here is that the histograms are created from 8 bit images and then normalized. The general formula for normalization used in the software is as follows:
$I_N=I/sum(I)$;
I_N=normalized image
I=original image

D. Histogram creation

Once the images have been normalized, histograms shall be created for both the images respectively. Using the following function, histograms will be created in Matlab.

hist(I)

Calculates the histogram for intensity image and displays a plot for the histogram. Since our image is in the range [0, 1], the histogram will be displayed with a default value of 256 bins.

E. Histogram correlation technique:

Once both the histograms have been created and normalized, their correlation coefficient is calculated. The correlation coefficient indicates a measure of similarity between the two histograms. Even though it is a ready function in matlab, it is very important to understand the output produced by the correlation function. The value of correlation coefficient is always between 1 and -1 where 1 indicates a positive correlation and -1 indicates a negative correlation. 0 indicates no correlation.

F. Fuzzy logic

Fuzzy logic is now implemented depending upon the result produced by the correlation function. If the value of correlation coefficient is between 0.8 and 1 then the bone is considered normal. The flexibility is used due to slight changes in bones of people with same age and BMI. This flexibility will also help increase the accuracy of the software and not misguide the user.

III.   FORMAT OF OUTPUT

As mentioned before, the output will be displayed with both the images and their respective histograms along with conclusion of the comparison done using histogram matching technique.

The image of output displayed below has been referred from the paper published by Sukhjinder Singh, R. K. Bansal and Savina Bansal in their research paper " Comparative Study and Implementation of Image Processing Techniques Using MATLAB" published in march 2012.
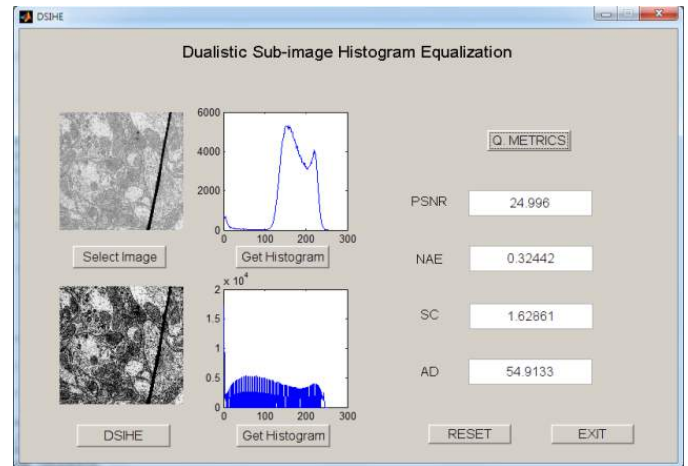
This is just a basic idea of how our output will be presented after both the images have been compared.

IV.   RESULTS AND IMPLEMENTATIONS

A demo has been created implementing the above methods and techniques with respect to dummy bone x-ray images. Two results have been drawn along with their histograms. In the first implementation, the same x-ray image was compared with itself and the correlation coefficient was 1. In the second implementation, two different images were compared and the result turned out to be 0.778. However these images looked same but did not belong to the same BMI category.

The output of the second implementation has been displayed to give a gist of the result of our demo software created.

2
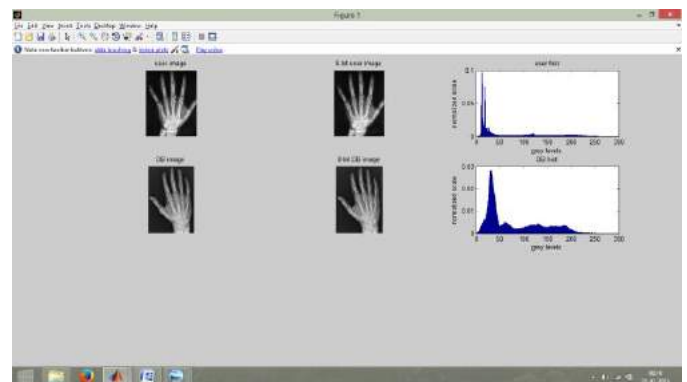
V. CONCLUSION

This paper uses various digital image processing techniques in order to achieve the output for bone defect detection. The possible outcomes the software produces will be either the bone has a defect and the user is recommended to consult a doctor or the users bone seems to be fine.

VI. FLOWCHART OF THE PROCESS

```
   ┌─────────┐
   │  Start  │
   └────┬────┘
        │
        ▼
 ┌──────────────┐        ┌──────────────┐
 │ Feed x-ray,  │◄───────│     BMI      │
 │ age and BMI  │        │  calculator  │
 └──────┬───────┘        └──────────────┘
        │
        ▼
 ┌──────────────┐
 │   Convert    │
 │images to 8 bit│
 └──────┬───────┘
        │
        ▼
 ┌──────────────┐
 │ Normalize the│
 │    images    │
 └──────┬───────┘
        │
        ▼
 ┌──────────────┐
 │ Creation of  │
 │  histograms  │
 └──────┬───────┘
        │
        ▼
 ┌──────────────┐
 │  Comparison  │
 │ of histograms│
 └──────┬───────┘
        │
        ▼
 ┌──────────────┐
 │   Display    │
 │   output     │
 └──────┬───────┘
        │
        ▼
   ┌─────────┐
   │   end   │
   └─────────┘
```

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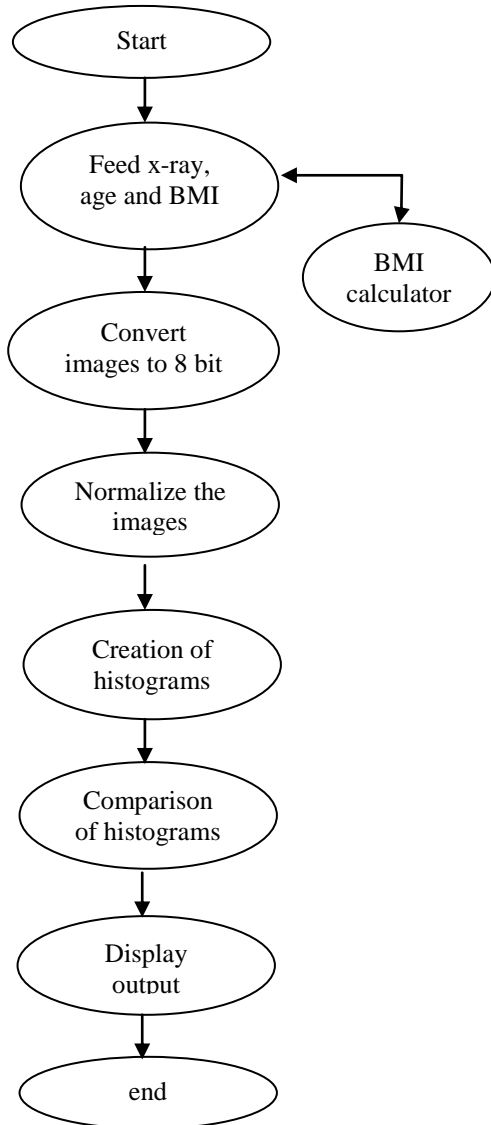Comparative Study and Implementation of Image Enhancement Techniques based on Histogram Equalization", Volume 3 Issue 3, March 2014
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BIGDATA: A PANORAMA VIEW

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ABSTRACT

In this era, where technology has reached its pinnacle, organisations are generating and storing enormous amounts of data. Maintaining and gaining insights from the generated data is a huge challenge and a key to competitive advantage. "Analytics as a Service" is the buzz word these days and providing on-demand analytics to enterprises is the wave to follow. Today, businesses want to predict the future, and they are turning to ''Big Data'' to feed a new breed of predictive analytics. Size is the first, and at times, the only dimension that leaps out at the mention of 'Big Data'. The growth of 'Big Data' reinforces the need for cloud solutions to handle exponentially more information flow. This paper attempts to offer a comprehensive definition of 'Big Data' that captures its other unique and defining characteristics. We introduce the commonly accepted framework used to describe the dimensions of 'Big Data' i.e., the five V's and the rapid evolution and adoption of 'Big Data' by various domains. We also highlight the technologies and form a relationship between 'Big Data' and cloud. The paper concludes with our take on this emerging technology.

Keywords- **Analytics, 'Big Data', Data mining.**

I. INTRODUCTION

Data is the new gold. Today the most valuable asset Organizations and Businesses hold is the Data. Data exists in many forms like images, text documents, audio, video, hyperlinks, etc. These data can be structured, unstructured or semi-structured, depends on its source and the medium through which it is generated.

Society is becoming increasingly more instrumented and as a result, organizations are producing and storing vast amounts of data. Organisations are not the only ones that contribute to this huge amount but also in daily life, data that is being increasingly gathered by numerous mediums such as mobile phones, laptops, cameras, microphones, software logs, web site tracking, sensors, finance, and accounting are few of those many reasons for the growth of data sets. And over the years, this data sets have grown myriad and so enormous that now it is being termed as 'Big Data'. Every day, we create 2.5 quintillion bytes of data- so much that 90% of the data in the world today has been created in the last two years alone [1].

As size of data is growing exponentially so is its value. Every bit and piece of data is useful at some or the other point of time. Deciding on which data to keep and which to discard is a hard decision to make. Here Data Analytics comes into picture. Analysis of data is important for extracting valuable information from the oceans of data.

Technological companies and entrepreneurial start-ups are frenetically looking for ways to construct the fastest algorithms for data analysis, or create the most reliable tools for accurate data extraction, or to build the biggest database [2]. Today the conversation is shifting from "What data should we store?" to "What we can do with data?" [3].

Analytics solutions that mine structured and unstructured data are important as they can help organization gain insights not only from their privately acquired data, but also from large amounts of data publicly available on the Web.

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We can closely relate data analysis of big data to the concept of data mining known as the Knowledge Discovery in Database (KDD) where data is extracted from the huge databases and mined to convert it into Knowledge base. This data is then processed to form Valuable information which is known as Knowledge. KDD process is shown in the figure [13] below:

Figure 1: Knowledge discovery process.
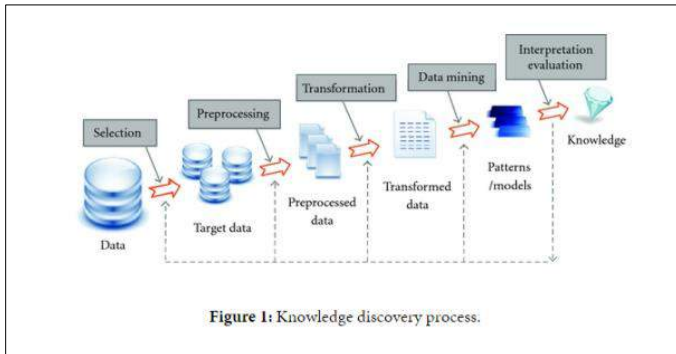
Today data mining has reached to the peak where it can predicate the future with the help of various algorithms. Data mining is changing the value that data holds. It is a fundamental fact that data that is too big to process conventionally is also too big to transport anywhere. IT is undergoing an inversion of priorities: it's the program that needs to move, not the data [4].

II. 'BIG DATA': AN OVERVIEW

A. DEFINITION

There is much wisdom in the saying - *"You can't manage what you don't measure"* which has been attributed to both W. Edwards Deming and Peter Drucker, and it explains why the recent explosion of digital data is so important. Simply put, because of 'Big Data', managers can measure, and hence know radically more about their businesses and directly translate that knowledge into improved decision making and performance [5].

The ability to cross-relate private information on consumer preferences and products with information from tweets, blogs, product evaluations and data from social networks opens a wide range of possibilities for organizations to understand the needs of their customers, predict their wants and demands, and optimize the use of resources. This paradigm is being popularly termed as 'Big Data'.

The term 'Big Data' is a catchall phrase that is used to refer to three aspects of the same phenomenon: 1) the vast amount of continually streaming digital information that characterizes much of modern day life; 2) the exponential increases in massive data storage capacity, and 3) the data processing power required to aggregate, analyse, manage, and interpret large volumes of digital information.

'Big Data' is one of those new, shiny labels, like SDN, DevOps and cloud, that is both hard to ignore and understand. There is no single ''Big Data'' type – it is a collective label stuck on unstructured data, the technology stack it inhibits, and the new business processes that are growing around it [6]. The true value of 'Big Data' lies not just in having it, but in harvesting it for fast, fact-based decisions that lead to real business value [3].

B. THE FIVE V's

'Big Data' is characterized by what is often referred to as a multi-V model, as depicted namely: Variety, Velocity, Volume, Veracity and Value. The Five V's are explained below with an example of Banking Sector. Now-a-days banks promote for loans, Provident Funds, Mutual Funds, various Cash Back offers, Credit card facilities. All the transactions performed either offline or online contribute to the tremendous amount of data.

1. Velocity (The Need for Speed): Velocity refers to the rate at which the data is produced and processed and then analysed. By 'Velocity', it means both the rate at which data arrives and the time in which it must be acted upon. e.g., Generation of data is done every second when we consider bank transactions. As the amount of data stored is huge, backups should be taken after particular duration of time to maintain the consistency of data as data is valuable.

2. Variety (A Plethora of Options): Variety represents the data types, including structured, semi-structured, and unstructured data. By 'Variety', it usually means heterogeneity of data types, representation, and semantic interpretation. e.g., Data generated in bank transactions or any bank procedure is not always of same format. It can be structured, unstructurted and semi-structured. Online transactions can come under

structured data, Semi-structured data comes from the forms submitted, and the unstructured data can be the emails received by the relational manager.

3. Volume (A lot needs to be done): Volume defines the amount of data scale of data, i.e., data size (from terabytes to petabytes and up i.e., zetabytes). As Velocity of data increases so does its Volume. Increase in customers and their transactions gives rise to enormous volume of data.

4. Veracity (Uncertainty): Veracity refers to how much the data can be trusted given the reliability of its source. It defines the Data reliability and trust. e.g., Customers submit various documents for opening an account. So there is a need to verify the documents properly so that we can ensure that customer is trustworthy and reliable.

5. Value (How much is it worth?): Value corresponds the monetary worth that a company can derive from employing 'Big Data' computing. Value is the worth derived from exploiting 'Big Data'. e.g., previously banks used to provide with debiting and crediting facilities only. But today it provides options for various funds, loans, also provides the facility of credit cards and cash back offers. Banks today are defining new initiatives and re-evaluating existing strategies to examine how they can retain their customers using 'Big Data'

III. DOMAINS OF 'BIG DATA'

Health care, Public Sector, Retail, Manufacturing and Personal location globally, Aviation Industry are few of the well-known domains for 'Big Data'.

e.g., a retailer using 'Big Data' can increase its operating margin. Harnessing 'Big Data' in the public sector has enormous potential, too. If 'Big Data' were to use in health care, it will mostly be used to track the records of patient and suggest tests if medical urgency occurs. The Indian Government utilises numerous techniques to ascertain how the Indian electorate is responding to government action, as well as ideas for policy augmentation. Big data can also be used in Politics as Big data analysis was, in parts, responsible for the BJP and its allies to win a highly successful Indian General Election 2014 [7].

Following are the case-studies on various domains:
1. Jet Airways India used advanced analytics to calculate and report aircraft emissions, enabling rapid decision making for buying carbon credits and allowances, avoiding fines and complying with regulations.
2. Bharti Airtel gained the ability to process 1.5 million new customers per month by integrating its channels and customer-facing processes to provide a more seamless customer experience.
3. Fiat Group improved customer retention by 7% and increased response rate to marketing campaigns by 15 to 20% with a solution that analyzes data and creates models to predict customer behavior [8].

IV. TECHNOLOGIES OF 'BIG DATA'

Big data requires exceptional technologies to efficiently process large quantities of data within tolerable elapsed time. A 2011 McKiney report [9] suggests suitable technologies which include A/B testing, crowdsourcing, data fusion and integration, genetic algorithms, machine learning, natural language processing, signal processing, simulation, time series analysis and visualisation.

Additional technologies being applied to big data include massively parallel-processing (MPP) databases, search-based applications, data mining, distribute file systems, distributed databases, cloud based infrastructure and the Internet. The 'Big Data' landscape is dominated by two classes of technology:

1. Systems that provide *Operational* capabilities for real time, interactive workloads where data is captured and stored. e.g., NOSQL database, focus on servicing highly concurrent requests while exhibiting low latency for responses operating on highly selective access criteria. NoSQL is faster and scale much more quickly and inexpensively than relational databases.

2.   Systems that provide *Analytical* capabilities for retrospective, complex analysis that may touch most or all of the data. e.g., MapReduce. The MapReduce framework provides a parallel processing model and associated implementation to process huge amount of data. With MapReduce, queries are split and distributed] across parallel nodes and processed in parallel(the Map step). The results are then generated and delivered (the Reduce step). The framework was very successful so others wanted to replicate the

algorithm. Therefore, an implementation of the MapReduce framework was adopted by an Apache open source project named Hadoop [10].

'Big Data' applications require a data-centric compute architecture, and many solutions include cloud based API's to interface with advanced columnar searches, advanced analytics such as computer vision, video analytics, and visualization tools [11].

V. 'BIG DATA' AND THE CLOUD

"'Big Data' is the new cloud computing." , "… in many ways, [cloud and 'Big Data'] are becoming one and the same – cloud resources are needed to support 'Big Data' storage and projects, and 'Big Data' is a huge business case for moving to cloud." This sentiment was expressed by Tim Byers of Motley Fool in an interview [12].

When it comes to the amalgamation of 'Big Data' and cloud technologies, it's a compelling combination. In this highly hyped combination, 'Big Data' – is the breadwinner, bringing usable information to your organization, which is what 'Big Data' is all about. If 'Big Data' is the breadwinner, then cloud brings a reliable, stable foundation – i.e., the infrastructure – to the relationship. Cloud is also known for bringing speed to innovation, agility and rapid scalability, and a lower total cost of ownership (TCO) to its relationships [12].

Big data and cloud are good combination as cloud provides the storage facility for enormous amount of data and elasticity too. Organisations don't have to worry about how to store the data that work is left on cloud management companies. As the overhead is released, hence organisations can completely focus on the analysis of data. As analysis of data is the backbone of big data.

VI. ANALYSIS

Big data gives rise to challenge of processing very large data sets, analysis, capture, search, storage, transfer, visualization, and information privacy. In order to overcome this hurdle the new methodology is taking birth which is known as Data Science. Data Science is nothing but applying scientific approach to derive valuable insights from data. In this emerging methodology, scientists require to have a versatile skill-set.

VII. CONCLUSION

In sum, success in Big Data lies in seeing the big picture first i.e., the forest, and then concentrating on the individual trees. Data is the new gold, one person's data is another's knowledge. Analysis of data sets can find new correlations, to "spot business trends, prevent diseases, combat crime and so on. Focus on insights, not just immensity of data. Go beyond the volume and velocity of data that can be gathered, and show the insights that can be gleaned.

As the data being generated today is astronomical, there is a need for analytics and data management. 'Big Data' in the near future will change the long-standing ideas about the analytics. Market leaders across industries will be adopting 'Big Data' technology for competitive advantage and complex problem solving. But as with significant changes in businesses, the repercussions of becoming a 'Big Data'-enabled organization can bring with it some good or bad outcomes. No doubt use of 'Big Data' will become a key basis of growth for Enterprise or Business of all sizes. 'Big Data' is varied, growing, moving fast, and very much in need of smart management.

'Big Data' is not just about helping an organization to be more successful but it also reaches to far more socially significant issues. Applying 'Big Data' Analytics in Education system can help us in examining the digital footprints learners leave behind. Also we can track a student's interest by analysing the frequently visited sites in the college campus. This can help us in designing courses based around student's interests.

In coming years ''Big Data'' along with Cloud may overrule all the current technologies. These two emerging technologies will be fully matured and established to predict the future. 'Big Data' Cloud (BDC) is the new future.

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Implementation of Security Techniques to Secure the System

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ABSTRACT

The architectures of the modern computer system evolve in such a way that they already include the advances in the technology. The design of secure computer architecture to protect the integrity of the data is pursued by the aerospace industry, the commercial and financial sectors and at all levels of government agencies. Computer security techniques are discussed and analysed in this paper. These discussions will centre on various computers security devices. Security policies are important in compromises of computer security and threats affecting computer communication. In order to prevent the computer system from vulnerabilities, deployment of the various scanning techniques is must for any type of organisation. Thus security concern in computers is a very recent phenomenon. These concerns have grown since the discovery and the widespread use of the worldwide web and the internet.

Keywords: Computer Security; Security Techniques.

[I] INTRODUCTION

Computer security is considered to be a wide concept that encompasses the use of any hardware or software that is designed to prevent the loss or theft of the electronic data. It is important for a number of reasons but the primary principle of this concept is to keep the information safe. Most of the time, the concept of computer security is concerned with the security of the computers insides. This is a definite statement because of the data and the compendious information that the users store on their hard drives. This information that the users save is far more critical or valuable that the machines themselves. Broadly, the challenge for computer security lies in how harmful it can be if such a critical data is lost [1]. Most of the people think that computer security is a corporate term or a business context. Of course it is because the

companies or organisations store a lot of sensitive information electronically. This sensitive information contains data related to the company's trade secrets, customer lists or extensive corporate documents both finished or in progress [1]. This paper mainly focuses on the various methodologies that have to be implemented in order to avoid the loss of such information. By setting up the methods or plans, one can feel assured about the security and the safety of the information that one stores [2]. We need to protect the system from the various vulnerabilities that affect our systems. Vulnerability is defined as a weakness in the product that could allow an attacker to compromise or exploit the system's integrity, confidentiality and availability. Computer security is implemented in order to avoid such an escalation or alteration in the critical data.

[II] OPTIONS

In case of an organisation where there are many sets of computer machines interconnected to perform different functions in different areas, the firewall is the basic deployment that is carried to protect the computers interconnected to each other from the external network. Intruders are present everywhere to disturb the uniqueness of the important information. An intruder is defined as an external activity that is carried out by gaining access to the host computer due to security loopholes. In order to avoid these intrusions, there are many intrusion detection techniques available. A countermeasure available to identify such intrusions is the signature identification of the intruder. However, the basic security options to maintain fair security are as follows [11]

A] Virtual Private Network: A virtual private network is an ideal one for the business with the

mobile employees who need to telecommunicate on the regular basis. By utilizing a unique feature of tunnelling the data, a VPN works in the public and private network. A VPN is a safe technology as it helps the organisation establish a secure owned private network for their interconnected system to communicate without giving any access to any external non-organisation activities (intrusions). One more advantage of this network is that once established, the employees can log into a business's private network though normal internet connection from anywhere in the world. This allows the team members to remain productive and maximise the security [11].

B] Encrypted Emails: Sending E-mails is a very common approach of the employees to interact or communicate with customers or network with other businesses and organisations. The only problem is that it is possible that the information within emails can fall under the hands of the wrong parties. This can lead to dire consequences if data such as banking or customer account information is exposed [11]. This problem can be avoided by using the encryption of the emails which implements a secure socket layer (SSL) and a transport layer encryption. Whenever the encryption services are active it will always show 'https' instead of 'http' in the address bar of your browser. This indicates a secure communication.

C] Anti-Malware or Anti-Virus Software: Software that is antivirus is necessary because there are various attackers that inject logic bombs or trigger viruses onto the machines. The execution of such viruses is the ones that reside on the host computer and control the actions in a negative manner. Antivirus software is equipped to prevent normal viruses and infections. Majority of the business and individual computer users normally install them [11].

D] Enhanced Security Login: Although most of the organisation already has a concept of username and password for privacy, we must consider taking this a step further with enhanced security login [11]. This requires a user for additional information like the personalised question or a PIN number. This concept also locks an account if the numbers of login attempts fail in a time period. As the technology of the hackers becomes more sophisticated, the legitimate organisations have to be a step ahead in computer security and privacy.

This type of security is helpful for keeping unwanted parties from infiltrating the computer system [11].

[III] APPROACH

Our approach focuses on security of the system. The security will make sure that the information is kept intact without any damage. Following will help to keep the security of the system up to the mark:

1) Cryptosystems: These systems use the same key for encipherment and decipherment. The goal is to keep the encipherment information secret. Definition: A cryptosystem is a 5 tuple (E, D, M, K, C), where M is the set of plain texts, k the set of keys, C is the cipher texts, E: M x K = C is the set of enciphering functions and D:C x K= M is the deciphering functions[8].

2) Authentication Basis: Authentication is the binding of an identity to a subject. The external entity must provide information to enable the system to confirm the identity [4].Most common example is passwords. The system must reproduce and recognise its user every time there is an appropriate login.

3) Biometrics: Biometrics is the automated measurement of biological or behavioural features that identify a person. Whenever the user accesses the system, the biometric authentication mechanism verifies the identity of the particular authenticated user. A comparison to the known data for the claimed user's identity will either verify or reject the claim. Common characteristics of biometrics are fingerprints, voice characteristics, eyes, facial features and keystroke dynamics.

4) Global Positioning System (GPS): The physical location of an entity is described by a location signature derived from the GPS satellites [4].

5) Access Control Lists: An access control list (ACL), with respect to a computer file system, is a list of permissions attached to an object. An ACL specifies which users or system processes are granted access to objects, as well as what operations are allowed on given objects [4].

**6) Assurance:** Assurance is confidence that an entity meets its security requirements, based on

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specific evidence provided by the application of assurance techniques [4].

7) Digital Signatures: A digital signature is a construct that authenticates both origin and contents of a message in a manner that is provable to a disinterested third party. Different types of digital signatures are Classical signatures and public key signatures [4].

[IV] METHODOLOGY

To be effective, methods should be well integrated within industrial practice. For this reason, most methods are equipped with methodological guidelines for a proper use in real-size system development.

Different organisation uses different methodologies to secure the system. Taking an example of twitter for authentication, to make authorized calls to twitter's APIs, your application must first obtain an OAuth access token on behalf of a Twitter user or you could issue Application-only authenticated requests when user context is not required. The way you will obtain such tokens will depend on your use case. E.g.: If you want to read or post twitter data on behalf of visitors to your website, 3-legged OAuth is used or have a mobile, desktop, or embedded app which can't access a browser, we use pin-based OAuth [5]. The possible states for the 3-legged sign in interaction are illustrated in the following flowchart:
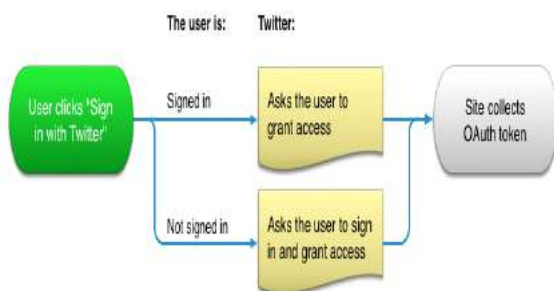
The process of using biometrics includes enrolment, enrolment storage and management, scanning, verification, and object integration.

When employee first reports to an organisation, biometric system administrates his /her complete enrolment by collecting biometric characteristics etc. This enrolment creates the template and the template is connected to user's ID and stored in database. After initial orientation, when the user sits at his desk to begin work, the biometrics

authentication application requires him to provide the characteristics collected during enrolment.

Step 1: User uses biometrics sensor to supply the measured physical characteristic.
Step 2: The biometrics software translates the collected user characteristics into a trial template.
Step 3: The trial template and user ID is sent to the verification algorithm.
Step 4: The verification algorithm sends a request to the database for the stored reference template associated with the provided user ID.
Step 5: Once the reference template is returned, it is compared with the trial template.
Step 6: If the templates match within a reasonable margin of probability (as defined by the organization and set by the administrator), access is granted to all applications integrated with the sign-on solution used [6].

An organization typically implements biometrics for one or both of two reasons: to strengthen access control for one or more systems or to improve employee productivity. We can demand an organisation to maintain software's on their computer machines in order to trace the activities of the employees and to compare the time dedicated by them to their work [6]. The implementation of this system keeps the higher authorities assured about the employees being completely work oriented. Thus biometrics play an important role for an organisation's increase in revenue or future profits.

Biometrics also favours in health security as it can retain the medical history of the patients by registering their fingerprints.

Biometrics can also be used for attendance in colleges and also for security at home.

Biometrics play an important role in day to day life as it can improve our system security to a great extent.

Trust and trustworthiness in a computer system must be backed by concrete evidence that the system meets its requirements and any literature using the terms trusted or trustworthy.

To determine this trustworthiness, we focus on the matrix that allows us to measure the degree of confidence that we can place in the entity under consideration. The security assurance or assurance is acquired by applying a variety of assurance techniques that provide justification and evidence that the mechanism, as implemented and operated meets the security requirements described in the security policy for the mechanism.
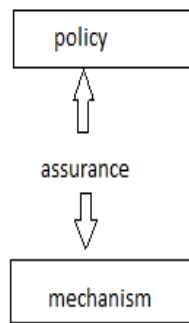
Assurance Techniques can be categorized as informal, semiformal or informal. Informal methods use natural language for specifications and justifications of claims. Informal methods impose a minimum of rigor on the processes used. Semi-formal methods also use natural languages for specifications and justifications but apply a specific overall method that imposes some rigor on the process. Formal methods use mathematics and other parsable languages with tools and rigorous techniques such as formal mathematical proofs [4].

Assurance is associated with an incident about the space shuttle challenger that exploded on January 28, 1986, killing everyone on board. An essential failure was the decision to take short-cuts to meet an accelerated launch schedule. Among other steps, several sensors were removed from the booster rockets. The sensors might have enabled analysts to detect that the cold weather was affecting the booster rockets adversely and to delay the launch. Better assurance techniques might have detected the possible effects of removing the sensors, as well as other problems in the design of the booster rockets[7].

The Trusted Computer System Evaluation Criteria [8] and The Information Technology Security Evaluation Criteria [9] are two standards that have been replaced by Common Criteria [10].

When experts evaluate and review the evidence of assurance, they provide a check that the evidence amassed by the vendor is credible to disinterested parties and the evidence supports the claim of the security requirements. Certification by these experts signifies that they accept the evidence.

Selecting the right security requirements for a computer entity requires an understanding of intended use of that entity as well as of the environment in which it must function.

[V] CONCLUSION

The definition of a "secure computer" necessitates a statement of requirement and expression of those requirements in the form of authorised actions and authorised users. Computer security rests on confidentiality, integrity and availability. The interpretation of these three aspects varies, as do the contexts in which they arise. The interpretation of an aspect in a given environment is dedicated by the needs of the individual, customs and laws of the particular organisation. Given a security policy specification of secure and non-secure actions the security mechanisms can prevent the attack, detect the attack and recover from the attack. These strategies may be used together or separately. It's more precise to say that the computer security is the protection of information stored in a computer system, as opposed to protecting information that's being transmitted or protecting the equipment and the facility itself. The computer security focuses on operating system features that control who can access a system and the data stored in it [4].

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Implementation of Image Processing in Grains Quality Analysis and Grading.

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ABSTRACT - In India 60% of the land is agricultural and agriculture is a major contributor to the country's economy. However, lack of literacy as well as infrastructural issues have resulted in very feeble use of Technology. Technology can play a major role in improving output of crops or the utility of the present land, analysis and gradation of the products.

Among the various technology alternatives, Image Processing is a non-destructive method that offers fast and efficient processing. It can help achieve major improvements in highly manual and laborious tasks, by automating and thus reducing the amount of human errors, increasing the sample size etc. Use of Image Processing in Indian Agriculture can become a boon to this Industry.

Image processing can be applied right from seed quality analysis to pollination stage (analysis of fertility status of pollens) to Prediction and improvements in growth of crops and detection of diseases to Analysis and Quality Grading of crops.

Use of Near Infrared may be a rather costlier approach. This paper briefly looks at the different technologies applicable in Agriculture and brings forward the use of Image processing specifically for Analysis, Grading and Categorization of the grains. Other options for grain quality analysis include the Near Infrared (NIR), which is mainly implemented for counting of grains and some basic analysis. Image Processing is expected to be commercially beneficial option between these.

This automation in the quality detection and grading, will improve the returns for farmers and make farming a profitable and sustaining business.

Keywords: Grading; Grain Analysis; Image Processing; Quality of Grains.

I. INTRODUCTION

Agriculture is the biggest part of Indian economy, but even now lacks the implementation of technology and automation. An Implementation of automation can be Precision Farming (PF). According to Robert et al., [1] Precision farming is defined as information and technology based agricultural management system to identify, analyse and manage site-soil, spatial and temporal variability within fields for optimum profitability, sustainability and protection of the environment.

PF requires special tools and resources to recognize the inherent spatial variability associated with soil characteristics, crop growth and to prescribe the most appropriate management strategy on a site specific basis.

While PF takes holistic view of the complete spectrum related to farming, different parts of the process can be addressed using technologies like Image Processing.

Image processing basically works by taking images and processing it to extract information about it and in turn will categorize them in different quality factors.
As not much research is yet carried out, there are many areas in which automation can be implemented. e.g. Manually it is more difficult to find the appropriate methods for detecting the leaf damage for pest treatment.
Image processing can be used for various purposes during the growth to the harvesting of crops as follows:

A] During the initial stage of the crop the images can be used to analyze, the current age & size of the crop verses the expected size , when the crop will be ready for harvesting. After the harvesting of the crop it may be graded according to the results obtained from the image processing. A Forecast of the production quality and quantity may also be obtained.

B] After the crop harvest, the crop may be checked for any defects such as redheads or [2] chalkiness seen in wheat. Based on these findings the crop may be categorized as fit or unfit.

C] The plant leaf images are obtained, and based on the colour palette extracted, we can ensure if these leaves are healthy or infected, e.g. Tomato or coffee leaves.[3] We may also be able to predict which infection may have occurred and then take necessary precautions by using proper pesticides and fertilizers.

The main advantage of implementing an automated system in this field will be to increase the efficiency of farming, thus improving the crop production quantity as well as quality.

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This paper focuses on the use of Image Processing Techniques for Quality Analysis and Grading of the Crop produce. The same process can be reused with small variation for seed quality analysis as well.

II. OPTIONS

Options available for grading of the grains are as follows:

1] Using the traditionally followed method, the quality testing of the grains can be done. Traditionally the quality of the grains is tested by a person inspecting them. The main disadvantage of this method is that the efficiency of the inspection will solely depend on the ability of that person. His decisions may also be affected by environment while inspecting. e.g. The Light present in the room, the person's mental state, etc. The samples on which inspection is carried out may even be limited.

This is labour intensive and error prone and hence needs to be improved through automation.

2] Near-infrared (NIR) spectroscopy[4] has been used to quantitatively predict the concentration of various constituents in food and agricultural products. Recent studies have demonstrated that NIR models of sufficient accuracy for breeding programs can be developed for prediction of any apparent loose content in milled rice based on principles of transmittance through whole-grain milled or (to a lesser extent) brown rice grains[5] (Villareal et al 1994) and reflectance from ground milled samples [6](Delwiche et al 1995)

3] A machine vision [7] system that is capable of applying the evaluation criteria consistently, objectively and without fatigue would be invaluable tool for grain handling and quality monitoring.

As discussed by Abirami S et al[8], Image Processing can be used to automate the quality analysis and grading, which is a more efficient and reliable. The samples tested will be larger in number as compared with the traditional method which will provide better precision.

With the use of computer vision, Image analysis involves the process of differentiating the granules from the background and extracting quantitative information, which is used further for decision making process. This is a rapid, economic, consistent, objective and non-destructive inspection technique. As a result, it can be used for variety of applications in the agricultural and food industry, including the inspection and grading of grains.

Image processing methods are mainly used in two application areas: improve pictorial information for interpretation; and processing of image data for machine perception, storage, and transmission.

A digital image is composed of finite number pixels, each with particular location and RGB (Red, Green and Blue) intensity value.[9] Colour Image Processing is divided into two major areas:

i. Full Colour where the images are acquired with a full-colour sensor (each pixel colour appears in its primary spectral components of RGB), and

ii. Pseudo Colour, where a particular monochrome intensity is assigned for processing.

III. APPROACH

We are focusing on grain grading using Image processing. As a test case, we can consider Rice grains. However the same technique can be deployed for other grains with some minor changes.

Overall process to analyse rice grains is as below:

1. From a rice grains produce to be checked for quality, small sample of grains are collected. Sample size can be determined using statistical techniques to get accurate results. Currently we are not covering the sample sizing in this paper.

2. Images of the samples are captured either using camera or with help of scanner.

3. These are pre-processed to bring the image to the desired quality.

4. These images are then processed to analyse each of the grains for their characteristics with help of Image Processing Techniques. The characteristics include size, shape, colour etc.

5. Collected data for the complete grain sample is then aggregated and analysed to arrive at the characteristics of the whole sample.

6. The sample is compared against the standards to determine the quality of the rice grain lot.

As per standards, rice is graded [11] based on the sound versus broken grain kernels, their size, colour etc.

A high percentage of sound kernels in a batch of rice usually indicates better rice quality. According to the official inspection criteria (CNS, 1995), the top grade of rice must contain over 75% sound kernels, not over 4% dead kernels, not over 3% chalky

kernels, and not over 3.7% total of damaged, broken, off-type kernels, and paddy (rough rice).

In this process, steps 3 & 4 can be almost completely automated with limited manual intervention using Image Processing techniques. Subsequently steps 5 & 6 can be automated with standard data aggregation, analytics and reporting techniques.

IV. METHODOLOGY

The methodology to capture and process the images is detailed here:

1] For any image, to compute the size of objects within the image, we need some calibration mechanism to get correct sizes.

While capturing images using a camera, either a fixed set-up with predefined calibration has to be used or a calibration scale may need to be added in the image for dynamic calibration at image level.

Alternatively we can use scanner to scan images of the grains and the scan density (dpi for the scan) provides the calibration for sizes of various objects in the image.

We are using scanning as the option to capture the images.

2] Convert the image into gray-scale and identify the objects based on appropriate thresholds.

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3] Using Edge Detection techniques and algorithms, identify the complete object individually. We are using Canny Edge Detector with a Gaussian blur, a gradient operator , non-maximum suppression and a Hysteresis may be applied. Unwanted objects and noise is filtered out using appropriate setting for these parameters.

4] The intensity gradient of the Image is obtained to detect the horizontal, vertical and diagonal edges.

5] After the edge detection, feature extraction is done using dimensionality reduction. Feature extraction starts from an initial set of measured data and builds derived values (features) intended to be informative, non redundant, facilitating the subsequent learning and generalization steps, in some cases leading to better human interpretations. Details such as length, breadth, colours for each Rice Grain are extracted. This information may further be processed to arrive at required features that allow us to grade the grains.
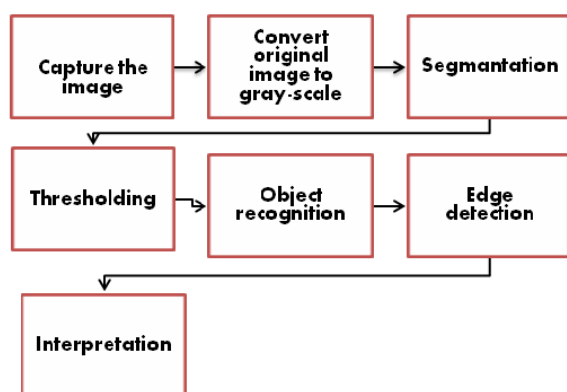
V. LIMITATIONS

We have built a basic prototype, which processes scanned images of rice grains and captures length and breadth for each rice grain. This needs to be enhanced further to capture colours and other characteristics to categorize them as per the standards of grading.
Limitations of this automation will be, that only a finite number of samples can be collected for the processing. Optimum Sample Size is a key for effective deployment of the suggested approach.
Input Grain Image is 2-dimensional. This may impact correct capturing of some characteristics.

VI. CONCLUSION & NEXT STEPS

Based on the maturity of the Image Processing techniques and our initial prototype, we believe significant automation can be implemented. This method can be effectively deployed to replace the current manual work to a large extent. It will reduce the human error and help in making the grading of grains effective and efficient.

While we are building this for Rice grains, it can be easily modified for other types of grains such as maize, bajra etc.

It may even be further improved to perform more complex tasks apart from the simple information extraction using the data mining and fuzzy logic techniques for the processed data.

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SkinLesionDetection – An Image Processing Approach

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Abstract—**In this study, we investigated a Smart Phone and computer support diagnosis system for skin cancer detection problem. Early skin lesion detection of skin cancer has the ability to reduce the rate of incidence of a disease and reduce state of being subject to death. There are various diagnostic technologies and tests to diagnose skin cancer. Conventional diagnosis method for skin cancer detection is Biopsy method. It is done by removing or scraping off skin and that sample under goes a series of laboratory testing. We are approaching towards a mobile imaging system for early diagnosis of melanoma. Different from previous work, we focus on smartphone captured images, and proposea detection system that runsentirelyona Computer. Smartphone capture dimages taken under any environment introduce new challenges for melanoma detection, which performed on the smartphone is subject to capture high resolution clear images. We propose new features to identify border irregularity which are useful for doctors. Our evaluation confirms the effectivenes sofproposed algorithms and features. In addition, we present our system prototype which computes selected visual features from a user-captured skinlesion image, and analyzes them to estimate the likely-hood of malignance, all on Computer.**

I. INTRODUCTION

Melanoma is the deadliest form of skin cancer.It is responsible for the majority of skin cancer related deaths. Most cases are curable if they are detected early. However, in some countries, due to lack of patients awareness and delayed or missed diagnosis by primary care physicians[3].There is a need for an accessible and accurate pre-screening solution to improve the general awareness. Now-a-days, smartphones are equipped with good processing power and high resolution image sensors. All this creates the opportunity to use a smartphone to analyze a captured image for disease diagnosis and self-screening for early detection of melanoma.

Several automaticm elanoma diagnosis systems have been proposed in the literature[1].However, they focus on dermoscopic images as well as mobile phones for dermoscopic image analysis. Dermoscopic images are taken with the aid of liquid medium or non-polarized light source and magnifiers, underwell-controlled clinical conditions. Dermoscopic images include features below the skin surface, which cannot be captured with normal camera sequipped in smart phones , as in our work[9].However, to detectlesion, they use da very basic thresholding method. To describe lesion, only simple color feature and border features extracted also focuses on images taken from mobile camera[2].

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Generally,an automatic melanoma detection system can be divided into three main stages of segmentation ,feature extraction, and classification.

The first stage aims to determine lesion region from image. There are several common method stop erform lesion segmentation[8],[1]:histogram thresholding, clustering, edge-based, region-based, and active contours. Among these methods, histogram thresholding and region based are most often used. Histogram thresholding methods use image histogram to determine one or more intensity values for separating pixels into groups. The most popular thresholding method for lesion segmentation is Otsu's method(gray scale method)[5].Region-based-methods form different regions by using region merge or region split methods.

These cond stage aims to extract features described the lesion. There are many methods proposed such as pattern analysis, Menzies method,ELM7-point checklist, etc.[7].However, most of these methods are usually applied to images taken from a dermatoscope. Form elanoma, the most important warning sign is a new or changing skin growth. It could be a new grow thora change in the color, size or shape of a spot on the skin. To help people can self-examinations their skin, American Academy of Dermatology promoted a simple method called" ABCDE"[4]corresponding to Asymmetry(A) is one half of the tumor does not match the other half, Border Irregularity(B)is the unevenness so images, Color(C)intensity change in the lesion region is irregular, and Dermoscopic Structures (D) focuses on five structural features they are network, structureless areas, branched streaks, dots and globules. Using the Evolution(E) of the lesion over time as an observable indication of Melanoma.

The final stage of automatic melanoma detection is to classify extracted features of lesions into either cancerous or noncancerous.

II. METHODOLOGY

The methodology uses image processing techniques. The dermoscopy or smartphone image of skin cancer is taken and it is subjected to various pre-processing for noise removal and image enhancement.It is challenging to achieve accurate segmentation of skin lesions from smartphone-captured images under loosely controlled lighting and focal conditions. Such features are extracted using feature extraction technique–Graylevelco-occurrence matrix. It classifies the given data st into cancerous or non-cancerous.

1)Dermoscopy or SmartPhoneImage:
Dermoscopy is also known as Dermatoscopy or Epiluminescence Light Microscopy(ELM)[1].The image obtained from such a dermatoscope is called DermoscopicImage. Smartphone-captured images are taken under loosely-controlled conditions and any environment.

Fig. 1: Image Sent From Smart Phone

2) Converting to gray scale:
The standard image size is taken as 180x180 pixels. Before preprocessing, the color cancer image converted into gray scale image by eliminating hue and saturation. The algorithm is to convert RGB values to gray scale

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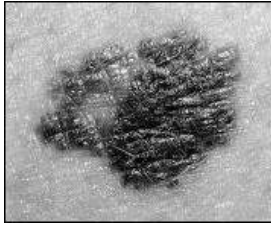values by forming a weighted sum of R, G and B Component [10].

Fig.2: Anisotropic Diffusion

3)Anisotropic Diffusion:

The Dermoscopic Images are in Digital format. Pre-processing is done to removes the noise, fine hair and bubbles in the image. The Hair removal is done here by using *Anisotropic Diffusion*.

Anisotropic Diffusion performs the following steps:
1.It identifies the dark hair locations by a generalized gray scale morphological closing operation.
2.It verifies the shape of the hair pixels as thin and long structure, and replaces the verified pixels by a bilinear interpolation.
3.It smooth's there placed hair pixels with an adaptive median filter.

(*a*)*Withhair(b) Withouthair*
Fig.3:AnisotropicDiffusion

4)Canny Edge Detection:

The Canny edge detect or is an detection operator that use samulti-stage algorithm to detect a wide range of edges in images.

Fig. 4: Canny Edge Detection Image

It was developed by John F.Cannyin1986.An edge in an image may point in a variety of directions, so the Canny algorithm uses four filters to detect horizontal, vertical and diagonal edges in the blurr edimage. The edge detection operator(Roberts, Prewitt, Sobel for example)returns a value for the first derivative in the horizontal direction(G_x) and the vertical direction(G_y).From this the edge gradient and direction can be determined:

$$G = \sqrt{{G_x}^2 + {G_y}^2}$$

$$\Theta = \operatorname{atan2}(G_y, G_x),$$

Where G can be computed using the hypot function and atan2 is the arc tangent function with two arguments. The edge direction angle is rounded to one off our angles representing vertical, horizontal and the two diagonals(0,45,90and135degreesforexample).

An edge direction falling in each color region will be set to a specific angle values, for example alphalyingin yellow region(0to22.5degreesand157.5degreesto180degrees)will be set to 0 degree[10].

5)Genetic Color Detection:

In the field of artificial intelligence, a genetic algorithm(GA) is a search heuristic that mimics the process of natural selection. This heuristic(alsosometimescalledametaheuristic)isroutinelyusedtogenerateusefulsolutionstooptimizationandsearchproblems[10].
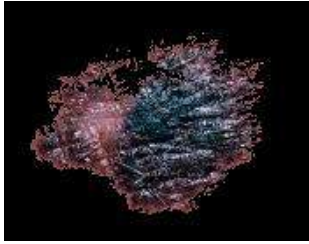
Fig. 5:Genetic Color Detection Image

6)*GVFSnake:*

Active contour model, also called snakes, is a framework in computer vision for delineating an object outline from a possibly noisy 2 Dimage. The snakes model is popular in computer vision ,and snakes are greatly used in applications like object tracking, shape recognition, segmentation, edge detection and stereo matching[10]. With this method, we get an rough idea of the Skin lesion growth (Fig.6) and edge of the Skin lesion (Fig.7).

The gradient vector low(GVF) snake model addresses two issues with snakes:

(a) Poor convergence performance when snake is initialized far from minimum.

Fig.6: Trace lesion form Inside to Outside

(b) Poor convergence performance for concave boundaries.

Fig.7: Trace lesion from Outside to Inside

7)*SnakeLevelSetMethod:*

Level Sets are an important category of modern image segmentation techniques are based on partial differential equations(PDE),i.e. progressive evaluation of the differences among neighboring pixels to find object boundaries. Ideally, the algorithm will converge at the boundary of the object where the differences are the highest[10]. Through Snake Level Set Inside to Outside method (Fig.8), we can predict the evolution of skin lesion from initial stage and from Snake Level Set Outside to Inside method (Fig. 9), we can get clear outside edges of the skin lesion.
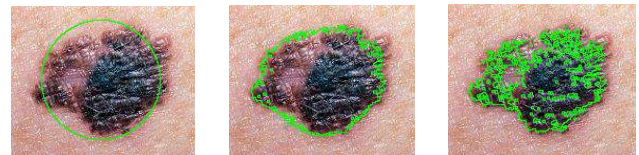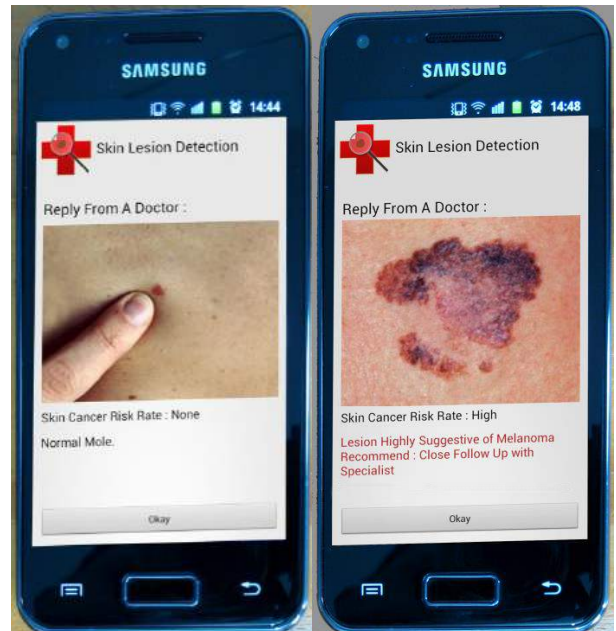

Fig.8: Snake Level Set Inside to Outside

Fig.9: Snake Level Set Outside to Inside

The final stage of melanoma detection is classified into either cancer or non-cancer by a doctor through replying back to Patient Smart Phone.

(a)(b)

19

Fig.10: Screen shot of application. (a)Is anon-cancer sample.(b)Is a cancer sample.

III.   CONCLUSION

A Smartphone and Computer aided skin cancer detection system can achieve a new discovery of detecting benig normal ignant skin lesions and separating them from healthy skins. The diagnosing methodology uses Digital Image Processing Techniques for the classification of Malignant Melanoma from benign melanoma. Dermoscopic images were collected from different sides and they are processed by pre-processing.

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E-mail Clustering using pattern matching

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Abstract-- **Email is an effective and popular way of communication today, by considering this fact we are going to develop Email clustering system which will save the time of user by accessing emails in group according to user requirements. An email can be represented as an Object consisting of several attributes like sender email-id, receiver email-id Subject, message, sending-time, and attachments etc. To accomplish this task we are making use of Label Induction Grouping Algorithm (LINGO), System will create LABEL (Appropriate Cluster name) of emails according to content of email message body, which will help users to access emails in easy and fast way.Managing More than One E-mail Service Providers(i.e. Gmail, Yahoo, MSN Hotmail).**

Keywords:- *Clustering Of Emails; Lingo Algorithm; Single Sign-On; SMTP; POP3.*

I. INTRODUCTION

Email is inter and intra organizational written communication for many companies. Email is an easiest and best form of electronic messaging service. Due to this, the use of email is increasing extensively day by day. The main source for official messages nowadays is email service. As per survey, it is found that, a normal human spends 90 min of his/her day on email. A person gets so many emails from different sites. But they are not in clustered form; the proposed system will help to cluster these data and will generate a meaningful label. Lingo algorithm is a very powerful clustering technique for generating clusters and labels.

The growth of the Internet has led to an explosion in e-mail traffic and in number of the users of e-mail service. At the same time, many large-scale e-mail service providers have appeared. They have hundreds of millions of subscribers and process billions of messages: for example, in May 2001, Hotmail had over 100 million users and Yahoo! Mail, in March 1999, served 45 million users with 3.6 billion mail messages [1][2]. Thus email has been an efficient and popular communication mechanism as the number of Internet users increase. Therefore, email management is an important and growing problem for individuals and organizations because it is prone to misuse. So clustering is used to group different emails so that it can be represented in a well-organized manner.

A. *Email as a database*

Email is comprised of various types of attributes such as sender-id, receiver-id, subject, message body, cc, bcc, date and time, attachments etc. and when many emails come together in the mail-box it forms a large group of messages.

B. *Email Mining*

Email mining is a process of discovering useful patterns from emails. Data mining is the process of discovering new patterns from large data sets involving methods from not only statistics and artificial intelligence but also from database management. There are number of applications of email mining today. Some of the interesting email mining applications are email categorization, summarization, Text mining is nothing but performing various searching functions, linguistic analysis and categorizations, applying various algorithms etc. to find the similarity in texts.

C. Clustering Email

Clustering is a technique to create groups of similar email or objects according to user requirement and put it into different folders and when it is used in email mining it is called as email clustering. In email clustering subject-based folders can be automatically constructed from a set of messages. In this case, the main aim is to acknowledge same clusters. This paper concludes that an email clustering approach is proposed to show text similarities. The proposed technique shows the email attributes and how the text similarities are used to cluster the users [3].

Existing System

There are many mail service providers on internet today like yahoo, MSN etc. Mails being one of the most popularly used service by all sector of life, corporate as well as personal to contact each other. Users have mail accounts on different mail servers. One cannot access email from other mail servers in existing mail accounts.

Disadvantages Of Existing System
The disadvantages of current system are
1) Remember different User-Id and Passwords.
2) Waste of time creating new sessions of each service providers by logging into their respective domains.
3) More waste of Bandwidth and download capacity.
4) People cannot access mails from different mail server at the same time from a single server.
5) Labels can be generated manually only[3].

II. PROPOSED SYSTEM

The proposed system is Email Clustering System Using Lingo Algorithm which includes single Sign-In. In our proposed system third party server forms clusters according to the content of the emails that are available in Inbox. It is a desktop based application in which it will first fetch the emails from inbox and then forms cluster, to form the clusters we are using Lingo algorithm For Single Sign–On, the user will have to initially enter the username and passwords of all the email accounts he wants to access with a single login. The system will generate a unique user id and password for the user and after that the user can access all the other mail accounts with a single login, without switching from one email account to other.

Architecture:-
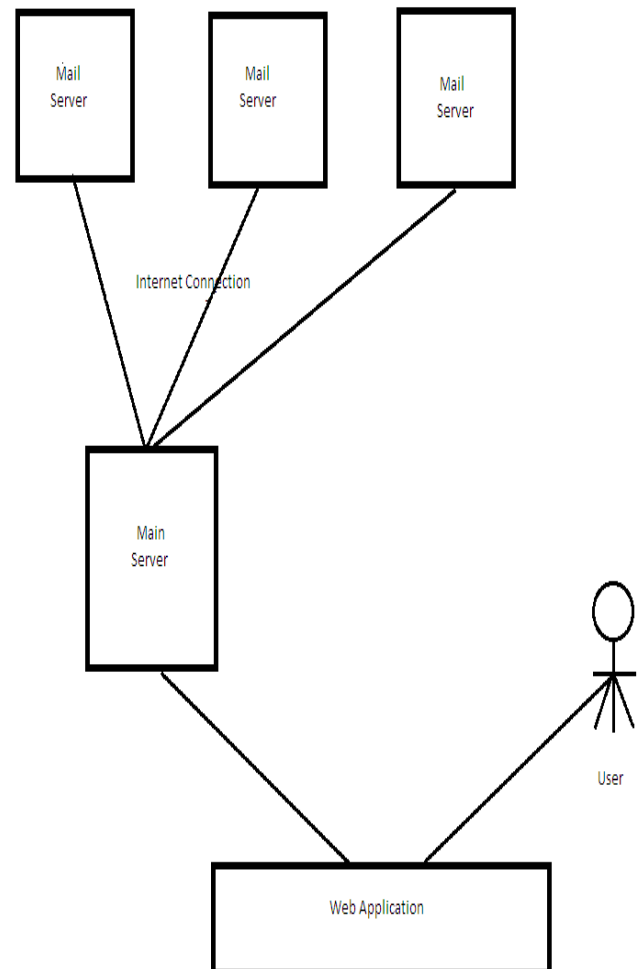
III. APPROACH

Clustering is the most important aspect in electronic communication nowadays. Because it's necessary to group large amount of data, a particular group called cluster. Osinski developed lingo algorithm which is a latest clustering algorithm. LINGO follows description comes first approach it means that first the labels are created in this algorithm and

then the documents are arranged under that particular label. Unlike earlier approaches where first groups are formed and then the label is created[4].

IV. METHODOLOGY

LINGO ALGORITHM

A brief algorithm of the current Lingo is given below:

1) Preprocess documents

- Extract frequent phrases and single words as cluster label candidates.
- Determine the assigned documents for each label candidate.
- Filter out the label candidates that contain less number of documents than the minimum cluster size threshold.

2) Build the term-document matrix using the stems of the label candidates (except the stop words in the label candidates)

3) Reduce the term-document matrix to the term-abstract concept matrix according to the desired cluster count base threshold.

4) Match the abstract concepts with the cluster label candidates.

5) Select the cluster label candidates that matched with an abstract concept as the labels of the determined clusters.

6) Merge clusters that share higher percentage of documents than the cluster merging threshold.

7) Form the final clusters for presentation [1].

V. Conclusion and Future Scope

This paper concludes that an email clustering approach is proposed to show text similarities. The proposed technique shows the email attributes and how the text similarities are used to cluster the users. The mails will be finally in a clustered format so as to minimize the job of searching for the users. Hence this will also reduce the consumption and make browsing user friendly.

The future scope of the work could be incorporating the similarity of the email attachments applying the proposed email similarity function for the more email mining operations like thread summarization and finding similarity between images in attachments.[2] and extra feature is voice enabled commands application its helps for handicap .

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Virtual Medical Assistant For Assisting Doctors During Prognosis

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Abstract:
Today when healthcare industry is growing at enormous rate and becoming more advanced, but drug awareness & marketing system used by pharmaceutical companies is age old which is costly and time consuming yet not perfect.
Our project web-based application will be designed to facilitate Pharmaceutical Companies
and Doctors. We are designing an online web-based application, which will maintain a huge database of all the drugs available in the market. This application is mainly for doctors. The doctors can free to access the drug information related to their field of specialization even online and also offline. The idea behind the project is very simple by updating our database regularly.

Advantages:

Virtual Medical Representative is used in both the medical and dentistry fields where it has several advantages over conventional systems. The dental applications of this technology are discussed in more detail in our VMR in dentistry section.

This case study looks at the adoption of virtual medical representative by the doctors in their profession who use it to train doctors (intern) in hospital and other similar environments.

Healthcare is one of the biggest adopters of virtual medical representative which encompasses surgery simulation, phobia treatment, robotic surgery and skills training.

The doctors themselves can use this application for getting the knowledge of a particular disease and their prescriptions.

Introduction:

eClinicalWorks
"Improving Healthcare Together"   [1]

ClinicalWorks is committed to making a change by dedicating our professional careers to improving healthcare by providing technology and services to reduce costs, reduce errors and improve the quality of care. eClinicalWorks is a privately-held, leader in ambulatory clinical solutions. Its technology extends the use of electronic health records beyond practice walls and creates community-wide records. [1]

Roles:

Medical sales representatives (widely referred to as 'reps') are a key link between medical and pharmaceutical companies and healthcare professionals. They sell their company's products, which include medicines, prescription drugs and medical equipment, to a variety of customers including GPs and hospital doctors, pharmacists and nurses. They work strategically to increase the awareness and use of their company's pharmaceutical and medical products. [2]

Concept:

The idea behind our project is very simple by updating our database regularly when new drug or medicines are invented. The doctors can also check if new drugs or medicines are invented. The doctors can also give feedback for the drugs or medicines. So that the admin will know that the updated medicines are good or not. For using this web based application doctors should have an internet connection and basic knowledge of the computers which now days all might have.
[2]

Implementation:

The virtual MR is developed to improve efficiency of doctors who will using the system.
The system will be greatly benefits to the doctors. In this admin can enable to update newly invented medicines in the database and the doctors can view this medicines after update the database The doctors can submit their feedback about the medicines . This system is time saving for both doctors as well as MR. Doctors can also see the various information about medicines like single generic means medicine are made from the only one product, combination generic means medicine made from the combination of the two or more product, combination of the two or more product, manufacturer company, price of the medicine.
[4]

Benefits:

i. A medical representative provides the link between the manufacturer and the prescriber. But the fact remains, that a single MR cannot reach all the doctors at the same time, and by the time the MR would meet the doctors other companies might come up with the same or the better product. This is a loss to the pharmaceutical company that discovered it first. [2]

ii. If the MR's from the different pharmaceutical companies visit a doctor at the same time it would waste a lot of time of the doctors.

iii. The virtual medical representative can be of help to doctors who have taken great pains to setup a clinic in the remote villages of India.

Conclusion:

The project entitled 'Virtual Medical Representative' is very useful for the doctors Department. The project was designed, implemented & tested successfully. The system developed is found to be working efficiently and effectively. This system regularly and timely updates the databases. It can be observed that the information can be obatained easily and accurately. The project provides much security. The simplicity and the friendliness are the advantages of this project. The system is made user friendly to the maximum so that any doctors can use the system provided he could access to the system via the login password. This project has some future enhancements in the blooming IT industry.
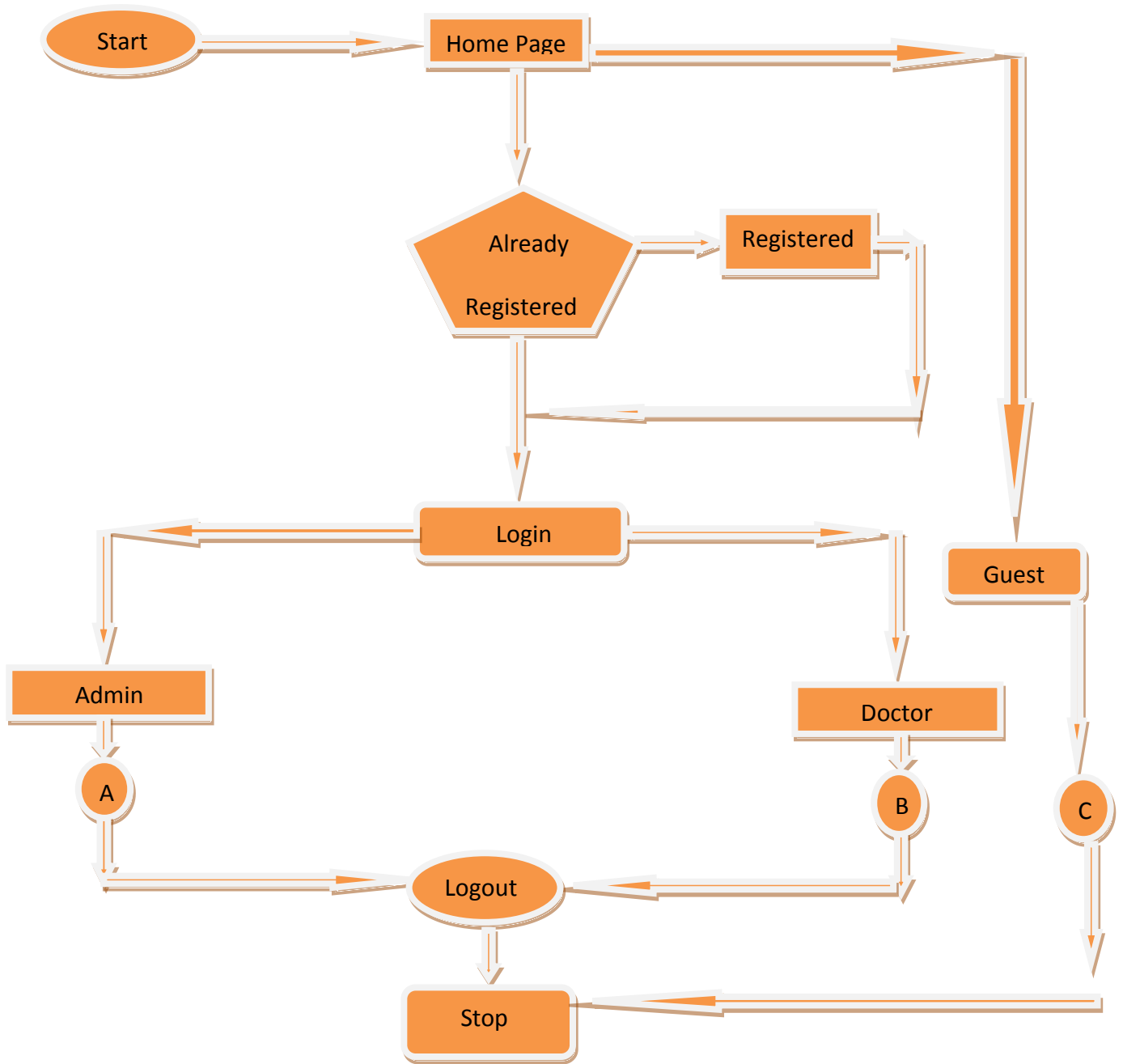
Fig: Working Of Virtual Medical Representative   [2]

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RFID Card and Android app based one card travel cashless ticketing for Public Transport System: Mumbai

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Abstract:- The Paper based on public transport ticketing system, in the metro city Mumbai (India). introduces severe malfunction in the system, malicious argument among public, corruption and most of all loose coins or tendering exact change towards the fare. This paper actually suggests a much more public friendly, automated system of ticketing with the use of RFID based smart card (one card travel) ticketing for BEST buses, Taxis, Auto-Rickshaws & Android application based ticketing for local railway train. The total system mainly acts to bring out the consistency among BEST buses, Mumbai Local Trains, Taxi Service & Auto-Rickshaw agencies that will conclude in uniform access of passengers in daily rides by using RFID card & Android app.

Keywords:- RFID card ticketing, SMS ticketing, Android application ticket system.

I. INTRODUCTION

As for the RFID application, it's been a widespread tool for transit transports and for the public ticketing system. It's already been an outstanding achievement throughout the globe including big cities like London, Helsinki, Shanghai, Istanbul, Moscow, Porto and many more. The system can be implemented for subways, railways and public bus services for the sake of systematic operations in corresponding cases.

In the metro city Mumbai, the conventional system of public transport is based on paper based bus or railway tickets that ultimately lead to chaos among public, system loss, corruption and most of all problem of loose coins or tendering exact change towards the fare that is responsible for a huge wastage of time. There are different Smart cards (RFID Cards) for BEST buses & Mumbai Local Trains. And till now we are following the same system to pay the fare of Taxi's & Auto-Rickshaw in Mumbai, in this loose coin problem occurs. To get rid out of this multiple smart cards problem, this paper is suggesting only one smart card (RFID based – one card travel) for all Public transportation (Local Train, BEST Buses, Taxis, Auto-Rickshaws) in Mumbai City. And an android based application to recharge this smart card and to print e-ticket for the Mumbai local trains. Due to the android based local train ticket facility there will be no queue for ticket in front of ticket counter or in front of ATVM machine. Each and every one can buy a ticket by using their smart card (RFID card) unique no in their android application.

The ticketing systems using RFID can be merged to solve the prevailing problems. Even though the Android based application can be designed to recharge those Smart cards (RFID cards). The RFID based tickets has easy operation, portability, reliability and user friendly features.

II. SYSTEM DESCRIPTION

Radio Frequency Identification (**RFID**) technology uses radio waves to identify people or objects. An RFID System consists of a RFID card which consists of microchip in it which will record the users balance & it will keep updating it using RFID card reader machine. User's photo, name & some basic information printed on the one side of card. See figure 1

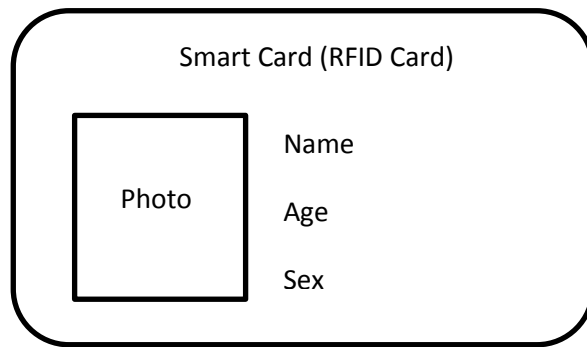Figure 1 Smart Card (RFID Card)

RFID card reader machine which will scan the user's smart card (RFID card) While traveling in BEST buses, user can use this card for purchasing tickets for desired destinations. Amount equivalent to the ticket amount will be deducted from the card instantly. And the message of ticket will be send to users mobile with the balance amount.
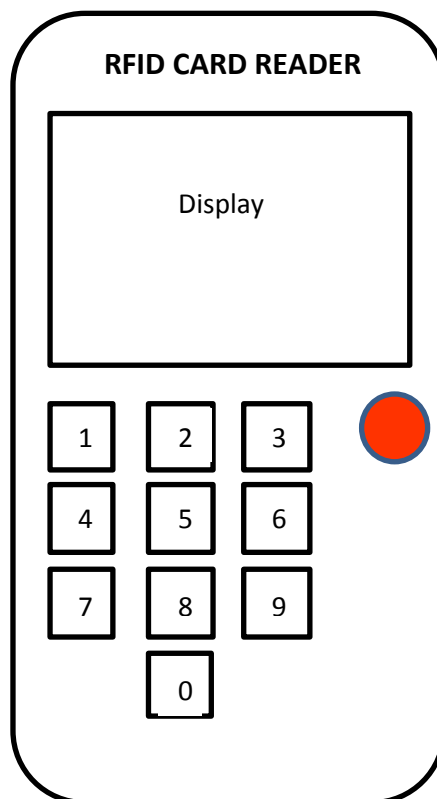

Figure 2 RFID Card Reader

Now, in taxis & auto-rickshaws the fare (RFID Card), by scanning the card and putting correct amount in the RFID card reader machine. Amount equivalent to the fare amount will be deducted from the card instantly. And the message of deducted amount will be send to users mobile with the balance amount.

For Mumbai Local Train tickets user has to Login with given ID and Password to the RFID card Android based application. In this application User has to put the Source station and the destination station, and the smart card (RFID Card) unique numeric number in it for the money transaction. So the amount equivalent to the ticket amount will be deducted from the card instantly. And the message of train ticket will be send to the users mobile with balance amount.
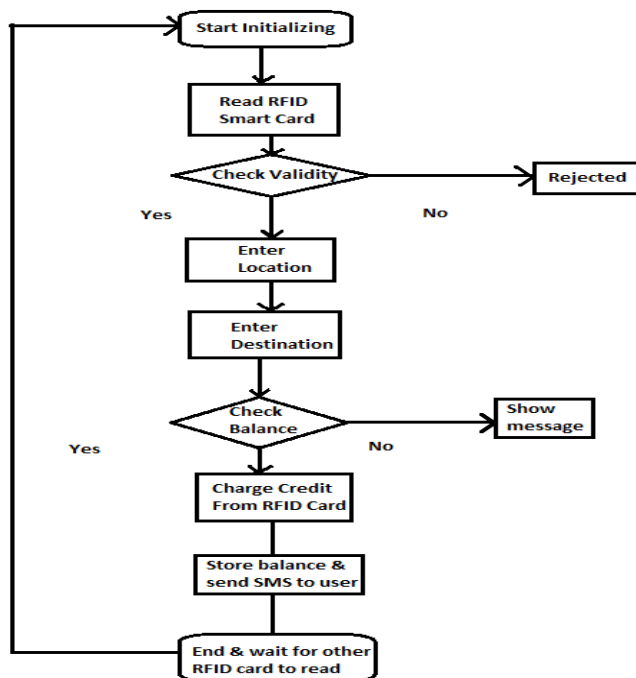
By using this RFID Android based application user can also recharge the smart card (RFID Card) online.

III. COMPARISON & BENEFITS OVER CONVENTIONAL SYSTEM

charge can be paid using this smart card

In conventional paper based ticketing, each & everyday lots of tickets are being printed and sealed showing that date manually by the person sitting in the bus or waiting for train. After finish travelling, the passengers usually through away the used paper made tickets here & there which ultimately pollutes the environment. Again large number of trees is being destroyed since the current system uses paper based ticketing and the used tickets are just wasted. But in our proposed system the RFID card carried out by the passengers does everything automatically and eventually reduces these mentioned complexities. As the Smart card (RFID Cards) tickets are based on message service, so it saves the paper & helps the environment.

Using automatic ticket systems enables operators such as transportation authorities to save time and personnel costs; fare collection can be organized much more efficiently. These systems low maintenance costs.

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IV. CONCLUSION

The system is expected to be fully automated, reliable, transparent and convenient. The whole system can also be used in Taxi's, Auto-rickshaw, railway ticketing system with small or no modification. They are much more convenient compared to the paper based ticketing system. The Smart card (RFID Card) will save paper due to ticket messaging system, loose coins problem. The RFID Based Android Application will save lots of time of queue for Mumbai local train tickets. Also it is very easy to recharge.

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Click 'N' Drive

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Abstract— Many distractions exist while driving, but cell phones are a top distraction because so many drivers use them for long periods of time each day. Vision is the most important sense for safe driving. Yet, drivers use their mobile phones and have a tendency to "look at" but not "see" objects. This paper proposes a handy android application which will allow the driver to not miss out on his important calls and still driving safely on road. Since Android is used worldwide this application will help all the android users while driving. Whether the driver is driving a four wheeler or two wheeler, this application will take care of the incoming calls.

Keywords-Android, Driving, safety, safe driving

I. Introduction

Driving on two wheeler or four wheeler, it is very important from driver's perspective to drive vehicle safely on the road. But while Driving there will be lots of distraction. "Mobile Phone" is one of the biggest distraction of the Driver especially teens now-a-days while driving the vehicle. It can make major Disaster when Driver attends his/her phone calls suddenly and it will create maximum amount of risk when the driver receives the call. So to protect ourselves and make your journey safe, we are introducing an Android Application "Click 'N' Drive" which will help Driver to not miss out on important calls and avoiding risk while Driving.

In this paper we are proposing our idea to overcome disaster for Driver so that Driver can Drive with minimum distractions.

II. Existing System:

There are a few applications available on google play store related to the safe driving having a few features. Some of them provide with the feature for VIP Phone Calls while other provide with auto generating Text Messages.

There are few applications available on Google Play Store which are as follows:

1. Safely Go: This application only allows VIP numbers and there are automatic text replies to the callers.

   Limitations: Other than VIP numbers no phone calls will be answered and there is no location and timer concept.

2. Drive safely-drive carefully: reads the text messages and emails to loud.

   Limitations: Important calls will go unanswered.

3. Safe Driver: According to GPS Location it will determine the incoming calls and text messages when is the car stopping and when the car is moving.

   Limitations: If the car is moving the calls will go unanswered.

Overcoming most of the limitations our application will try to provide the best safety.

III. Background:-

There are lots of different applications which are available related to safe driving now-a-days. It will help Driver to protect against an Accident. But there is no as such application which can provide safety for "TWO wheelers" driver and "FOUR wheelers" driver in that same application.

Our Application is based on ANDROID operating system. The operating system which can understand almost all the mobile phone users.

Our important UNIQUE point of our application is that we are providing our application for both "TWO Wheelers" as well as for "FOUR Wheelers" driver with AUTO Answering the in-coming calls with the pre-recorded audio.

IV. PROPOSED SYSTEM

Our Application is based on ANDROID operating system. The operating system which can understand almost all the mobile phone users.Maintaining the Integrity of the Specifications

For building this application we are using Eclipse Juno IDE with Android Development Toolkit. In SDK manager we need to install different API's according to different versions of Android Operating System. Well, API is for development, so the changes in new API version are more "inside". But new version of Android usually adds more features for users, that are "visible". The framework API that an Android platform delivers is specified using an integer identifier called "API Level". Each Android platform version supports exactly one API Level, although support is implicit for all earlier API Levels (down to API Level 1). The initial

release of the Android platform provided API Level 1 and subsequent releases have incremented the API Level.

User can select Black List phone numbers and the application will answer the phones using a pre-recorded audio or if driver doesn't choose to answer the phones depending on your vehicle and the options selected, respective actions will be taken. Hence causing less distraction to driver from his Android SmartPhone. He can then set the source location and the destination location with timer set in reaching the destination location.

V. WORKING
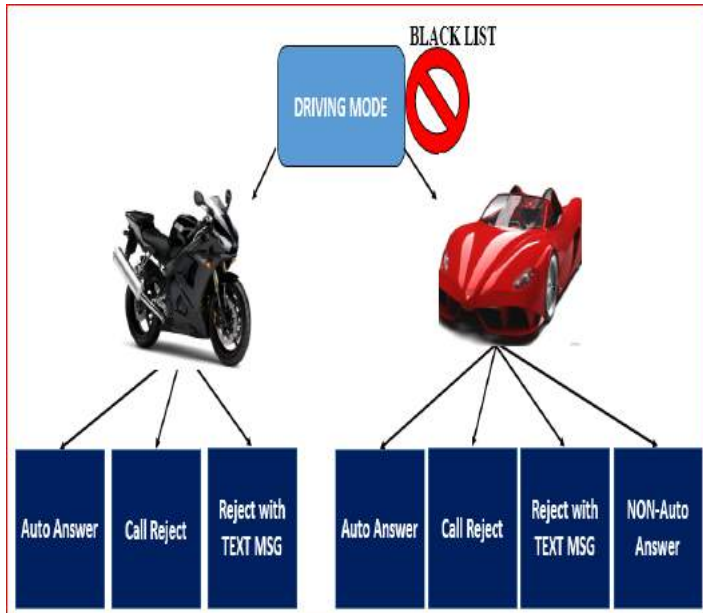
The Basic idea or we can say that the Actual Working of this application is as follows:-

a) Driver first needs to switch on the Application which means the Driver will activate the "DRIVING MODE".

b) Then he can set the Blacklist Phone numbers, These phone numbers in "Blacklist" won't be answered while the mode is still on. He even gets the options if he wants to set Whitelist Phone numbers, these phone numbers are in other words VIP numbers which get the highest Priority.

c) Driver can select any one from the following options:

    A. Accept All.

    B. Reject all from Blacklist.

    C. Accept only Whitelist.

d) Then Driver has to select the vehicle, he can select any one from the following:

A. TWO Wheeler.

B. FOUR Wheeler.

e) If he selects Two wheeler he gets following options:

A. Reject Call:

Drivers incoming calls will be rejected.

B. Reject Call with a Text Message:

Drivers incoming call will be rejected and Text message will be sent to the caller saying "I am Driving at the moment. Will Call you Later".

C. Auto Answering with the pre-recorded audio:

When there is an incoming call on the drivers phone, after 5 seconds Automatically the call will be received and the pre-recorded audio will be played to the caller. The audio will be inform that "I am Driving at the moment, call me later after some time".

f) After selecting Four wheeler he gets the following options from which he has to select any one:

A. Reject Call:

Drivers incoming calls will be rejected.

B. Reject Call with a Text Message:

Drivers incoming call will be rejected and Text message will be sent to the caller saying "I am Driving at the moment. Will Call you Later".

C. Auto Answering with the recorded audio:

When there is an incoming call on the drivers phone, after 5 seconds Automatically the call will be received and the pre-recorded audio will be played to the caller. The audio will be inform that "I am Driving at the moment, call me later after some time".

D. No Auto answering with Prerecorded Audio:

Drivers incoming call after five seconds, the call will be received automatically and the speaker on the receiver's phone will be activated.

g) Then the driver will be asked if he wishes to set the timer, he can set the time i.e approximate time which he will take to reach the destination. For example he writes 20 minutes then after 20 minutes there will an alert popup on his phone that "Would you continue in this mode", if the answer is yes i.e if he clicks the "YES" button then this mode will be continued and if the answer is no i.e if "NO" button is clicked driving mode will be switched off.

Suppose the application doesn't receive any reply from driver till 60 seconds then the phone will be continued in driving mode.

h) Driver will also be asked to if he wishes to set the source and destination location, once he sets the location, as soon as he reaches the destination an alert popup will be shown "would you like to continue with this mode?" if he clicks "YES" button this mode will be continued else "NO".

FUTURE ENHANCEMENTS

After the first update of this application, the incoming text messages will be read out loud implementing text-to-speech machine and also while driving the only applications which will be allowed to access will be Maps and Navigation, no other application will be granted access.

CONCLUSION

Click 'N' Drive is a handy android application which will avoid distractions to driver from his phone and concentrate on his Driving and not even missing out on important calls.

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August 20–22, 2014 • San Diego, CA
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Graph Theory and Python

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Abstract

Graph mining is becoming an important development of data mining research. A set of nodes or vertices are connected through links forming social network. Analysis of such a net work may yield descriptive and predictive information. Characteristics which describe such networks are elaborated. Mining for particular sub-graph give information in different domains .Our project deals with flight routes in python language. It will help us giving us the information about the specific flights and also fetch us the routes pertaining to query. The graph will involve source and destination airports as the nodes and the links or edges will be characteristics such as Flight fare, Flight timing ,Flight distance and so on .In future techniques can be developed which will give aggregation of such sub-graphs (Bottom-Up approach) to create super-graphs. One may think of applying this technique to create roots for BRTS in new planned Smart Cities.

Introduction

Graph Theory

Let V be a finite set, and E(V) = {{u, v} | u, v ∈ V, u ≠ v} .
The 2-sets of V, i.e., subsets of two distinct elements denoted by E(V).
DEFINITION. A pair G = (V, E) with E ⊆E(V) is called a graph (on V). The elements of V are the vertices of G, and those of E the edges of G. The vertex set of a graph G is denoted by VG and its edge set by EG. Therefore G = (VG, EG). In literature, graphs are also called simple graphs; vertices are called nodes or points; edges are called lines or links. The list of alternatives is long (but still finite).

A pair {u, v} is usually written simply as uv. Notice that in many casesuv = vu, but not necessarily. In order to simplify notations, one also write v ∈ G and e ∈ G instead of v ∈ VG and e ∈ EG.
DEFINITION. For a graph G, we denote νG = |VG| and εG = |EG| .
The number νG of the vertices is called the order of G, and εG is the size of G. For an edge e = uv∈ G, the vertices u and v are its ends. Vertices u and v are adjacent or neighbours, if uv∈ G. Two edges e1 = uv and e2 = uw having a common end, are adjacent with each other.

A graph G can be represented as a plane figure by
drawing a line (or a curve) between the points u and
v (representing vertices) if e = uv is an edge of G.
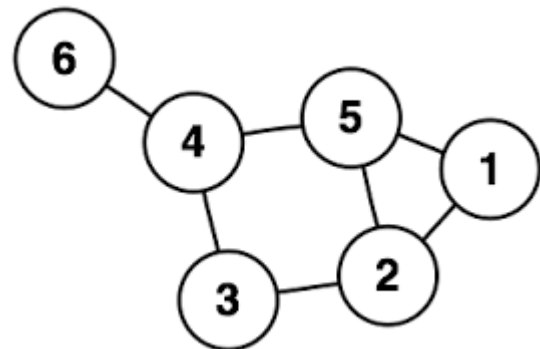The figure in themiddle is a geometric representation
of the graph G with figure 1.

Figure 1.

VG = {1, 2, 3, 4, 5, 6} and
EG = {12, 1 5, 23,2 5, 3 4,4 5, 4 6}.

Social Network Theory

A social network is a **heterogeneous** and **multi-relational**data set represented by a graph. The graph is usually very large, with nodes corresponding to **objects** and edges corresponding to **links** representing relationships or interactions between objects. Both nodes and links have **attributes**. Objects may have class labels. Links can be one-directional and can be binary if required. Examples of social network include electrical power grids, telephone call graphs, the spread of computer viruses, road networks, the World Wide Web, and co-authorship and citation networks of scientists and spread of disease.

Social networks in general exhibits following phenomena:

1. Densification power law: Previously, it was believed that as a network evolves, the number of degrees(total numbers of edges in complete graph) grows linearly in the number of nodes. This was known as the**constant average degree assumption**. However, extensive experiments have shown that, on the contrary, networks become increasingly **dense** over time with the average degree increasing (and hence, the number of edges growing super linearly in the number of nodes). The densification follows the densification power law (or growth power law), which states

$$e(t) \propto n(t)^{a};$$

where$e(t)$ and $n(t)$, respectively, represent the number of edges and nodes of thegraph at time t, and the exponent a generally lies between 1 and 2. Note that if $a = 1$, this corresponds to constant average degree over time, whereas $a = 2$ correspondsto an extremely dense graph where each node has edges to a constant fractionof all nodes.

2. Shrinking diameter: It has been experimentally shown that the effective diametertends to **decrease** as the network grows. This contradicts an earlier belief that the diameterslowly increases as a function of network size. As an intuitive example, considera citation network, where nodes are papers and a citation from one paper to another is indicated by a directed edge.The out-links of a node, v (representing the paperscited by v), are "frozen" at the moment it joins the graph. The decreasing distances between pairs of nodes consequently appears to be the result of subsequent papersacting as "bridges" by citing earlier papers from other areas.

3. Heavy-tailed out-degree and in-degree distributions: The number of out-degrees fora node tends to follow a heavy-tailed distribution by observing the power law, $1=na$,where n is the rank of the node in the order of decreasing out-degrees and typically,$0<a < 2$ (Figure 1). The smaller the value of a, the heavier the tail. This phenomena is represented in the preferential attachment model, where each newnode attaches to an existing network by a constant number of out-links, following a**Figure 2**The number of out-degrees (y-axis) for a node tends to follow a heavy-tailed distribution.

The node rank (x-axis) is defined as the order of deceasing out-degrees of the nod. An example is shown here for social network.
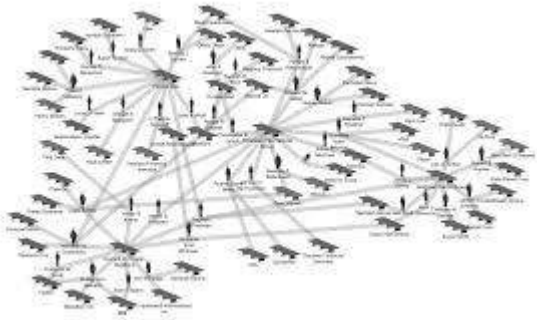
Figure 3: An example of social network.

Python

Python is a clear and concise language with good support for input/output,numeric,images and plotting. Typically, one can develop complex applications in Python very quickly compared to some other languages. It is used in several open source as well as commercial scientific modelling and visualization software packages. It has already gained popularity in industries such as animation and game development studies, Big Data, where the focus is on application development.

Commercial Use Of Graphical System

A few of the commercial uses that we are seeing with graph databases includes:

Social Networking and Recommendations: We've seen a few social network startups begin with relational and learn very quickly that, as they scaled, they needed to move over to a graph database. Most large/successful social networks use graph databases at their core. Graph database provide exceptional power for visualization as many algorithms are available.

Network and Cloud Management: A number of telephone companies are using graph databases to model their networks, in support of network optimization activities and to conduct "what if" failure analysis.

Master Data Management: Cisco recently deployed a new hierarchy management system that handles complex master data, such as organization and product. Because of the flexibility and performance advantages over relational, this system is built on top of a graph database.

Geospatial: The "original" graph use case pioneered by Euler remains alive today. Mobile cell analysis, shortest-path analysis and logistics are three such use cases (among many) where graph databases are currently in use.

Bioinformatics: Era7 Bioinformatics uses graph databases to relate a complex web of information that includes genes, proteins and enzymes.

Content Management and Security and Access Control: Adobe's Creative Cloud uses a graph database to manage access to content and the relationships between users, groups, assets and collections. Telenor, one of the world's largest telcos, brought its login time down from minutes to milliseconds by moving the part of its relational system that handled access control over to a graph database.

SQL VS NOSQL: HIGH-LEVEL DIFFERENCES

- SQL databases are primarily called as Relational Databases (RDBMS); whereas NoSQL database are primarily called as non-relational or distributed database.

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- SQL databases are table based databases whereas NoSQL databases are document based, key-value pairs, graph databases or wide-column stores. This means that SQL databases represent data in form of tables which consists of n number of rows of data whereas NoSQL databases are the collection of key-value pair, documents, graph databases or wide-column stores which do not have standard schema definitions which it needs to adhered to.
- SQL databases have predefined schema whereas NoSQL databases have dynamic schema for unstructured data.
- SQL databases are vertically scalable whereas the NoSQL databases are horizontally scalable. SQL databases are scaled by increasing the horse-power of the hardware. NoSQL databases are scaled by increasing the databases servers in the pool of resources to reduce the load.
- SQL databases uses SQL (structured query language) for defining and manipulating the data, which is very powerful. In NoSQL database, queries are focused on collection of documents. Sometimes it is also called as UnQL (Unstructured Query Language). The syntax of using UnQL varies from database to database.
- SQL database examples: MySql, Oracle, Sqlite, Postgres and MS-SQL. NoSQL database examples: MongoDB, BigTable, Redis, RavenDb, Cassandra, Hbase, Neo4j and CouchDb
- For complex queries: SQL databases are good fit for the complex query intensive environment whereas NoSQLdatabases are not good fit for complex queries. On a high-level, NoSQL don't have standard interfaces to perform complex queries, and the queries themselves in NoSQL are not as powerful as SQL query language.
- For the type of data to be stored: SQL databases are not best fit for hierarchical data storage. But, NoSQL database fits better for the hierarchical data storage as it follows the key-value pair way of storing data similar to JSON data. NoSQL database are highly preferred for large data set (i.e for big data). Hbase is an example for this purpose.
- For scalability: In most typical situations, SQL databases are vertically scalable. You can manage increasing load by increasing the CPU, RAM, SSD, etc, on a single server. On the other hand, NoSQL databases are horizontally scalable. You can just add few more servers easily in your NoSQL database infrastructure to handle the large traffic.
- For high transactional based application: SQL databases are best fit for heavy duty transactional type applications, as it is more stable and promises the atomicity as well as integrity of the data. While you can use NoSQL for transactions purpose, it is still not comparable and sable enough in high load and for complex transactional applications.
- For support: Excellent support are available for all SQL database from their vendors. There are also lot of independent consultations who can help you with SQL database for a very large scale deployments. For some NoSQL database you still have to rely on community support, and only limited outside experts are available for you to setup and deploy your large scale NoSQL deployments.

- For properties: SQL databases emphasizes on ACID properties (Atomicity, Consistency, Isolation and Durability) whereas the NoSQL database follows the Brewers CAP theorem (Consistency, Availability and Partition tolerance)
- For DB types: On a high-level, we can classify SQL databases as either open-source or close-sourced from commercial vendors. NoSQL databases can be classified on the basis of way of storing data as graph databases, key-value store databases, document store databases, column store database and XML databases.

Advantages Of Proposed/Graphical System

"Graph" does not mean "chart." A graph is a mathematical system that can be described in terms of chunks of information (called "nodes") and the relationships between these chunks of information ("edges"). Think of a social network: Individuals (nodes) are linked together by friendships (edges). Or a highway system: Towns (nodes) are linked together by roads (edges).

Different kinds of nodes and edges can be used in the same database to add many layers of meaning. Think of a corporate structure: Employees are nodes, the edges between two people are the relationship — teammate of, supervisor of, subordinate of — and employees can have many different relationships with their fellow employees. Projects can also be nodes, and projects can have edges with people — team member of, project leadof — and edges with other projects — dependent on, replaced by. Many kinds of data are well represented by graphs, but it requires a very different way of thinking about information.

Makes it easier to express many kinds of data that require significant kludging to fit in a relational database. Certain kinds of searches that are very difficult in a relational database (i.e., any search where relationships between different kinds of data are important) are very quick and easy. Easily allows for new kinds of data. Very well suited to the irregular, complex data involved in mapping the "real world."

Python example 1:

```
importmatplotlib.pyplot as plt

plt.plot([10,12,13],[14,15,16])

plt.plot([7,12,18],[9,15,10])

plt.plot([18,12,15],[17,15,14])

plt.plot([14,12,13],[6,15,16])

plt.plot([14,15],[6,14])

plt.show()
```
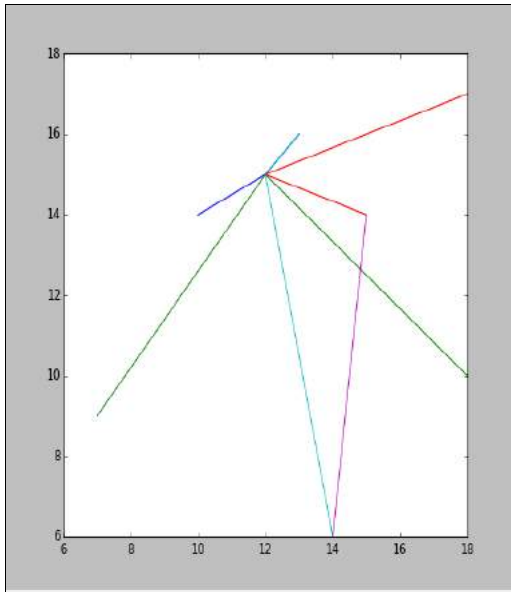
Python Example 2:

```
importmatplotlib.pyplot as plt

importnetworkx as nx

G=nx.Graph()

pos=nx.spring_layout(G)

G.add_edge('Mumbai','Jamnagar')

G.add_edge('Mumbai','Bhuj')

G.add_edge('Mumbai','Ahmedabad')

G.add_edge('Mumbai','Udaipur')

G.add_edge('Mumbai','Delhi')

G.add_edge('Mumbai','Jaipur')

pos = {        'Mumbai':(0,0),    # positions for all nodes
            'Jamnagar':(4,8),
                        'Bhuj':(-3,7),
            'Ahmedabad':(-2,3),
            'Udaipur':(5,3),
                        'Delhi':(7,-4),
                        'Jaipur':(-3,-7)
            }

nx.draw(G, pos=pos, with_labels=True)

plt.show()
```
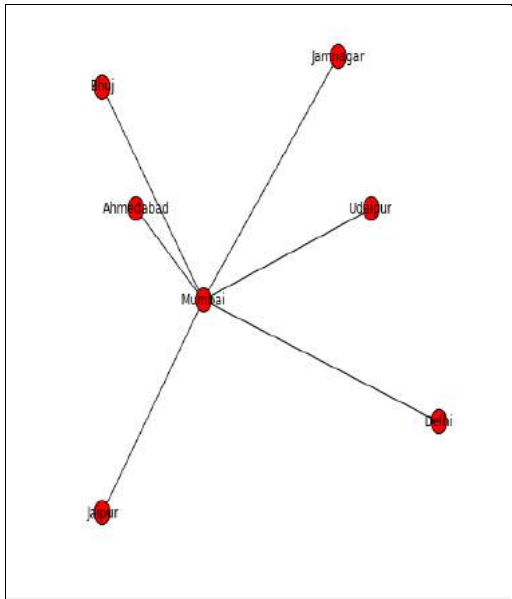
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Graphs are networks consisting of nodes connected by edges or arcs. In directed graphs, the connections between nodes have a direction, and are called arcs; in undirected graphs, the connections have no direction and are called edges. We mainly discuss directed graphs. Algorithms in graphs include finding a path between two nodes, finding the shortest path between two nodes, determining cycles in the graph (a cycle is a non-empty path from a node to itself), finding a path that reaches all nodes (the famous "travelling salesman problem"), and so on. Sometimes the nodes or arcs of a graph have weights or costs associated with them, and we are interested in finding the cheapest path.

For example we want to plot a graph for following nodes,

A -> B,   A -> C ,   B -> C,   B -> D,
C -> D,   D -> C,   E -> F

F -> C.

This data represented as graph in the following way: It has   six nodes and directed links from A to B and C, B to C and D, C to D, D to , E to F and F to C. This can be represented as dictionaries in Python.   graph = {'A': ['B', 'C'],   'B': ['C', 'D'], 'C': ['D'], 'D': ['C'], 'E': ['F'],

'F': ['C']}

The following function shall find path between any two nods.

deffind_path(graph, start, end, path=[]):

path = path + [start]

if start == end:

return path

if not graph.has_key(start):

return None

for node in graph[start]:

if node not in path:

newpath = find_path(graph, node, end, path)

ifnewpath: return newpath

return None

If we run this program as shown here:

>>>find_path(graph, 'A', 'D')

['A', 'B', 'C', 'D']

>>>

Note that while the user calls find_graph() with three arguments,forth argument is the empty list i.e. '[]', the function calls itself with a four arguments: the forth argument is the path that has already been traversed. The default value for this argument is the empty list, '[]', meaning no nodes have been traversed yet. This argument is used to avoid cycles (the first 'if' inside the 'for' loop). The 'path' argument is not modified: the assignment "path = path + [start]" creates a new list.

If we want to find all paths, the program is modified in the following way.

deffind_all_paths(graph, start, end, path=[]):

path = path + [start]

if start == end:

return [path]

if not graph.has_key(start):

return []

paths = []

for node in graph[start]:

if node not in path:

newpaths = find_all_paths(graph, node, end, path)

fornewpath in newpaths:

paths.append(newpath)

return paths

A run of the above program result as :

>>>find_all_paths(graph, 'A', 'D')

[['A', 'B', 'C', 'D'], ['A', 'B', 'D'], ['A', 'C', 'D']]

>>>

Another variant finds the shortest path:

deffind_shortest_path(graph, start, end, path=[]):

path = path + [start]

if start == end:

return path

if not graph.has_key(start):

return None

shortest = None

for node in graph[start]:

if node not in path:

newpath = find_shortest_path(graph, node, end, path)

ifnewpath:

if not shortest or len(newpath) <len(shortest):

shortest = newpath

return shortest

Sample run:

>>>find_shortest_path(graph, 'A', 'D')

['A', 'C', 'D']

>>>

Link mining

It is a newly emerging research area that is at the intersection of the work in link analysis hypertext andweb mining, relational learning and inductive logic programming and graph mining . Link mining is an instance of multi-relational data mining.

Link mining encompasses a range of tasks including descriptive and predictive modelling. Both classification and clustering in linked data structure (social networks) require new data mining algorithms. But with the introduction of links, new tasks also come to light. Examples include predicting the numbers of links(out-degrees or in-degrees of nodes in a social network), predicting the type of link between two node objects, inferring the existence of a link, inferring the identity of an object, finding co-references, finding attributes of links and discovering sub-graph patterns. An object or node may be defined by its attributes as well as its link attributes.

 For example an airlines route connecting different cities is represented by a graph data structure. Links between different nodes may represent ticket price or flying time or fuel consumption between them. One can have several of such graphs for each airline and sub-graph mining for cost effective travel may be queried . Airline may do mining for cost saving features.

3. LINK MINING TASKS

As mentioned in the introduction, link mining puts a new twiston some classic data mining tasks, and also poses new problems. Here we provide a (non-exhaustive) list of possible tasks.
Illustration of each of them using the following domains as motivations:
Web page collection:

In a web page collection, the objectsare web pages, and links are in-links, out-links and cogitation links (two pages that are both linked to by thesame page). Attributes include HTML tags, word appearances and anchor text.

Bibliographic domain:
In a bibliographic domain, the objects include papers, authors, institutions, journals andconferences. Links include the paper citations, authorship and co-authorship, affiliations, and the appears-inrelation between a paper and a journal or conference.
Epidemiological Studies:
In an epidemiology domain, theobjects include patients, people they have come in contact with, and disease strains. Links represent contactsbetween people and which disease strain a person is infected with.

Link-Based Classification

A link data miningtask to linked domains islink-based classification. In link-based classification, one is interested in predicting the category of an object, based not just on its attributes, but on thelinks it participates in, and on attributes of objects linked bysome path of edges

4.2 Feature Construction
A second challenge is feature construction in the multi-relationalsetting. The attributes of an object provide a basic descriptionof the object. Traditional classification algorithms are basedon these types of object features. In a link-based approach, it may also make sense to use attributes of linked objects. Further, if the links themselves have attributes, these may also beused. However, as others have noted, simply flattening the relationalneighbourhood around an object can be problematic. Several authors have noted that in hypertext domains, simply

including wordsfrom neighbouring pages degrades classification performance. A further issue is how to deal appropriately with relationships that are not one-to-one. In this case, it may be appropriate to computer aggregatefeatures over the set of related objects. We have found this works well for learning probabilistic relational models, but this approach may not always beappropriate.

Collective Classification

A third challenge is classification using a learned model. Alearned link-based model specifies a distribution over link andcontent attributes, which may be correlated based on the linksbetween them. Intuitively, for linked objects, updating thecategory of one object can influence our inference about thecategories of its linked neighbours. This requires a more complex classification algorithm than for a propositional learner.

Iterative classification algorithms have been proposed for hypertext categorizationand for relational learning. The general approach of iterative classification hasbeen studied in numerous fields, including relaxation labelling in computer vision, inference in Markov random fieldsand loopy belief propagation in Bayesian networks.

Some approaches make assumptions about the influence of the neighbour's categories (such as that linked objects have similarcategories); we believe it is important tolearn how the link distribution affects the category. As an example, this allows us tolearn the notion of hubs – e.g., a computer science departmenthomepage is likely to point to a lot of professor homepage.

This concept we propose to extend to apply for Smart City. It has been proposed that in such a city public transportation should be available within five-minute walking distance from all houses and all work places. That is possible if BRTS is implemented. To prepare a BRTS Road Map, one can start with small graphs and grow them. Algorithms and software are available for working with graphs. Once such complex network is created, one can apply graph mining to verify for all small hamlets.

Automated Levelling Trains

Gayanka Ganesh Sawardekar

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Abstract:- Everyday headline of the newspaper made me think of one of the big and the dangerous problems that each one of us face when we travel by train. It becomes very difficult for women's, children's, elders to climb up the train special when they are in hurry.

But does travelling by trains a safe journey, for all Mumbaikars??... In past few years we often found the new of rail accidents due the gap in the foot board and platforms.

A measure taken by the railway authority is to increase the height of the platform.

Being an IT student my work is to think for an new advanced technology which will help all of us to travel by train more safely.

➢ It's time now we have to upgrade the convectional train models.

➢ We need to make trains more automated and efficient.

➢ By a means of Gyroscope and Hydraulics' the train will self adjust its foot board so as before reaching the platform there will be hardly a gap in footboard and platform and it will avoid the inconvenience to passengers.

➢ The trains will be smarter and will self adjust itself according to the platform and tracks and this will also reduce the regular maintenance cost of tracks and platforms.

➢ I hope that the implementation of Hydraulic Suspension in the train models in future will reduce such accidents appreciably.

1. Introduction

The headline of the newspaper made me think of one of the big and the dangerous problems that each one of us face when we travel by train. The title of this news paper was just not a highlighter of this problem of gap between the train footboard and platform but it was a serious question that was ask to each one of us.

In the above picture we can see that the gap between the footboard and train is almost 23 Inches.

It becomes very difficult for women, children, elders to climb up the train special when they are in hurry.

I being born and brought up in Mumbai, so to describe about the Mumbai city I must say it never sleeps

Mumbai is a live city, and its lifeline is its Railways.

The railway system of Mumbai has three divisions to give the passengers of Mumbai a safe journey i.e. it has Central, Western and Harbour rails.

But does travelling by trains a safe journey, for all Mumbaikars. In past few years we often found the new of rail accidents due the gap in the foot board and platforms.

To add on just a couple of month before, a 16-years old school going girl Monica More, lost her arms falling into a gap between the platform and the footboard at Ghatkopar station while trying to board the train.

Following is the survey and observational data collected

The concern authorities, ministry and railway faulty also putting many efforts to reduce this gap in platform and trains.

A measure taken by the railway authority is to increase the height of the platform.

But as we know that the Mumbai is made of seven islands, it's a city build on sea by connecting this seven islands.

Raising the platform by concrete and cement will not solve this problem of gap completely.

As due to monsoons, movement of tectonic plates and geological activities below the crest of Mumbai will always lower the height of this platform over the years.

Measurements conducted at central and western railway platforms.

STATION	GAP (March 2011)	GAP (March 2012)
Central Railway:-		
1) THANE	-	17 inches
2) GHATKOPAR	23 inches	15 inches
3) DOMBIVLI	20 inches	11 inches
4) KURLA	-	10.5 inches
5) DIVA	-	15 inches
Western Railway:-		
1) KANDIVLI	20 inches	-
2) JOGESHWARI	20 inches	15.5 inches
3) BANDRA	-	15 inches
4) MAHIM	-	15 inches
5) MATUNGA ROAD	-	14 inches
6) DADAR	-	17 inches

The concern authorities, ministry and railway faulty also putting many efforts to reduce this gap in platform and trains.

A measure taken by the railway authority is to increase the height of the platform.

But as we know that the Mumbai is made of seven islands, it's a city build on sea by connecting this seven islands.

Raising the platform by concrete and cement will not solve this problem of gap completely.

As due to monsoons, movement of tectonic plates and geological activities below the crest of Mumbai will always lower the height of this platform over the years.

2. Methodology

- ➢ It's time now we have to upgrade the convectional train models.
- ➢ We need to make trains more automated and efficient.

- ➢ We need to employ a mechanism of hydraulics in the current train model and need to program them.
- ➢ By a means of Gyroscope and Hydraulics' the train will self adjust its foot board so as before reaching the platform there will be hardly a gap in footboard and platform and it will avoid the inconvenience to passengers.
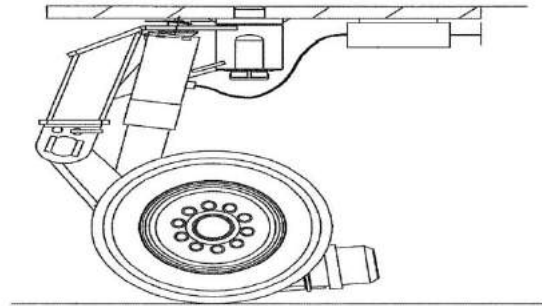
- ➢ The trains will be smarter and will self adjust itself according to the platform and tracks and this will also reduce the regular maintenance cost of tracks and platforms.

I hope that the implementation of Hydraulic Suspension in the train models in future will reduce such accidents appreciably.

2.1 Schematic Model

In this paper, a dynamic model of a high-speed train is developed, including the train's dynamic schematics. Based on this dynamic model and an automatic levelling mechanism are developed with an algorithm. Whenever the train is reaching the platform the height of each platform is pre fetch in the microcontroller of the train and the train will level itself according to the height of platform. Even at the critical speeds on various tracks train will automatically levels its suspension stiffness and hydraulics can to offer a smooth drive to the passengers inside the train. The sensitivity of a train's critical speed with respect to the suspension parameters is analyzed in this paper. This reveals the need of an automated suspension system that that can make train able to adjust its height of the platform on its own.
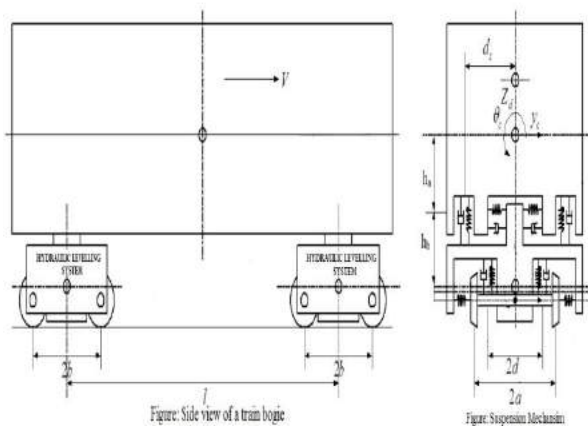
Figure: Side view of a train bogie

Figure: Suspension Mechanism

Some Parameters that a microcontroller inside the suspension system will calculate are:
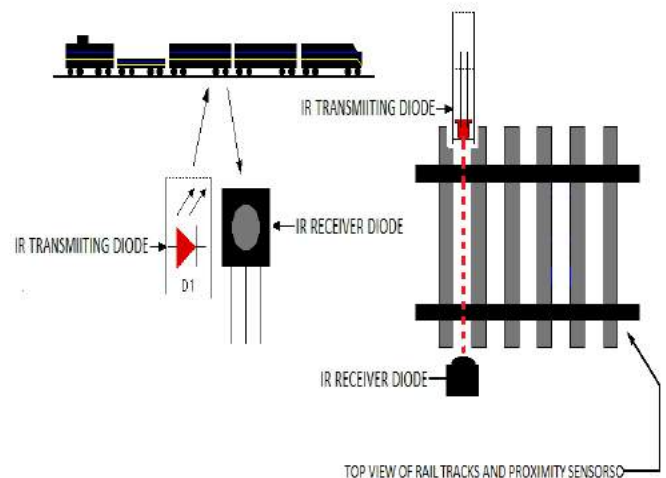
l	Length between the two suspension system	Z_d	Vertical component of bogie
$2b$	Distance between the two wheels of a suspension	$2d$	Inner axel distance between the wheels
V	Velocity of a bogie	$2a$	Outer axel distance between the wheels
W	Weight of a bogie	K	Suspension Constant
h_a	Height above the platform	θ_c	Inclination of the horizontal plan with ground
h_b	Height below the platform	Y_c	Horizontal component of bogie

3. Prototype Model
The following Diagrams show the animated prototype model of a Dynamic high-speed train:

DESIGNED USE FOR THE INFRARED PROXIMIY DETECTOR - BETWEEN THE RAILS INSTALLATION

IR TRANSMIITING DIODE

IR RECEIVER DIODE

IR TRANSMIITING DIODE

IR RECEIVER DIODE

TOP VIEW OF RAIL TRACKS AND PROXIMITY SENSORS

ACROSS THE TRACK INSTALLATION

IR TRANSMIITING DIODE

IR RECEIVER DIODE

SHIELD

RAIL TRACK
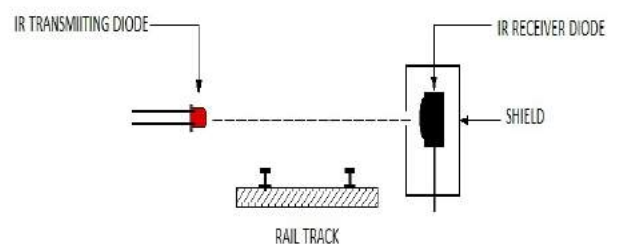
- THE RECEIVER WILL NEED AN ENCLOSURE OR SHEILD TO BLOCK DIRECT OR REFLECTED INFRARED LIGHT FROM OTHER EMITTERS.

Each wheel of bogie will automatically sense its height from the ground with the help of sensors and gyroscope it adjust itself

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according so as to keep the gap minimum in the foot board and Platform of train.

A microcontroller will be programmed accordingly to sense the level and then send the input commands to the hydraulic suspension mechanism to expand or contract the height of the footboard of the train according to the platform on which the train reaches.

4. Algorithm

5. Conclusion

This paper show and evolutionary and adaptive prototype of train model which can level itself as per the height of platform. Usi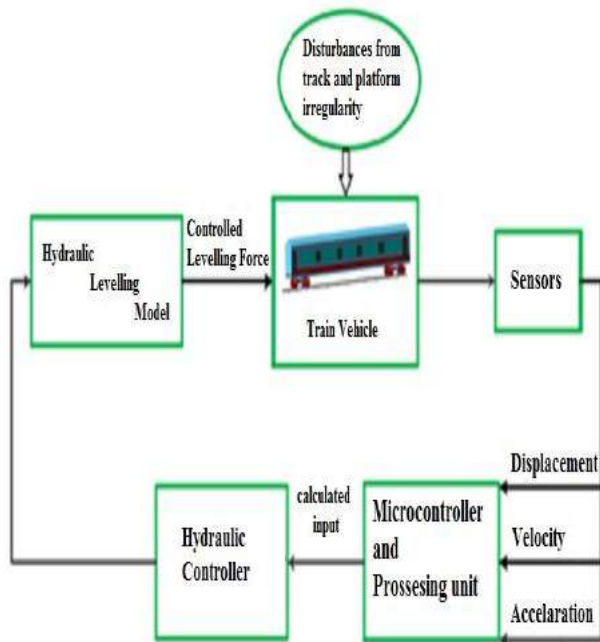ng various automation techniques and hydraulics with the help of sensors we can build a smart train which would be more efficient in work and will provide better comfort to passengers while travelling and boarding the trains.

It will also reduce the number of accidents caused by the gaping in the trains and platform.

6. Expected Outcome

By a means of Gyroscope and Hydraulics, the train will self -adjust its foot board before reaching the platform. There will be hardly any gap in footboard and platform and it will
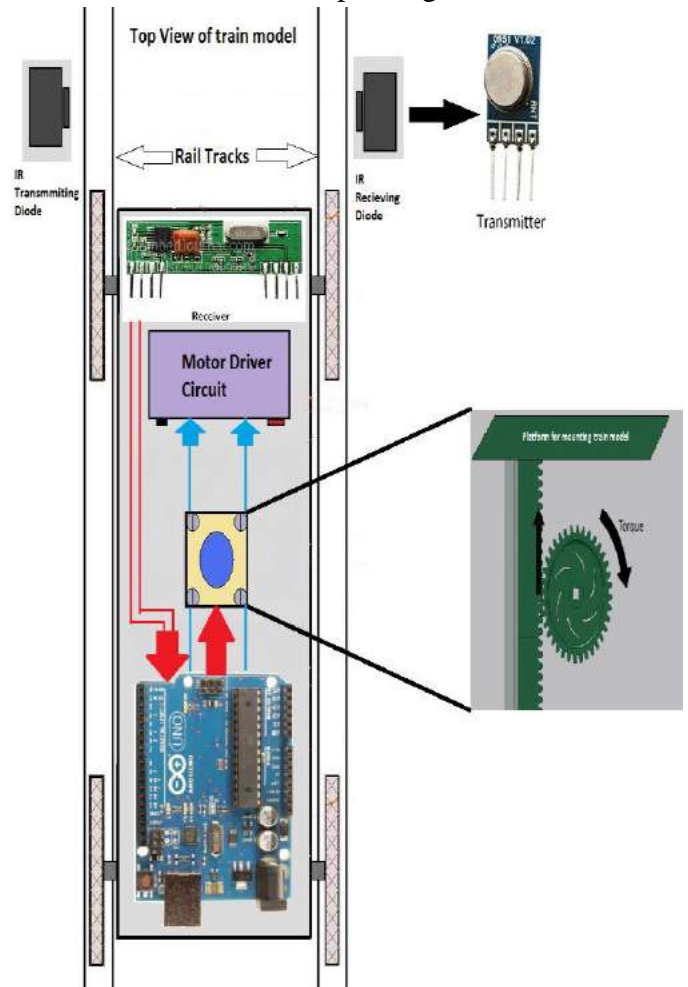
avoid the inconvenience to passengers.

The trains will be smarter and will self- adjust itself according to the platform and tracks and this will also reduce the regular maintenance cost of tracks and platforms.

I hope that the implementation of Hydraulic Suspension in the train models in future will reduce such accidents appreciably.

7. Acknowledgement

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Implementation of Digital Library on Cloud

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Abstract- **As society is becoming instrumented with the innovations intechnology, there is a need to transform every manual system into automated one. Today, Database management system (DBMS) has replaced the tedious job of maintaining records on paper, and so is the need for change in every domain where DBMS is implemented. Earlier, manual library system was transformed into digital library, now this digital library is shifting its paradigm from traditional client-server architecture to Cloud. The project idea is to provide a setup where-in a digital library will be deployed on cloud. So the overhead of maintaining the servers and clients will be reduced and also monitoring the system will be much easier providing High Availability(HA). Cloud setup for the library will be done by Virtualization technology (VT) using VMware Workstation, VMware client, Hypervisors i.e., ESXi's, etc. This paper provides the advantages of using a cloud based library system over traditional digital library system and concludes with the challenges that we face while implementing this system on cloud, along with future scope.**

Keywords- Cloud Computing; Greenstone Digital Library;IaaS; PaaS; SaaS; Virtualization Technology.

I. INTRODUCTION

Computing industry is rapidly changing today and with the significant improvements and viability of this industry in the past couple of decades, researchers strongly visualise the computing technology registering its position as the 5th utility [1]. Cloud Computing is one of the most talked about emerging technology trends today for its potential to be a "disruptive" technology [2]. Cloud computing refers to a broad set of computing and software products that are sold as a service, managed by a 3rd-party provider and delivered over a network. Sold on-demand with limited or no upfront investment for the end-user, consumption is readily scalable to accommodate spikes in usage. Customers pay only for the capacity that is actually used (like a utility), as opposed to self-hosting, where the user pays for system capacity whether it is used or not [3].The analogy is, 'If you need milk, would you buy a cow?'Just to get the benefit(milk), why should a consumer buy a (cow) software /hardware?

As we have entered the era of digitization, there is a staggering amount of digital data that is being streamed daily. Every sector today is transforming itself from traditional manual systems to automated one. Continuous changes in the information management have forced the libraries to accept the technological advancements and satisfy the information needs of the users' in many ways [8] .Traditional libraries are limited by storage space; but digital libraries have the potential to store much more information, simply because digital information requires very little space to contain it. Libraries are witnessing tremendous changes from the very beginning of traditional form. Earlier,

libraries used to have floppy disks followed by CD-ROMs (Compact Disk- Read Only Memory) to provide information service to the users. At present, libraries are moving towards new paradigm called cloud computing[5]. In a Digital Library environment we can foresee a number of benefits promised by cloud-based services. For example, the computing resources can be made available anywhere there is a computer and Internet connection, minimizing the impact of geography on the service provided by the Library to its information users. And access devices can be simpler (and smaller) if the data and applications reside in the cloud. Cloud services can free up the Digital Library from capital expenditures on their computing infrastructure and minimize the need for in-house IT expertise.

In cloud computing, libraries need not have the software, operating system and applications in the premises, that will be available with the service provider. Users only need to pay for the service they use. Through this technology, user can access information from any part of the world, which helps to save the money, time and resources. Changes in technology havebrought a sea change in the library functioning and processing of information.

II. NEED FOR CLOUD BASED DIGITAL LIBRARY

In current scenario, libraries in most of the colleges are offline. Drawback of such system is that, users can't have access to its facilities if they are not in the college premises. Secondly, if there is only one hard-copy of a particular book, then that becomes a non-sharable resource once someone issues it. Or suppose a book gets misplaced due to manual error then it becomes a tedious task to find it again. Above problems can be solved if we make use of Cloud services to manage our library. As cloud follows you where-ever you go, so will be the library, be it your house, another work place or while travelling. Also the cloud provides resources which are sharable, so one copy of book can be shared by many people, and more than one person

can issue it too. And lastly, there will never arise a problem of books getting misplaced. All you will need to access this cloud based library would be an internet connection and a device providing internet service.

Fig 1: Cloud computing in Libraries
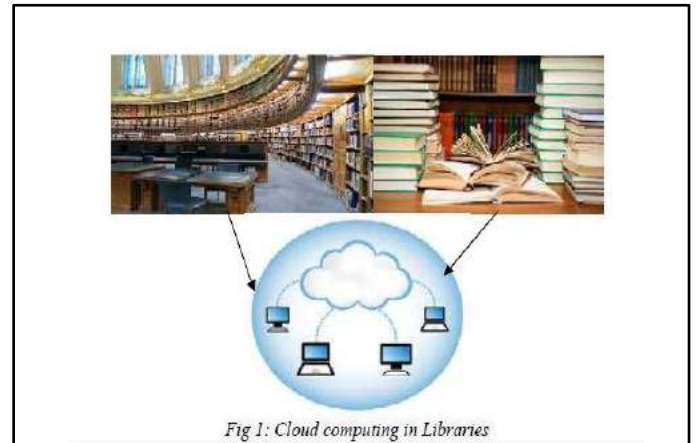
In the present digital environment every library has electronic information. Libraries also have printed form of books and user records. If the library data is available in single place it will help the users of library to access the data in one place. This kind of cooperation and sharing of data among the library will increase the efficiency and overall cost for sharing the resources [5].

Cloud based library will be the one stop solution to share the information virtually emerged as on- demand computing tool for network access in the form of shared computing concept [7] . Nowadays, Cloud Computing is the key term being used in the world of Information Technology and it is the new kind of computing where the virtual resources are shared among the users. Through Cloud Computing, it is possible to share the network, servers, software, applications, storage, and services. User need not buy all the software, hardware, applications, networks and so on and need not depend on the traditional library. Instead, they can log in to the system and get only required services, for which only they have to pay. In this method, the users will pay for what they have used i.e. pay-per-use model. Since the service is available over the web, the service can be availed through browser from any part of the world.

III. TYPES OF CLOUD SERVICES FOR DIGITAL LIBRARY

The main aim of cloud computing is providing services. Cloud basically provides many

services but its three most-important, well known services are SaaS, PaaS, IaaS.

    a) *Software-as-a-Service (SaaS):*The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings [4]. Is a service will be extended by the vendor on demand. Librarystaff does not need to worry about the installation and maintenance of the software, they can access the software from any part of the world [5].

    b) *Platform-as-a-Service (PaaS):*The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly configuration settings for the application-hosting environment [4].

    c) *Infrastructure-as-a-Service (IaaS):* The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, and deployed applications; and possibly limited control of select networking components (e.g., host firewalls) [4]. In this method, service providers will provide the hardware components to the library. Servers with available capacity, communication technology and Operating System for utilizing the services will be provided by the vendor. Library staff will enter the Service Level Agreements with third part for hardware requirements. This way, the overhead of maintaining the servers will be reduced [5].

IV. METHODOLOGY

For the purpose of demonstration, we will be using an existing open source digital library software known as Greenstone Digital Library. Greenstone is produced by theNew Zealand Digital Library Project at the University of Waikato, and developed and distributed in cooperation with UNESCO and the Human info NGO. It is open-source, multilingual software, issued under the terms of the GNU General Public License.

This readily available software will be hosted on our cloud setup.Basically Cloud Computing requires setting up of servers. But setting up a server is out of scope of this project and rather too costly. Instead we have come up with a new technique called Virtualization Technology. Cloud setup is created using VMware Workstation. Here we create four Virtual machines (VM), two virtual machineswill be for the ESXi(i.e., hypervisors) servers. And third will be having Windows 2008 server R2 on which Greenstone application will be deployed, and last VM will be a Windows7 VM on which the GLI-Client (Greenstone's Librarian Client Interface) will be installed. VM's are configured such that they can be accessed remotely but taking remote sessions or by using a VMware product named vSphere Client. We have created a SAN storage of 100 GB and have linked the two VM's of Win2008 server and Win7 to it. Purpose of SAN storage is that if load on any of the VM increases and it is about to crash, that load is balanced by SAN Storage. This is how Load Balancer works in Cloud Environment. Further, we have made use of vCenter5 which is known as the Data Center. Here we have created a Data Center which holds a cluster. And this cluster holds all four VM's. Making use of Data Center we can manage and monitor all virtual machines at one place. Also it provides a graphical view of the overall setup and the machines linked to one another. For having access to VM's we need to install VMware tools in them.The current implementation of this paper provides Platform-as-a-Service (PaaS) and Software-as-a-Service(SaaS).Figure below shows the cloud setup demonstrating implementation of digital library on Virtualized servers.
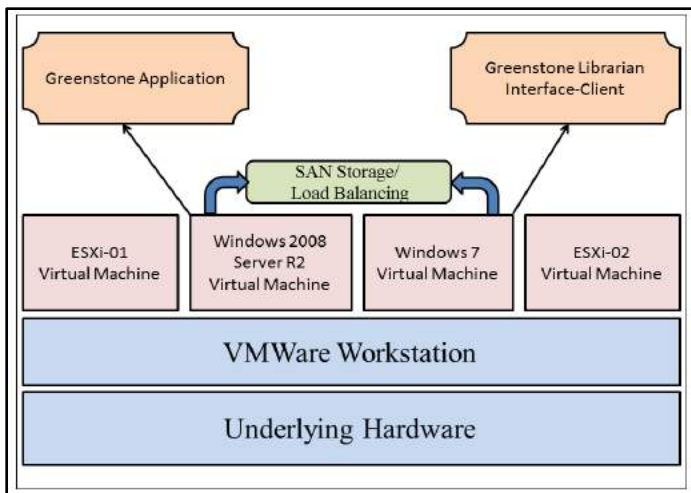
V. CHALLENGES

Use of any emerging technology has few challenges that need to be overcome while implementing it. While using Cloud as a platform following are the challenges that need to be taken into consideration:

1. Security is the primary concern be it any technology. Cloud is nowhere the exception. As data is available online, the biggest strength of cloud is its major loophole.
2. As data center is managed by third party vendors, indirectly our data is with them. So we need to sign SLA's(i.e., Service Level Agreement) while hosting our applications on the cloud infrastructure. These SLA's need to be updated timely.
3. Latest update for the VMware software needs to be taken care of. Also Licensing the product is major issue.
4. Data backup, intellectual property rights is the other problem which has to be taken care before.

VI. FUTURE SCOPE

As the project is in its initial stage of implementation, for now we haven't taken into consideration the security challenges. But in long term, when the project will be fully developed future work will be done to tighten the security of cloud and library service. Also there are quiet an issue of Data Leakage in cloud. This problem will be taken into consideration as well. Our future improvements include, providing digital library service on android device so that students as well as faculties and the staff involved in the functioning of library can have the application handy. Also will it reduce the hardware cost as well as software installation efforts.

VII. CONCLUSION

Cloud Computing is a completely new IT technology and it is known as the third revolution after PC and Internet in IT [6]. Cloud computing is an everlasting computing environment where data is delivered on-demand to authenticated devices in a secured manner and users utilize a shared and elastic infrastructure. 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 [4].Cloud Storage is an attractive concept in IT field since it allows the resources to be provisioned according to the user needs. It provides services on virtual machines whereby the user can share resources, software and other devices on demand. Cloud services are supported both by Proprietary and Open Source Systems.Though Cloud computing is one of the emerging topics, its implications in library is at the initial stage. But it is going to occupy the libraries within the short period since it has more benefits than the traditional computing. The current implementation of this paper provides Platform-as-a-Service (PaaS) and Software-as-a-Service(SaaS).Though the cloud service has much more flexibilities, there are some issues such as security, legal issues, privacy and trustworthiness of the company to be resolved before moving to the cloud service. But except for that cloud setup is cost efficient method and easy to implement and maintain.

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Implementation of RFID Tags in Indian Railway Pass

Name: Komal Sunil Ghodke Class: F.Y.B.Sc.IT Div: A

INTRODUCTION:

Radio-frequency identification (RFID) is the wireless use of electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information. Unlike a Barcode, the tag does not necessarily need to be within line of sight of the reader. RFID is one method for Automatic Identification & Data Capture (AIDC).

RFID tags can be Passive, Active or Battery-Assisted Passive (BAP).

- An active tag has an on board battery and periodically transmit its ID signal. BAP has a small battery on board and is activated when in the presence of an RFID Reader.
- A Passive tag is cheaper and smaller because it has no battery; instead, it uses the radio energy transmitted by the reader.

ABSTRACT:

Railways represent one of the best modes of transportation available for the common man. But one of the problem faced is the poor Pass Renewing Facility provided. One has to fill up the form each time and also have to wait for long in the queue. The information is entered each time by typing which increases typing efforts and also consumes time. This creates a lot of problem especially for students and working people. To overcome this problem RFID tag can be implemented in Monthly or Quarterly Passes.

METHODOLOGY:

Till now for the extension of Railway Pass one has to stand in a queue for long. Also each and every time one has to re-enter her/his information. This consumes a lot of time and typing efforts.

Information of the Pass Holder such as name, address, DOB, sex, mobile number and UID number will be saved in Railway's Database at the first time. Also Pass Holder's scanned photograph and signature will be saved. In this way, all the saved data will be stored in the database & then in the server.

Whenever one has to renew his/her Pass, the RFID Tag on the pass will be read using RFID Reader and the stored Pass

Holder's information will be displayed on the monitor.

The only thing to be entered will be Validity/Extension Date and Source-Destination Station.

Once this is done, using submit option the Pass is ready for getting printed.

RFID IMPLEMENTED RAILWAY PASS

ALGORITHM:
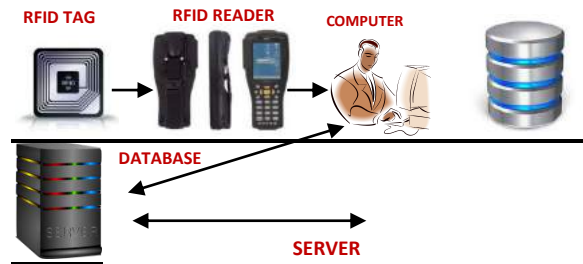
Process of Renewal of Pass

CONCLUSION:

This paper shows implementation of RFID Tags in Railway Passes. Using this technique the renewal of pass will become quick, easy and advanced. Also time consumption will be reduced; typing efforts will also be minimized.

JUST A SINGLE READ & ENTERING OF DATE/STATION NAME WILL GET YOUR PASS IN HAND.

EXPECTEDOUTCOMES:

- Indian Railway Ticketing facility will become more modernized. This modernization will help in the basic development of our country.
- Pass Holder's especially students and working people will not have to wait for long; typing efforts will be reduced.
- This implementation of RFID Tag in Pass will upgrade our facility thus will make it Quick, Easy and Advanced.

ACKNOWLEDGEMENT:

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B.Sc.IT Department

REFERENCE:

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Bluetooth Low Energy

Use of Bluetooth Smart Technology for students safety

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I. INTRODUCTION

Bluetooth Low Energy is an integral feature of Bluetooth 4.2 also known as Bluetooth Smart Technology. It is a wireless personal area network technology designed and marketed by the Bluetooth Special Interest Group aimed at novel applications in the healthcare, fitness, beacons, security, and home entertainment industries. Compared to Classic Bluetooth, Bluetooth Smart is intended to provide considerably reduced power consumption and cost while maintaining a similar communication range.

Bluetooth Smart is supported by all mobile operating systems including iOS, Android, Windows Phone and BlackBerry, as well as OS X, Linux, and Windows 8.

II. ADVANTAGES OF BLUETOOTH LOW ENERGY

Bluetooth Low Energy has various advantages and has various advancements in the wireless data transfer field. Following are certain advantages of Bluetooth Low Energy:-

A. Low Power Consumption

- Bluetooth Low Energy consumes very less power in comparison to Classic Bluetooth system.
- Bluetooth Low Energy transfers data in the form of packets and turns the Bluetooth off when there is no active transfer while in the Classic Bluetooth system the Bluetooth remains constantly on even though there is no data transfer hence affecting the battery life of devices drastically.A device running on Bluetooth Low Energy system can run for ''months or years'' on a button cell.
- Improving the battery life of the devices has opened doors for using Bluetooth Low Energy in various ways in different devices without worrying about power suppy for e.g. Sports Wrist bands can now have heart rate monitors and various other features which can get sent using Bluetooth Low Energy to the phone without worrying about the battery life of the wrist bands.

B. Cost effective

The cost of the Bluetooth Low Energy peripherals is very low and the size of these peripherals is also small.

Bluetooth Low Energy system can be adapted by making minors changes to the previously used Classic Bluetooth hardware reducing the effective cost of the advanced Bluetooth Low Energy technology.

C. Compatibility

Bluetooth smart is compatible with a large installed base of mobile phones, tablets and computers. It is estimated that by the year 2018 more than 90% of the Bluetooth enabled devices will support Bluetooth Smart Technology(Low Energy).

III. SPECIFICATIONS OF BLUETOOTH SMART TECHNOLOGY

Bluetooth Smart Technology or the Bluetooth Low Energy has almost similar specifications to that of the Bluetooth Core System except for the certain advancements in respect to Security, Range, Latency, Power Consumption, Connectivity and Throughtput.

A. Radio Interface

Bluetooth Smart technology operates in the same spectrum range of 2.4 GHz same as Classic Bluetooth technology, but uses a different set of channels. Instead of the Classic Bluetooth 79 1-MHz channels, Bluetooth Smart has 40 2-MHz channels. Within a channel, data is transmitted using Gaussian frequency shift modulation which makes the frequency deviation on the positive and the negative ends smooth, similar to Classic Bluetooth's Basic Rate scheme. The bit rate is 1Mbit/s, and the maximum transmit power is 10 mW.

B. Host Control

Bluetooth Smart (low energy) places a significant amount of intelligence in the controller, which allows the host to sleep for longer periods of time and be woken up by the controller only when the host needs to perform some action. This allows for the greatest current savings since the host is assumed to consume more power than the controller

C. Latency

Bluetooth Smart (low energy) can support connection setup and data transfer as low as 3ms, allowing an application to form a connection and then transfer authenticated data in few milliseconds for a short communication burst before quickly tearing down the connection

D. Software Model

All Bluetooth Smart devices use the Generic Attribute Profile (GATT) i.e. they all communicate with each other as Client and Server.

IV. BLUETOOTH SMART TECHNOLOGY IN COMPARISON TO CLASSIC BLUETOOTH TECHNOLOGY

Technical Specification	Classic Bluetooth technology	Bluetooth Smart technology
Distance/Range (theoretical max.)	100 m (330 ft)	>100 m (>330 ft)
Over the air data rate	1–3 Mbit/s	1 Mbit/s
Application throughput	0.7–2.1 Mbit/s	0.27 Mbit/s
Active slaves	7	Not defined; implementation dependent
Security	56/128-bit and application layer user defined	128-bit AES with Counter Mode CBC-MAC and application layer user defined
Robustness	Adaptive fast frequency hopping, FEC, fast ACK	Adaptive frequency hopping, Lazy Acknowledgement, 24-bit CRC, 32-bit Message Integrity Check
Latency (from a non-connected state)	Typically 100 ms	6 ms
Power consumption	1 W as the reference	0.01 to 0.5 W (depending on use case)

V. CONCLUSION

This paper describes the basics about the Bluetooth Smart Technology and a new implementation of this technology that can be used in devices for the safety of the school students

VI. USE OF BLUETOOTH SMART TECHNOLOGY FOR SCHOOL STUDENTS SAFETY

Bluetooth smart technology can be used for the safety of school students in a following way researched by me

Every school student can have a Bluetooth Low Energy tag attached to their identity card; the school itself will have a server Bluetooth tag which can connect to these Bluetooth Low Energy tags. Each tag will have the students details identity loaded on it.

The server Bluetooth tag can be loaded with a software which sends a message to the respective parent stating that the student has entered the school. This way a students attendance can be marked and the message to the parents makes them feel relaxed about their child reaching the school safely. Once the student leaves the school a message can be again sent to the parents informing them that their child has left the school and should be home soon.

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10. Specification of the Bluetooth System

Object Tracking and Motion Detection

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Abstract: **This paper represents a peculiar approach to detect moving objects from the background, and also to track objects or body parts. A reference frame is initially used and considered as Background information. While a new object enters into the frame, the foreground information and background information are identified using the reference frame as background model. In this approach, morphological operations are used for detecting objects or identifying movements. Video sequences have been captured and tested with the proposed algorithm. I am using an efficient algorithm that is capable enough to manage illumination changes. Experimental results are also shown demonstrating the performance. The result shows that the proposed method runs rapidly and accurately for the relevant output.**

Keywords: **Moving Object Detection, Object Tracking, Morphological Gradients, Shadow Removal, Surveillance**

I. INTRODUCTION:

There are various methods for Object Tracking and Motion Detection. Pixel-based method is one of the best approaches in case of Object Tracking. In such methods, Failure Detection can be carried out effectively.

But, tracking moving objects in video Sequences is very critical task. Video Surveillance Systems are used, nowadays, in both public as well as private sectors. Understanding Human activity from a video is an important task of research in computer vision. Human body motion Analysis is an interesting research for various applications like virtual reality, physical performance, human-machine interface, robotics, crime-investigation, etc…

The main objective of this paper is to use an algorithm that can detect human motion at certain distance for object tracking applications. I had carried out various tasks such as motion detection, background modeling and subtraction, foreground detection, shadow detection and removal.

II. RELATED WORK:

A standard system attempts to recognize the regions of interest in a video scene, i.e. the moving entities in the scene. The classification of the moving entity forms a critical part of the system, as the subsequent modules analyze the moving entity based on whether it is a vehicle, a human or a group of humans.

The background subtraction is a widely used approach for detecting moving objects in videos from static cameras [11][1]. The rationale in the approach is that of detecting the moving objects from the difference between the current frame and a reference frame, often called the "background image", or "background model". A**s** a result, the background image must be a representation of the scene with no moving objects and must be kept regularly updated so as to adapt to the varying luminaries conditions and geometry settings. More complex models have extended the concept of "background subtraction" beyond its literal meaning. The background subtraction method

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[1] Human Motion Detection using Background Subtraction Algorithm

is the common method of motion detection [11][2]. It is a technology that uses the difference of the current image and the background image to detect the motion region, and it is generally able to provide data included object information. The key of this method lies in the initialization and update of the background image. The effectiveness of both will affect the accuracy of test results. Therefore, this paper uses an effective method to initialize the background, and update the background in real time.

A need was felt for adapting an already existing object recognition system for still images, such that it could be easily deployed for recognizing objects in a video sequence. With my this research work, I am trying also the recognize different colors in the video, so it becomes easier to knew which kinds of objects are there in the background

III. PROPOSED SYSTEM AND IMPLEMENTATION

As proposed earlier, this project is to be linked with another project to come up with the final system called Human Motion Detection System. This project would be focused on the Video Motion Detection module where I would perform research on the techniques and methodology to detect motion and to develop a module for a technique that I prefer to use in this project. This module would record down motion and pass it into the next module that would be on object classification where it classify human and non-human object. Thus, this project is to come up with a solution that detects motion effectively and record it down with one or more objects that are moving and causing motions.

The purpose of this project is to help new researchers learn and further research on their topic of interest, which in this case is the human motion detection system. The question to be addressed here in this module is, given a sequence of images, how do we detect motion or track a moving object? The project is to mainly answer this particular question addressed by providing a prototype to emulate or prove the algorithms or techniques that are available to perform motion detection by an input of images in a number of frames.

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[2] Human Motion Detection using Background Subtraction Algorithm

The Human Motion Detection System can be used in surveillance and security systems. The system that this project came up with will be useful for security in a fixed restriction area.

Therefore, the background of the targeted area is assumed to be non-moving and considerations of sudden change in lightings are ignored as well. However, the consider0ations of other factors are taken into consideration. Basically, the initial plan was to use a technique called image segmentation to abstract the foreground image from the source image obtained and later processed to filter out noises or small images disturbance. Based on a level on acceptable percentage that it is sure it's a human motion, the program would detects and displays the motion with a bounding box on the human which is in a different colour to other moving objects that caused motion as well since all moving objects are bounded by the rectangles. The program will record down the scene when the motion event occurs.
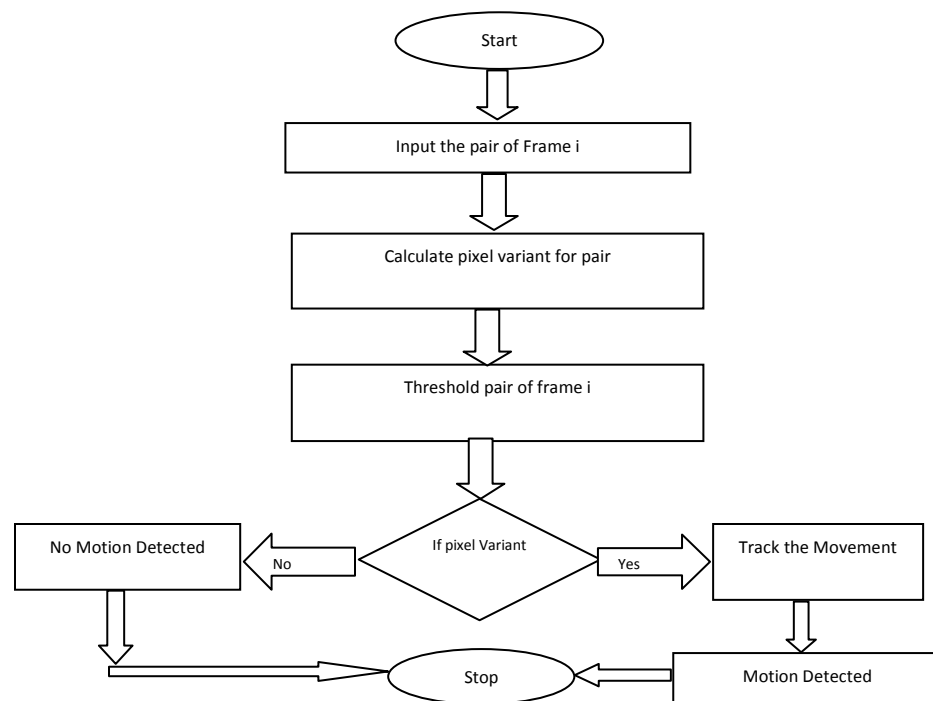

Fig. 1 Flow Chart

IV. METHOD:

The process algorithm works as follows:

i. Arrange the Sequence of Video Frames

ii. If motion is detection, then perform Background Modeling, otherwise stop.

iii. Perform foreground object extraction.

iv. Shadow Detection and Removal

v. Morphology Process

vi. Draw Boundary Box and Human Object Tracking

A) Background Modeling:

Background subtraction provides important cues for numerous applications in computer vision, for example surveillance tracking or human poses estimation. However, background subtraction is generally based on a static background hypothesis which is often not applicable in real environments. With indoor scenes, reflections or animated images on screens lead to background changes. In a same way, due to wind, rain or illumination changes brought by weather, static backgrounds methods have difficulties with outdoor scenes.

Background subtraction involves calculating a reference image, subtracting each new frame from this image and thresholding the result. What results is a binary segmentation of the image which highlights regions of non-stationary objects. The simplest form of the reference image is a time-averaged background image.

B) Salient Robust Motion Detection

The three major drawbacks of adaptive background subtraction that were identified were:

i. It makes no allowances for stationary objects in the scene that start to move.

ii. It needs hundreds of images to learn the background model.

iii. It cannot handle quick image variations and large distracting motion.

C) Feature Extraction:

After having all the moving objects labeled and segmented, the next step is to understand what the object is or in other words, to recognize them. In some cases, we may want to classify them accordingly. However, the classification engine is dependent on the application where the human motion detection system is applied at.

Some researchers have also been carried out on tracking algorithms using probabilistic metric space in their papers [6][3]. Their method has several valuable properties such that it provides alternatives to standard learning methods by allowing the use of metrics that are not embedded by vector space. It also uses a noise model that is learnt from training data. Lastly, it needs no assumption of probabilistic pixel wise independence.

D) **Shadow Detection and Removal:**

There are several techniques for shadow detection in video sequences, and the vast majority of them are based on color video sequences. Once the foreground object identified, each foreground pixels are checked whether they are part of a shadow or the object. This process is necessary, since, shadow of the some of the background object may get combined with the foreground object. This causes the object tracking task as a complicated task. For pixel (x, y) the shadow can be detected and removed as given below,

Firstly current image should be subtracted from background image. The resultant image then is converted into gray level using rgb2gray function. Now, the gray level image contents whose values greater than threshold value are filled with holes in the binary image.

If threshold is low, several foreground pixels corresponding to moving objects may be misclassified as shadows. On the other hand, selecting a larger value for threshold results in less false positives, but pixels related to actual shadows may not be detected

V. EXPERIMENT:

The experimental results are presented to show that the proposed methods can achieve promising performance in background subtraction and foreground object extraction. This system detects and tracks the moving objects exactly. In this approach, the background scene is modeled using a set of background image frames,

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[3] Human Object Tracking using Shadow Removal Techniques

which basically consists of 5-30 consecutive frames. The object pixels are segmented out from its background followed by post- morphological process

Approach 1:
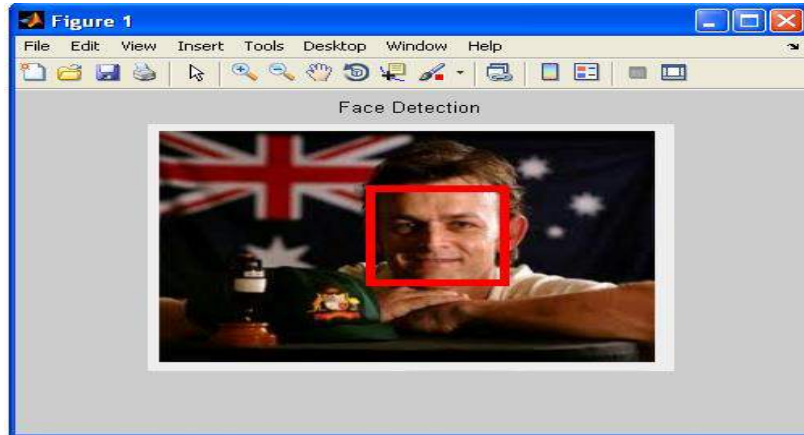
Fig. 2: Face Detection

As you can see in the diagram, in this approach, I am detecting the body parts like face, nose, eyes, mouth, etc. from the given image.

Approach 2:
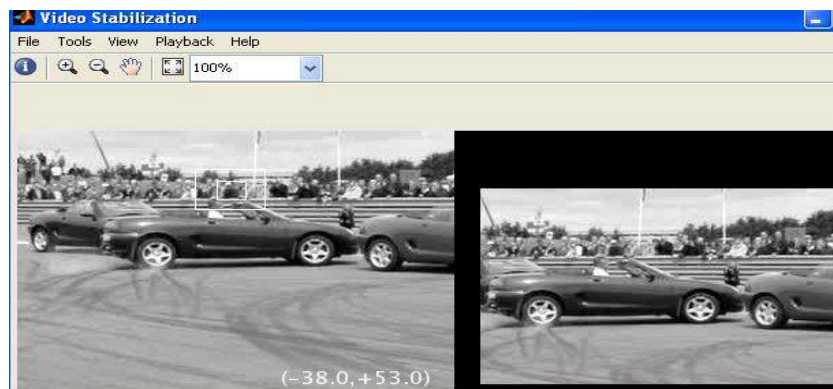
Fig. 3: Car Movement Detection

In this approach, it is showing the actual movement of the cars to the Lane. When the movement of the cars goes out of the Lane, it will create an alert Message to move in a proper lane Left / Right Direction.

Approach 3:

Fig. 4 Car Detection in Lane
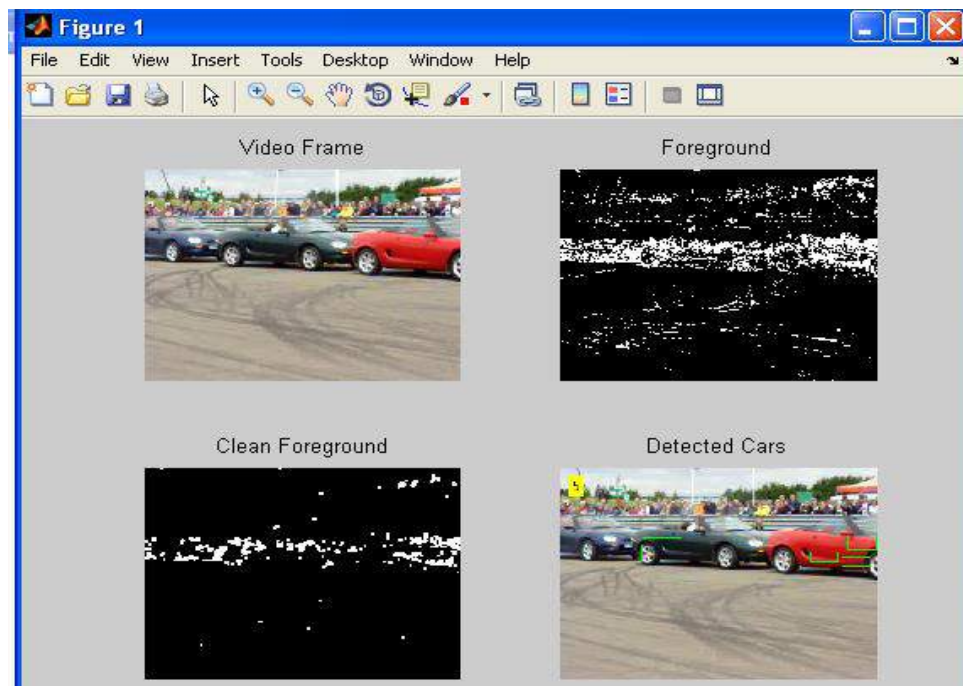
Fig. 5 Car Detect with Foreground

In this method, multiple motions of the cars are being captured from the Video Frame. Various frames with respect to the background have been captured. As you can see in the diagram, there are the pixels representing the actual location of the cars.

Approach 4:
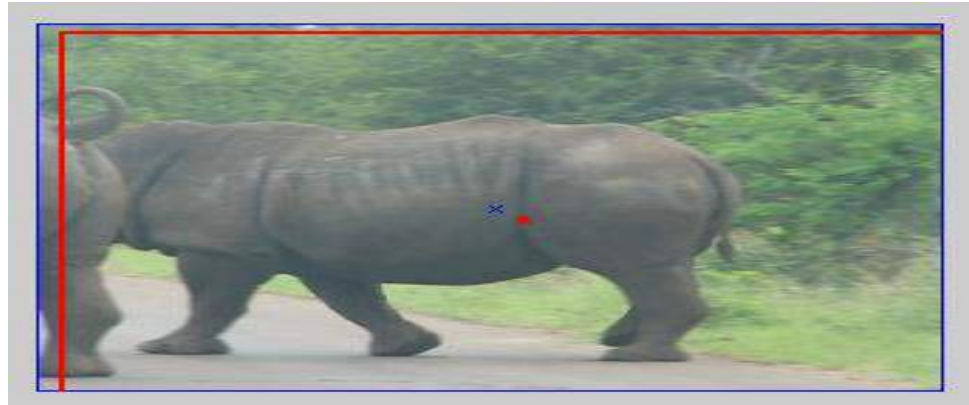
Fig. 6: Motion Detection
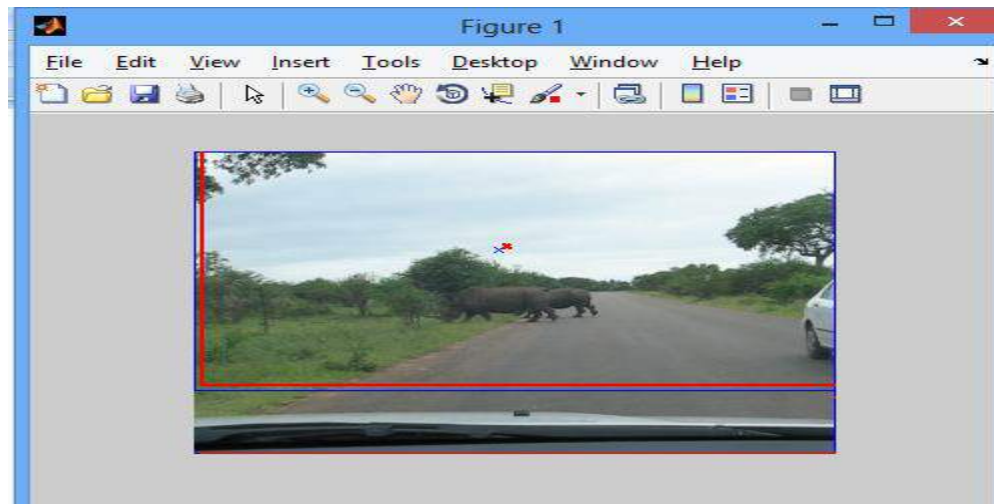
Fig. 7: Motion Detection

In this Approach, you can observe the motion of the animals been captured and focused using red and blue borders.

VI. CONCLUSION:

In this research paper, my proposed method of Capturing particular object and Motion Detection will help you to find the results in approved manner. It can be achieved with high accuracy and reliability. I had used threshold method to detect motion, by filtering the noise in the background. This method has a very good effect

on eliminating noise as well as shadow regions. The simulation results by MATLAB show that the method is useful in both Tracking objects and Detecting Motions.

An attention based method has been proposed for motion detection and estimation. The approach extracts the object displacement between frames by comparing salient regions.

The method was illustrated on various video data and different thresholding criteria. Compared to Black's technique the attention method was shown to obtain a better estimate of motion direction. The stability of the results can be improved by increasing the volume of processing. The simple elements are amenable to parallel implementation. In addition, the method does not require a training stage or prior knowledge of the objects to be tracked.

VII. FUTURE SCOPE:

Future work will be carried out on wider range of data to establish threshold values with more certainty with particular emphasis on addressing noise arising from background motion and changes in illumination. Camera motion involved.

- There is variety of enhancements that could be done to achieve greater detection accuracy.
- In real-time Video Capture, you can recognize unknown person at unexpected time, by keeping records of your employees coming to the company at specific time interval.
- You can also compare the results of Similarity or Dissimilarity between the two Images, which are same but differs in look.
- Such Detection widely helps in Crime Investigation.
- Also, in case of CCTV footage, you can focus on the face; detect the motion of the person, etc…

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geoSENSE: A Real-Time Bus Tracking System

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Abstract - **In a developing country like India, travelling between stations through any modes of transport is Time-Consuming as well as very Hectic. Many of the Commuters travel by Buses which ply from different Bus-Stops mainly from their Door Steps. This kind of transportation is far easier and the most preferable for the Commuters. But nowadays, due to increase in population as well as private and public vehicles, Traffic Jams are the worst case scenario that happens. As the Public Sector Buses get stuck in this Heavy Traffic Jams, they get delayed to reach their Bus-Stops. Due to this scenario, the commuters have to stand in long queues at Bus-Stops to wait for the buses to arrive, basically wasting their every minute of the day on waiting for these buses. This Research Paper attempts to introduce a No-Wait System through an application called geoSENSE, which will provide the commuters with Real-Time Arrival of Buses at their Bus-Stops on their fingertips by just a Click! This Application will help the Commuters to plan their Journey accordingly by monitoring the movement of the buses in Real-Time through the usage of GPS Tracking System.**

Keywords - **GPS, GPRS, GSM, Mobile Application, Real-Time Bus Tracking, Longitudes, Latitudes, Great-Circle Distance Algorithm, Google Earth.**

I. INTRODUCTION

In India, there is a drastic increase in the number of Private and Public Vehicles plying here and there. This increase has led to Heavy and Worst Traffic Jams in each part of the country. Due to this, Vehicles get delayed to reach their destination. Though there are many modes of Transport available that connect cities to each other like Trains, Cabs, Auto Rickshaws, etc. Commuters still use Buses as their most preferable, comfortable and cheapest modes of transport. These Buses connect every District in the cities with each other basically providing Door-to-Door Services to commuters. But due to frequent Traffic Jams in the Cities, the Buses get delayed to reach their destination because of which the Commuters have to waste lot of their Time waiting for the Buses to arrive at Bus-Stops. Sometimes Commuters travel by some other modes of Transport such as Auto-Rickshaw and spend some extra money due to delay of Buses.

Sends location info to SMSC via GSM
Receives Geographical Location from sattelite
SMSC sends the data to the server
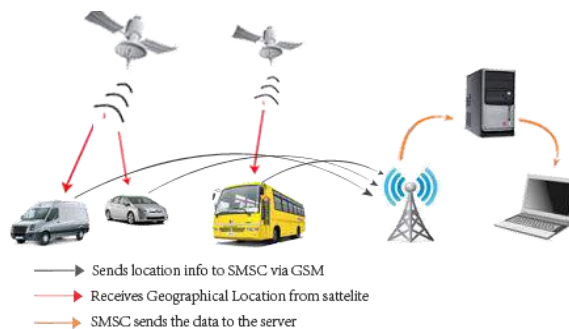
Fig.1. Real-Time Bus Tracking System

geoSENSE is a Mobile Application that uses an Advanced Method of Monitoring and Tracking the Movement of the Buses that are equipped with the GPS Technology Systems that receives and transfers the signals through GPS Satellites. geoSENSE is the combination of Global Positioning System (GPS), Geographic Information System (GIS) and Global System for Mobile Communications (GSM) technologies that provides actual Real-Time Position of each Bus. This Application will use the Great Circle Distance Algorithm to calculate the distance between two Longitudes and two Latitudes whose data would be collected by the GPS/GSM Systems. Using this Algorithm, geoSENSE will calculate the Real-Time Arrival of the Buses on the Bus-Stops.

II. BACKGROUND

Geolocation, position location and radiolocation are terms that are widely used today to indicate the ability to determine the location of a Bus. Location usually implies the coordinates that may be in two or three dimensions, and usually include information such as the latitude and longitude where the Bus is located. geoSENSE is an outdoor Geolocation Mobile Application in which Bus can be located using GPS

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while traveling on the road. Initially Mobile Applications developed were passive tracking system. In passive tracking system a hardware device installed in the vehicle store GPS location, speed, heading and a trigger event such as key on/off, door open/closed. When vehicle returns to a specific location device is removed and data downloaded to computer. Passive systems also included auto download type that transfer data via wireless download but the system was not real time. Passive systems weren't useful to track consumer's vehicle for theft prevention. Real time tracking system was required that can transmit the collected information about the vehicle after regular intervals or at least could transmit the information when required by monitoring station. Active systems were developed that transmit vehicle's data in real time via cellular or satellite networks to a remote computer or data centre. .Many vehicle systems that are in use now days are some form of Automatic Vehicle Location (AVL). It is a concept for determining the geographic location of a vehicle and transmitting this information to a remotely located server. The location is determined using GPS and transmission mechanism could be a satellite, terrestrial radio or cellular connection from the vehicle to a radio receiver, satellite or nearby cell tower. Other options for determining actual location, for example in environments where GPS illumination is poor, are dead reckoning. After capture, the tracking data can be transmitted using any choice of telemetry or wireless communications systems. GSM is the most common used service for this purpose[2][1].

III.   RELATED WORK AND SURVEY

Many Researchers have proposed the use of cutting edge technologies to serve the target of tracking vehicles. These technologies include: Communication, GPS, GIS, Remote Control, Server Systems and others.

The proposed Real - Time Tracking system in this paper is designed to track and monitor Buses' status, this system is an integration of several modern embedded and communication technologies. To provide location and time information anywhere on earth, Global Positioning System (GPS) is commonly used as a space - based global navigation satellite system. The location information provided by GPS systems can be visualized using Google Earth.

In wireless data transporting, Global System of Mobile (GSM) technology has become popular because it is an inexpensive, convenient and accessible way of transferring and receiving data with high reliability[3][2].

The proposed system consists of: Mobile Application for Drivers and Commuters and also Cloud Database to store the Data. The users of this application

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[1] GPS Based Automatic Vehicle Tracking Using RFID
[2] Hybrid GPS - GSM Localization of Automobile Tracking System

can monitor the location graphically on Google Earth; they also can view other relevant information of each Bus.
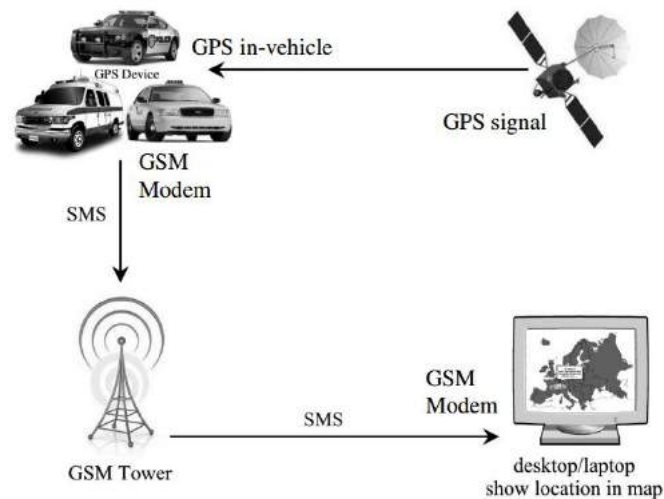
Fig.4. The block diagram of GPS tracking system.

A. **PROBLEM IDENTIFICATION**

According to the Newspaper Article that was published in Times Of India Mumbai, on 10th of January 2015, the following insights were recorded [14][3]:

A. There are around 2500-3000 Buses that have implemented the GPS Systems

B. There was a SMS System developed in 2012 wherein the Commuters needed to send SMS consisting of Bus - Stop Number to 56060 and it will reply with the Current Location of Buses as well as its Position, Speed and Expected Time of Arrival at the Bus-Stops. This System was declared as Total Flop by the public

C. The Commuters now wanted a Mobile Application which gives Real-Time Arrival of Buses at their Bus-Stops as well its Current Location on their Fingertips with Just a Click!
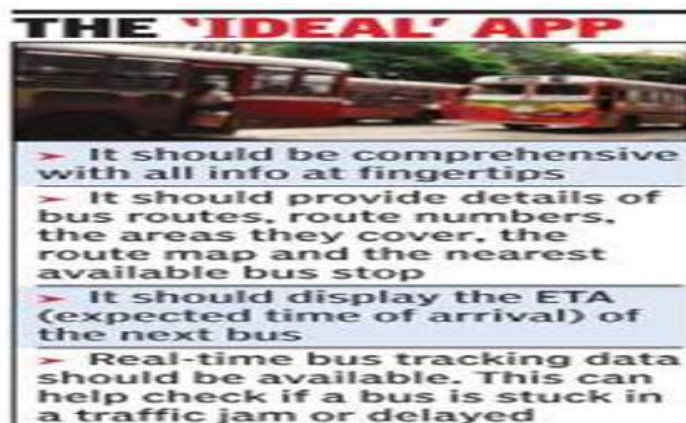
Fig.5. "SMS System Flop, need Real-Time Bus Tracking" TOI Article

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[3] TOI Article

After going through this article, we were motivated to perform an Online Survey on Commuters to know more about the problems they are facing right now as well as their Suggestions and Opinion regarding the Application. We asked them about 9 Questions and following were the results.

1. What do you think about Public Transportation in the City?
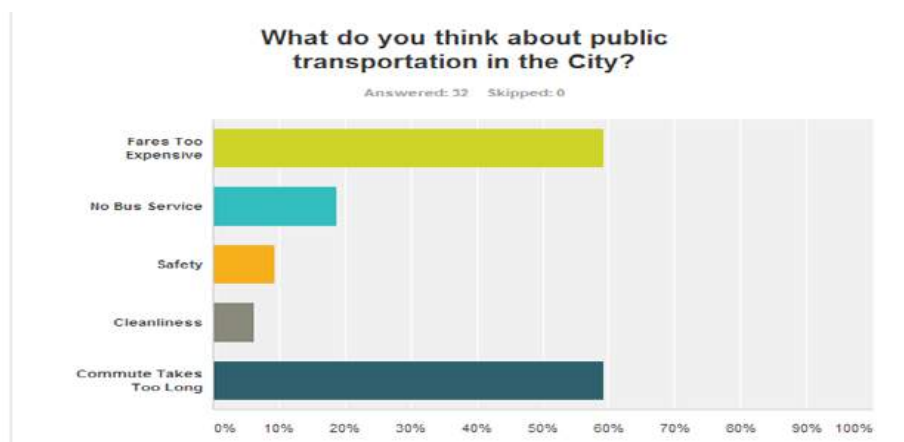
Fig.6. Responses to Question No. 1

According to the results, Most people answered that the Fares are too expensive (59.38%) as well as Commute takes too long (59.38%). This was because of the Traffic Jams that the Vehicle gets stuck into and so gets delayed and because the Buses get delayed, people travel by Auto Rickshaw and Cabs to their destination hence paying extra Money for a Ride.

2. In a Typical Week, which Transportation Form do they use?
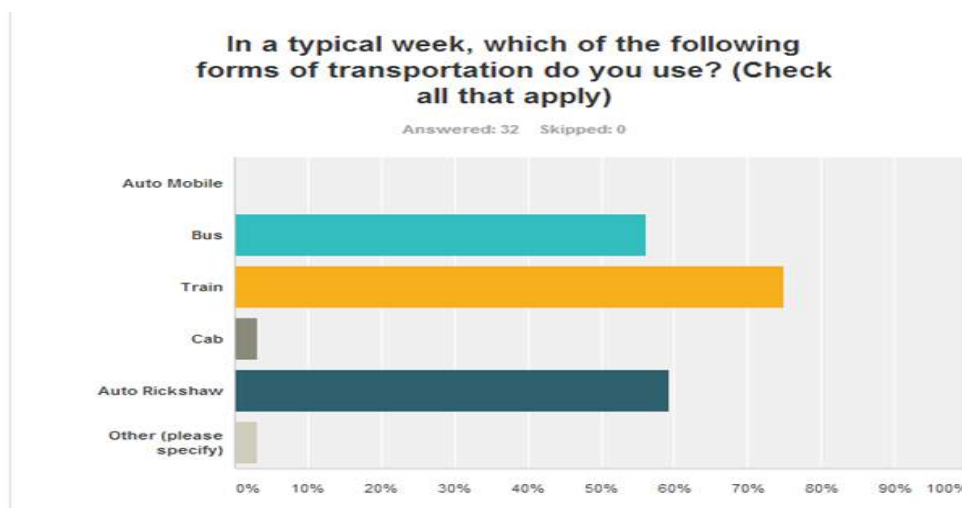
Fig.7. Responses to Question No. 2

This Graph concludes that Most Preferred Modes of Transportation is Train, Auto-Rickshaw and then Buses. Due to Delay of Buses and no Availability of Bus-Routes in some parts of the City, a large number of people prefer Auto-Rickshaw over Buses. They also prefer Trains as they are Cheapest and Mostly on Time.

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3. On an Average in a week, How frequently do you travel by Bus?
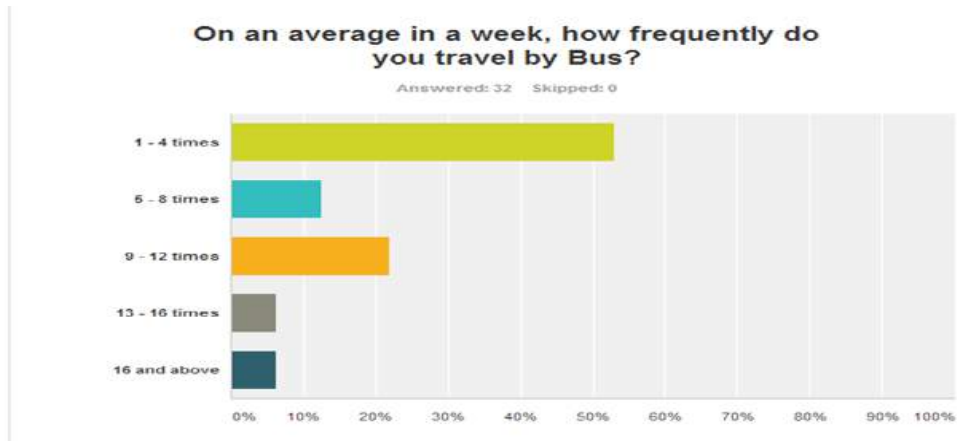
Fig.8. Responses to Question No. 3

This statistics shows that Most of the Public in the City travel less in Bus on an average in a week ,i.e., only 1-4 Times (53.13%).

4. What is the purpose of your travel by Bus?
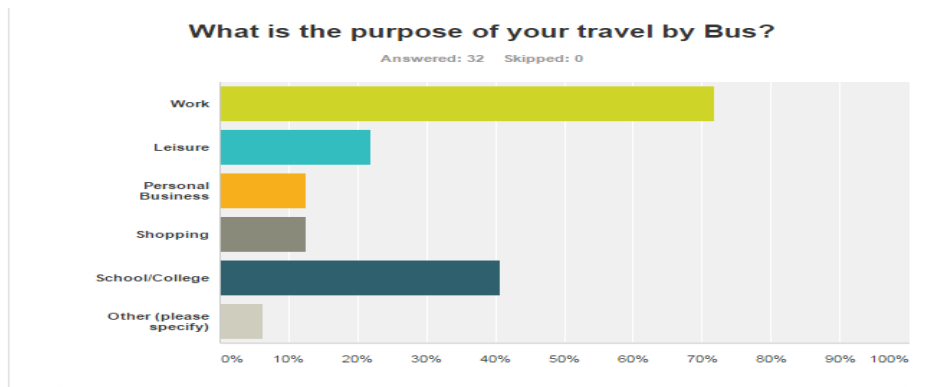
Fig.9. Responses to Question No. 4

The statistics shown above conclude that going to Work (71.88%) and School/College (40.63%) is the main reason for which they have to travel in the City.

5. What are the problems that you face while planning your journey by Bus?

Fig.10. Responses to Question No. 5

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The Responses recorded on this Survey as shown above lists down various problems faced by the Commuters while travelling by Bus. The Delay of Buses, Unawareness of the Arrival Time of the Bus, Bus Frequencies are the main issues recorded so far.

6. **Why would you prefer Auto Rickshaws / Trains over a Bus?**
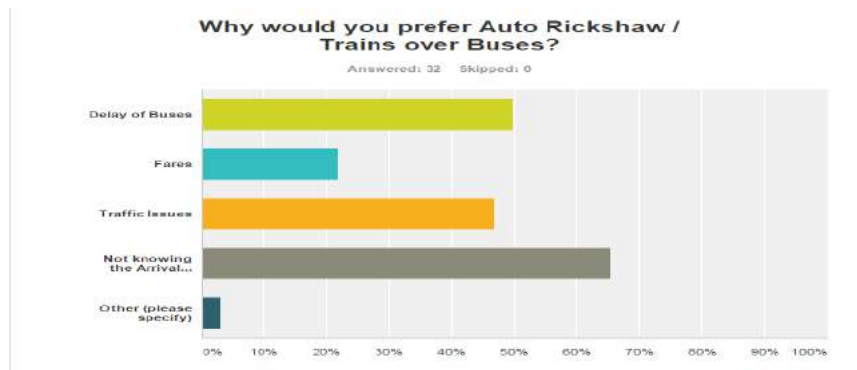
Fig.11. Responses to Question No. 6

Statistics shown so far on above displayed graphs conclude the issues faced by Commuters and their usage of Other Modes of Transportation Facilities.

7. **What if there is an application that satisfies all your requirements like Real - Time Bus Monitoring and its Expected Time of arrival on Bus Stop?**

Fig.12. Responses to Question No. 7

To the Question asked above, Most of the responses recorded were "It would be Helpful".

8. **If this service was available today, how likely would you be to use this service?**
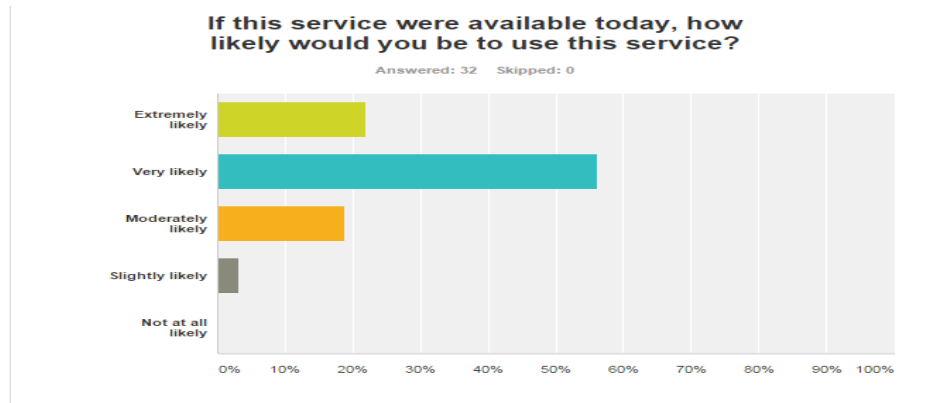
Fig.13. Responses to Question No. 8

According to the Statistics shown above, They would prefer more likely to use this Application to Plan their Journey in advance so that their Time and Money are saved while travelling by Buses.

9. **Wouldn't that be more interesting if you save some Money spent on other transport system while travelling by Bus?**
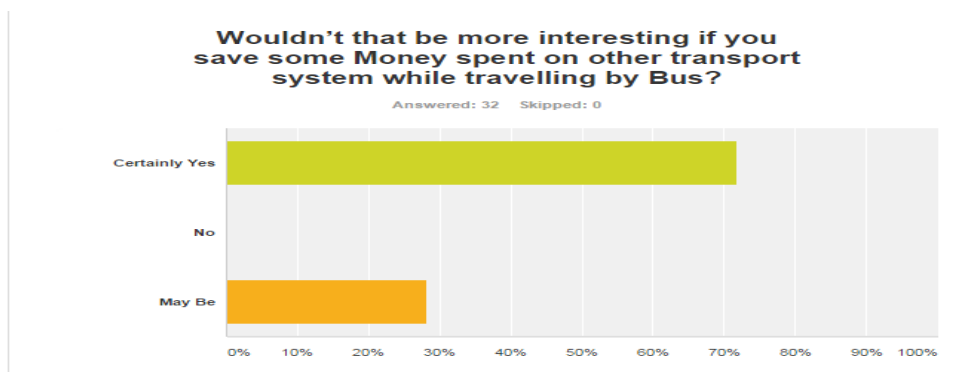
Fig.14. Responses to Question No. 9

Most of the public voted for Certainly Likely (71.88%) to this Question as they would be very much satisfied if they would save some Money of Other Modes of Transport while travelling by Bus

IV. PROPOSED SYSTEM AND IMPLEMENTATION

For implementing the Bus-Tracking Mechanism, we have proposed to use the Mobiles Phone with Built-in GPS Hardware Chip. Today's world revolves around the Smart and Featured Phones developed with many Smart Technologies that has GPS as well as Google Maps and Navigation Facility.

Our Proposed System has Two Modules: First, Mobile Application to be installed on Driver's Smart Phone which will capture the Location of the Bus when it's moving. This GPS Location in Latitudes and Longitudes can be collected through

the use of GPS Satellites as well as Cell-Phone Towers. The GPS Locations collected through this Application will be stored in Cloud Databases which will help reduce the burden of Hardware and Servers. The Distance, Time and Speed of the Buses on Real-Time will be calculated continuously at regular intervals through the use of Great Circle Distance Algorithm in the Database

Secondly, a Mobile Application for the Commuters is developed which will communicate with the Driver Application as well as the Database on the Cloud so as to retrieve the Real-Time Data. This Application will provide all the Details about the requested Bus on the Fingertips of the Commuters, just making it easier for the Commuter to Plan their Journey according to the Data provided on the Bus.

Technically, the proposed system is broken into two main components[1][4]:

A. COMPUTER MAPPING OR LOCATION DISPLAY COMPONENT

To display the location of a vehicle a mapping technology must be used. Despite the fact that there are many free mapping software on the internet such as Google map, OpenStreetMap etc, most of these mapping software does not fully represent all the needed locations and road networks but with the help of Google maker the freely available maps can be edited to suit our purposes. Due to the fact stated above, Google map maker was used to fully and effectively adjust the Google map to fit in to the city that was used as a case study.

B. THE COMMUNICATION COMPONENT

Effective communication between all the components involved will guarantee the success of the whole system; this was achieved using a Mobile Application for both Drivers and Commuters where both these Applications communicated with each other. This Platforms were made using HTML5, CSS3 and Javascript using PhoneGap Application. The Database through which the Data is made available to Commuters is cloud based and created on Database.com powered by salesforce.com. The Mobile Application is simple and will provide Commuters with First Hand Information on the Buses and their Routes they ply. The Commuters just need to give their requirement and the data is fetched from database to fulfil their need.

For Calculating Great-Circle Distance between two Longitudes and Latitudes, Haversine Formula is used as follows:-

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[4] A GPS Based Automatic Vehicle Location System For Bus Transit

$$a = \sin^2(\Delta\varphi/2) + \cos\varphi_1 * \cos\varphi_2 * \sin^2(\Delta\lambda/2)$$

$$c = 2 * \mathrm{atan2}(\sqrt{a}, \sqrt{(1-a)})$$

$$d = R * c$$

where, φ *is latitude,* λ *is longitude,* R *is earth's radius (mean radius =* *6,371km);note that angles need to be in radians to pass to trigonometry* *functions!*

Following is the proposed system module:-

Fig.15. Our Proposed GPS System

V.   CONCLUSION

geoSENSE is an advanced method used to track and monitor any remote vehicle equipped with a software unit that receives and transfers signals through GPS satellite. The results after implementing this Module are that the Commuters travelling by Buses are getting the Real-Time Arrival of the Buses on their Application. This has helped them to plan their Journey accordingly without wasting their much Time and Money. This Paper attempts to introduce the Real-Time Tracking by using Just Smart Phones available currently in the Market through an Application. This Application has indeed provided Commuters with a No-Wait System.

VI.   FUTURE WORK

The Technologies will be more advancing in the near future with the invention of Newer and Better Technologies in the Market. Our Project is basically based on Tracking of the Buses to make the life of the Laymen easier and better through an Application. In the nearing future, we would be advancing this Application and

Technology further for the Betterment of the Public. Following are the Future Work we suggest young researchers too:

1. Use of RFID to Track the Movement of every person and inform their Loved Ones about their Safety while travelling in Bus.

2. Implementing the Module which provides the Commuter to issue the Bus Tickets themselves reducing the problems faced by Commuters as well as the Conductors in keeping Money change.

3. Implementing a Module which will help the Commuters to renew their Bus Pass through the App itself.

4. Introducing Rush Free Buses by implementing RFID Passenger Counting at the Entrance of the Buses

5. Implementing Navigation Panels on every Bus stop which will provide the location details of the Buses at their fingertips using the WIFI connection that will be available and accessible throughout the city according to our Indian Government.

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Bank Transaction Tax (BTT): Future of Tax reform in India

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Abstract—**World over, tax systems have undergone significant changes during the last twenty years as many countries across different ideological spectrum and varying levels of development have undertaken reforms. The wave of tax reforms across the world that began in the mid 1980s actually accelerated in the 1990s motivated by a number of factors. The evolution of Indian tax system was motivated by similar concerns. Tax policy has evolved in the country in response to changing development strategy over the years. In the initial years, tax policy was guided by large number of demands placed on the government, which led to increase in the level of savings and investment in the economy to stimulate growth and the need to ensure a fair distribution of incomes. These meant an effort to raise taxes from those with an "ability to pay", with little regard for the efficiency implications of the chosen instruments for the purpose. This created a complexity in taxation resulting in creation of parallel economy in the form of black money and many such drawbacks. As the time is moving forward the need for simplicity in taxation arises such that the whole taxation system is understood by each and every common person of the society .This paper aims the study on the concept of Bank Transaction Tax (BTT) and effect of its implications in our real life. It will also enlighten on its Pros and Cons.**

Key words: more than four key words must be given.

Objective of the study

1. To study how BTT can simplify current taxation system in India.

2. To examine how BTT can bring about equity in taxation in India.

3. To analyze how BTT can reduce taxation cost.

4. To find out if BTT can decrease the circulation of black money in India.

INTRODUCTION

Government has to play an important role in all round development of society in the modern era. It has not only to perform not only its traditional functions (defense, maintenance of law and order) but also to undertake welfare and development activities such as health, education, sanitation, rural development, water supply etc. It has to also pay for its own administration. All these functions require huge public finance. Taxes constitute the main source of public finance whereby government raises revenue for public spending. Taxes have been broadly categorized into direct and indirect taxes. Tax is a fee charged by the Government on the income of a person, or an activity undertaken by him or her, or on a production. It is the basic source of revenue for the Government

Current taxation system in India

The economic crisis of 1991 led to structural tax reforms in India with main purpose of correcting the fiscal imbalance. Subsequently, the Tax Reforms Committee headed by Raja Chelliah (Government of India, 1992) and Task Force on Direct Taxes headed by Vijay Kelkar (Government of India, 2002) made several proposals for improving Income Tax System. These recommendations have been implemented by the government in phases from time to time. As regarding the personal income tax, the maximum marginal rate has been drastically reduced, tax slabs have been restructured with low tax rates and exemption limit has been raised. In addition to this, government rationalized various incentive provisions and widened TDS scope. In case of corporate tax, the government has reduced rates

applicable to both domestic and foreign companies, introduced depreciation on intangible assets and rationalized various incentive provisions. Some new taxes have been introduced such as Minimum Alternative Tax and Dividend Distribution Tax, Securities Transaction Tax, Fringe Benefit Tax and Banking Cash Transaction Tax. However, Fringe Benefit Tax and Banking Cash Transaction Tax were withdrawn by Finance Act, 2009.

Flaws of taxation

Excessive taxation: India continues to be the most heavily taxed country in the world if all direct and indirect levies are taken into account. The increasing trend of multiple levies of VAT and service tax on the industry has exacerbated the woes of the taxpayer.

Total uncertainty: The uncertainty of our tax laws makes long- or even medium -term planning virtually impossible. For example, excise duty was to be levied on branded jewellery in 2005.

Complexity: It is ironical that every finance minister swears by simplification and rationalization, and does just the opposite. The classic example is the new Direct Taxes Code, which is more complex and irrational than the Income Tax Act of 1961. Service tax, with its new set of rules framed in 2011, has now crossed the stage of complexity to become totally incomprehensible.

Absence of execution in India, the failure to implement laws continues to be the single largest weakness of the tax system. This year's budget now makes prosecution possible for any service tax violation. But several prosecution provisions in the income tax, central excise and customs laws are virtually defunct as no prosecution is ever initiated. In the last 20 years, there are not even 10 cases where major offenders have been punished for any tax offence

Rampant injustice in tax administration: The unfortunate reality of the central and state taxation is that those with money, muscle or political power are least concerned about obeying any tax laws. The organized sector is repeatedly harassed with frivolous showcase notices and absurdly high-pitched demands.

Scant respect for the Constitution: The federal structure of our Constitution has allocated and distributed areas of taxation between the Centre and statesHowever, the practice of levying service tax on activities already subject to state sales tax continues unchecked as it is always possible to argue that a particular activity. This constitutional indiscipline has now infected state governments too

Absence of impact assessment: There is no assessment of the impact of a new levy on a particular sector or the industry in general - who will be affected, how easy will it be to collect the tax, or whether the levy is equitable and fair example is the levy of service tax on commercial coaching centers. Once again, the teaching standards in our schools and colleges force parents to opt for extra tuition for their wards. It is equally unfair to levy service tax on such activity.

Concept of BTT

Bank transaction tax is a tax levied on debit (and/or credit) entries on bank accounts. It can be automatically collected by a central counterparty in the clearing or settlement process. This concept was first proposed in India by a Pune based NGO know as Arthakranti. They presented this statement in front of some of the top leaders of a national political party BJP. BTT can be the long term beneficiary for the society. It's more of like moving towards a society in which use of hard cash will b very less and maximum work will be done by the advancing technology.

Need For BTT

- Current Tax System is very complicated
- Uncertainty of Current Tax Laws which discourages long term/mid-term planning
- To Stop Black Money flow in India
- For better Tax Assessment
- To simplify Tax system in India
- To generate revenue from Tax

Literature Review
In the recent e-article "Arun Jaitley expresses reservations on banking transaction tax" of The Economic Times (Jan 10, 2014)

A proposal to replace income tax and excise with a single tax on banking transaction is "attractive" but several questions have to be answered before it is implemented, senior BJP leader Arun Jaitely said. He was commenting on a proposal to replace all the existing taxes, including income tax, excise and other levies, with a single Banking Transaction Tax (BTT). At present, society is distraught with excessive taxation, complex taxation.

Responding to a proposal on currency compression and move towards plastic currency or cheques, Jaitley said it has not been the characteristic of this country.

"In many countries, cash transactions have gradually come down. Unfortunately, it has not been the characteristic of this country and the reason is that people, for their mental satisfaction or for being secure, like to keep cash with them," he said.

In the recent e-article "Nitin Gadkari bats for introduction of transaction tax" of The Economic Times (Feb. 6, 2014)
Former BJP President Nitin Gadkari today reiterated that even if various existing taxes are scrapped and only transaction tax is levied, India's revenue collection would go up to Rs 40 lakh crore from the present Rs 14 lakh crore.

"There are 34 different taxes in the country at present and the total revenue collection through it is to the tune of Rs 14 lakh crore. But if all the taxes are scrapped and only transaction tax is introduced, the total revenue will touch Rs 40 lakh crore," he said.

In the recent e-article "BJP for single transaction tax to check leakages" of Hindustan Times (Jan 7, 2014)
There's nothing sexy about death or taxes unless someone promises to abolish it if you vote for them, an American tax lawyer once said.

For the past month or so, top BJP leaders have been thinking aloud about a proposal to abolish income, sales and excise taxes and replace them with a tax on every transaction made with a plastic card, which they think can sweep every voter off his or her feet.

On January 2, Pune-based anti-tax group Arthakranti made a presentation to senior BJP leaders, including Rajnath Singh, LK Advani, SushmaSwaraj, and Arun Jaitley, former finance minister Yashwant Sinha and Nitin Gadkari, on simplifying taxation by a flat banking transaction tax.

But few leaders are impressed by the proposal apart from Gadkari and Subramanian Swamy, who heads a sub-panel drafting the party's vision document on economic issues.

Working format of BTT

- Withdrawal of existing Taxation System completely (except customs i.e. import duties).

- Every Transaction routed through a bank will attract certain deduction in appropriate percentage as Transaction Tax i.e. Single point tax deducted at source. (say 2 %).

- This deduction is to be effected on receiving/credit accounts only.

- This deducted amount will be credited to different Government levels like Central, State and Local (say 0.7%, 0.6%, 0.35% respectively).

- Transacting Bank will also have its share in this amount as the bank has a key role to perform (say 0.35%).

- Withdrawal of High denomination CURRENCY (say above Rs. 50).

- Cash transactions will not attract any transaction tax.

- Government should make legal provisions to restrict cash transactions up to a certain limit (say Rs. 2000).

Direct benefits:
  I. Savings in amount of taxes paid

II. No tax returns & No tax compliance cost

III. Adequate tax revenue for each level of Government (Center, State and Local)

IV. Transparency in the Economy

V. Significant drop in commodity prices (Approx 15% to 20%)

VI. Loans from banks at lower rates (Approx 4% to 5% annual rate of interest)

VII. Terrorist and anti-national activities can be controlled

VIII. Substantial reduction in construction cost (Approx by 15% to 20%)

Pros and cons
Pros
I. It will help to generate of more revenue for the government.
II. It will Simplify taxation policy such that it can be understood by every common man
III. The prices of commodities will decrease
IV. The will be reduction in cost of taxation as most of the work done will be done by banks
V. It will result equality in taxation
VI. Will help in curbing black money
VII. It will bring transparency in economy

Cons
I. Requires huge amount of infrastructure development in terms of banking.
II. Difficulty in recording cash transactions
III. Barter system to save tax
IV. Increase in tax burden.

Conclusion:
To conclude, for BTT certainly deserves some accolades in terms of bringing some thought and debate on Tax Reforms on the table. The biggest con of BTT is its regressive structure - its incidence on low income population would be disproportionately higher than the high income population. A slab system thereon would again lead to the same set of problems and would not be easy to reasonably execute. BTT currently requires a lot of ground work and if analyzed properly and executed can bring long term benefit to the economy.

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To Study the Market For Business Development In Business Incubation Industry For Talentooz Ltd.

(All rights of this research work are with Talentooz Ltd.)

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Abstract— **The research was undertaken with title" To study market for business development in Business Incubation industry for Talentooz. Ltd.". The study specifies the competitor analysis, customer survey and the designs for the development of online services for new ideas and innovation. This study work is divided into 3 parts. First part include the study of similar business incubation services provider and their analysis. Second part include identification of customer problems which they face while working on their idea, which can be solved by providing online platform. And last part include designs of wireframes for website, which will provide business incubation services. The study was done by collecting secondary data from different similar and primary data was collected to identify problems through well-constructed questionnaire with the help of Google docs. A sample size of 120 was studied to understand customer problems and 8 similar services providers were studied to understand their pros and cons. This study helps to understand different forms of services provided under business incubation industry, the way in which that can be provided and the success factor of other these services. Based upon the study and understanding of customer requirement some basic wireframe designs were made for the online platform**

  Keywords—Incubation industry, business incubation services,wireframe design,online platform,business incubation service provider.

I. INTRODUCTION

Business incubation is a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts. A business incubator's main goal is to produce successful firms that will leave the program financially viable and freestanding. These incubator graduates have the potential to create jobs, revitalize neighborhoods, commercialize new technologies, and strengthen local and national economies. As of 2013 there are around 9000 business incubation centers spread all over the world. Out of which India has hardly 120-150 incubation centers of various type.

II. RESEARCH OBJECTIVE

A. Primary Objective

- To know the problems faced by people while working on their own idea.

- To know the requirement or expectations of customers from the online platform for the resources.

B. Secondary Objective

- To study similar services providers in the market.

- To study strengths and weaknesses of similar service providers.

- To design wireframes for Talentooz website.

III. SIMILAR SERVICE PROVIDER

The main goals of the competitor analysis is to know who the competitors are to our company, what strategies they are using, how competitors might react to your actions, how to achieve the competitive advantage for company.

For this analysis we have studied the direct as well indirect competitors who are providing the similar kind of services to the customer.

From this analysis we came to know the improvement areas in those sites from the user points which will improve the Talentooz services to customer. Also the points which needs to be avoided.

IV. FINDING OF STUDY

A. Marketing Strategy

Different marketing strategies are used by competitors for increasing the foot fall. Some of these strategies are as follows.

- Results-oriented services to enhance responses and interactions.

- Free basic services to allow the users to use the platform and get familiar with it.

- Different premium services as per the need of user which will enhance the search for the resources needed by users.

- Individual attention to users for their need.

- Expansion through acquisition of other company to better serve the customers.

- 3 Different platforms are provided to user, online, offline and on-the-go (mobile app).

- Partnership with the universities other cofounders institute like founder institute

- Making the availability of the basic membership free of cost is also one of the marketing strategy which is used to increase the user visit to website

- Offline local meet ups across the world to provide trustworthy environment.

- Increase brand value through registered members by providing them options for increasing their visibility across the web.

- Creating awareness through online sites about the business news.

- Posting blogs about the company, what it does, how it does etc. throughout the web.

- News about the progress of the business on online business news forums.

- Strict moderation on investor profile which helped to build the users confidence with the company.

- Giving users rewards points which increases their pride and interest

B. Uuser Interface

- Simple, attractive and easily accessible UI. User should not struggle to find the options on the website.

- There should be information about the company, services they offer, clear description of the terms of services, benefits of the services and the prices for the services.

- To equip the user with the functioning of the website a video or pictorial representation can be used. (Things are better understood through the videos and pictures instead of text)

- Customer experience can be shared publically on the web site.

- Information about the top or famous clients and partners can be shared to gain confidence of the user.

- Support for the problem can be provided through live chat options.

- Sign up should be simple and registration process should be as small as possible.

- Description for the fields should be provided so user don't get confused.(Form fields)

- Profiles of the members can be shared in short n concise manner, which provide easy browsing to user.

- Sharing of the company news, success stories and the journey of the website. Their founder information, team information should be shared.

- For better accessibility mobile application can be provided to the user

- There should physical platform also along with the online to build the trust.

- Website should make online presences as much as possible.

C. Functionality

- There should be email verification for the profiles so that fake profiles will not be created. Else registrations can be done through social profile only.

- Strict moderation should be there while creating profile by user. Access should be allowed only after knowing the purpose of the user for registration.

- Profile should be published on website only after they complete the basic needed information.

- Each profile should be different from the other having different roles, like investor, founder etc.

- Search option should have advance filters which reduces work of users and gives them needed data.

- Website should function correctly and must be redirected to the appropriate pages. All the buttons should be functioning.

- User should have access to only that members or resources to which they are looking for.

- Function should provide the data as per the location of user.

- Features for tracking the growth of the user can be provided which help them to plan the path to achieve the goal.

- There should be clear demarcation of the profiles, their needs etc.

- Different option can be provided to user to connect with other member like message, chat, video calling etc.

- Data validation should be for the information provided by user.

- Free trails can be provided to increase the foot fall of visitors.

- ..."

V. RESEARCH METHODOLOGY

A well-structured questionnaire was prepared for interviewing the prospects. Close-ended questions are there and these questions analyses the problem faced by people while working on their own ideas, the barriers, and unavailability of resources and how they tried to overcome these barriers. This questionnaire also analyses the awareness of people about the online platforms which can help to grow the ideas into commercial product.

A. Research Design

1) Nature of Research: Descriptive research is used to obtain information concerning the current status of the phenomena and to describe "what exists" with respect to variables or conditions in a situation.

2) Research Instrument: The research was mainly done with the help of questionnaire which was prepared by keeping in mind the general responded.

a) Sample Design: The samples collected with the help of Google Docs by circulating from link through contacts and social networking sites. For this study we have used the non-probability sampling technique. In this non-probability more specifically snowball sampling is used.

b) Sample Size: 120

c) Data Collection: Primary data was collected directly from the people through a questionnaire.Secondary data: Similar services provider information was collected through their own sites and other websites.

B. Data Analysis

1. Did you ever had a feeling to do something of your own?

TO DO SOMETHING OF YOUR OWN

- Yes
- No(if No, don't move forward , this is not for you)

3%
97%
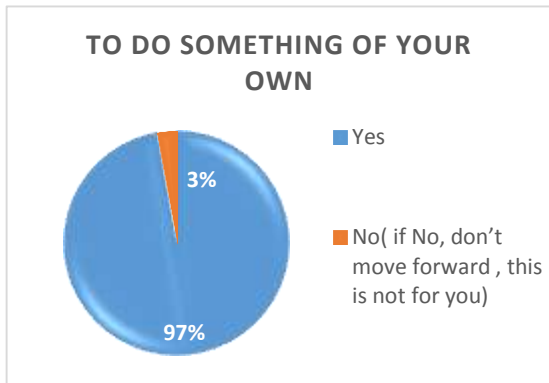
97 % of people always have an idea which is of their original innovation, on which they would like to work. But very few people were able to do it.

2. Did you ever had an idea, which was never accomplished?

IDEA WHICH WAS NEVER ACCOMPLISHED

No
11%

Yes
89%

Even if people have idea, most of are never accomplished due to so many reasons. From above graph we can say 89% ideas have never been accomplished.

3. Would you like to convert your idea into reality (a commercial product)?

LIKE TO CONVERT IDEA INTO REALITY?

No
11%

Yes
89%

Now a day's people are more interested in working on their own thought in their own way. Almost 89% of people would like to convert their idea into commercial products.

4. Have you ever worked on your idea?

HAVE YOU EVER WORKED ON YOUR IDEA?

- Yes
- No

39%
61%
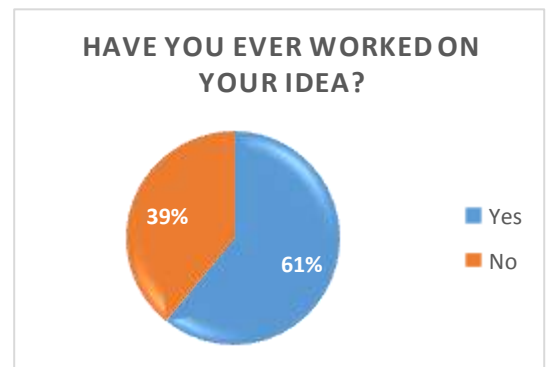
Only having an idea is not sufficient to bring it into reality. People also have to work on it. So from the respondent who were having idea, 61% have worked on it, but 39% haven't given chance to it.

5. Have you ever tried to find a team for working on a project and failed to team up?

HAVE YOU EVER FAILED TO TEAM UP?

- Yes
- No

42%
58%
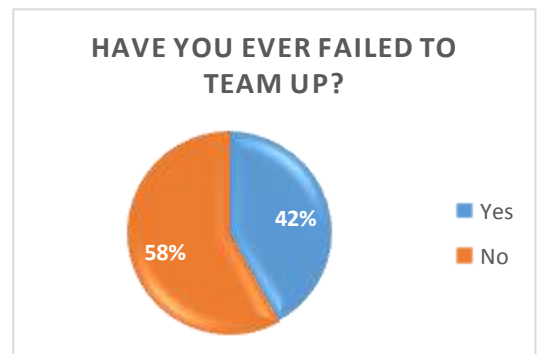
Getting a team of like-minded people is creating trouble now days and causes failure of idea development. Having a team working on same idea, foster the development of that idea. So during survey we came to know that 42% of people failed in finding team for working on their own idea.

6. Have you ever felt need for funds while working on your idea or project?

FELT NEED OF FUND FOR WORKING ON YOUR IDEA?

No 21%

Yes 79%
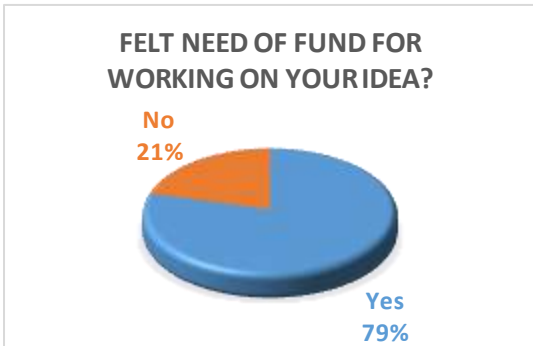
To start working on something new and different ideas, if needs a lot of investment to bring it into market. So 79%felt need of funds when they were working on their projects. This is one of the important need of any project development.

7. What all are the problems you faced while nurturing your idea?

Problems Faced

Category	
Other	
4. Professional Network	
3. Investment	
2. Need for Team	
1. Lack of Guidance	

0   20   40   60   80
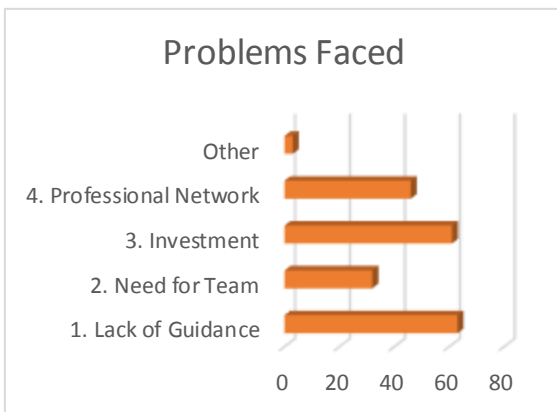
We provided different options regarding the most important hurdles people faced while working on their idea or projects. As per the survey guidance and investment these are two major hurdles for idea or project development.

8. Would you like to work on your idea if all the resources are made available to you for working on it?

WOULD LIKE TO WORK ON YOUR IDEA IF ALL RESOURCES ARE MADE AVALIABLE?

4%

96%

■ Yes
■ No
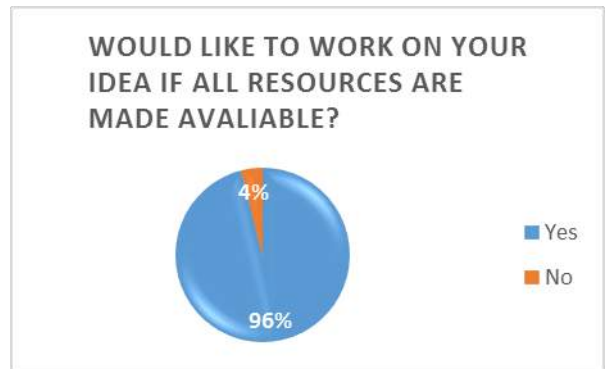
96% people are willing to work on their own idea, if they get all the required resources for their idea. This shows that there is great market potential for platform like Talentooz.

9. Have you heard of any online platform where you can get all type of help necessary for working on your idea?

HAVE YOU HEARF OF ANY PLATFORM WHERE YOU GET ALL TYPE OF HELP FOR WORKING ON YOUR IDEA?

Yes 17%

No 83%
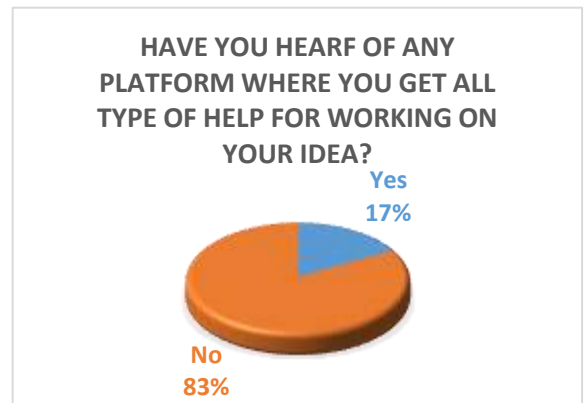
More than 80 % of people are unaware about existence of such platform which can help them in making their dream to become reality. This is one important factor which is stopping generation of innovation.

10. Would you like to join a platform which can guide you for making your idea a reality or to contribute to your idea and get reward for it?

WOULD LIKE TO JOIN A PLTFROM WHICH CAN GUIDE YOU WHILE WORKING ON YOUR IDEA?

No 15%

Yes 85%

If people are provided with platform which can help them in nurturing their idea, 86 % people will join such type of platform. This talks about customer willingness for platform which Talentooz want to provide.

> 11. If yes, what type of a platform would you like to join?

Type of platform

Other — 3

No online platform only physical platform. — 16

An online platform where you get expert advice, funds for contributing to your... — 49

An online forum where you can ask for the help and you can get answer from the expert. — 21

0   20   40   60

When different options are provided to samples regarding platform they want for working on their ideas. 55% said that they would like to join an

online platform where they can get expert advices, investment, and rewards as and when needed.

Text heads organize the topics on a relational, hierarchical basis. For example, the paper title is the primary text head because all subsequent material relates and elaborates on this one topic. If there are two or more sub-topi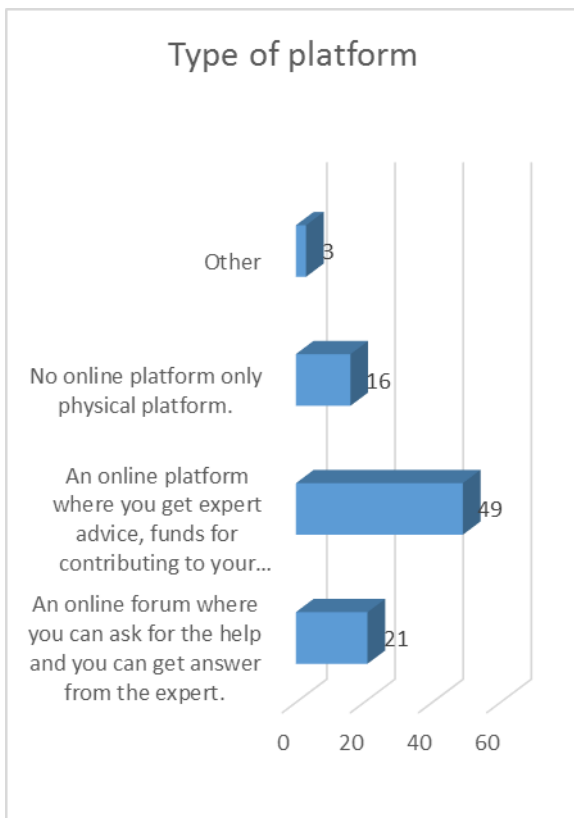cs, the next level head (uppercase Roman numerals) should be used and, conversely, if there are not at least two sub-topics, then no subheads should be introduced. Styles named "Heading 1," "Heading 2," "Heading 3," and "Heading 4" are prescribed.

VI.   RESEARCH FINDING

From the customer survey we came to know about the following important points.

- Most of the people have ideas in their minds, which is their own innovations and almost all are willing to make their idea into reality. But due to problems 89% of ideas are never accomplished.

- People try implementing their ideas, work on it mostly individually, but they face problems of funds and the guidance.

- So the two main problems faced by people while working on their own ideas are the lack of guidance and funds for the work.

- People will feel great if they get rewards for it. They will feel great if they get career options based on their own work and would like to work for such opportunity.

- Most of the people about 83 % are not aware about such a platforms where they can incubate their idea and get all the necessary helps.

VII.   SUGGESTION

- There is large scope of expansion in this industry by creating global presence and

integrating with other industry will foster the growth.

- Two main hurdles faced by most people are guidance and investment.

- Most of people are still unaware about existence of platform where they get all assistance for working on their own thoughts/ideas. So creating awareness among people about such platform is very important.

CONCLUSION

If we look at the growth of this industry and current market trends there is wide scope available to business incubation industry and its services. This industry is still new and growing. People are unaware about such platforms.

The basic purpose for the existence of this industry is to assist the new start-ups and entrepreneurs to establish a sustainable venture. For this purpose it is very important to understand the type of assistance needed by entrepreneurs.

From the study we found that the main problems which should be overcome by these services are guidance for how to proceed with work and initial funds that are required establishment of early entrepreneurs and for the nurturing of idea to make it commercial product.

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Use of Psychology in Advertising

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Abstract— **Advertisement is quite old concept, over the years there have been various trends and changes in advertising tactics used by marketers. Even after so many years there are some fundamental characteristic which marketers use while advertising. Consumer psychology is important aspect in any advertisement. This research paper focuses on how psychology is used by marketers in advertising their product.**
Key words: more than four key words must be given.

Objectives of the Study:

1) To get more detailed knowledge on relation between psychology & advertising.

2) To understand the psychological concepts used in advertising.

3) To understand impact of advertisement by analyzing some successful advertisements.

I. INTRODUCTION

Advertisements are one of the best way of communicating to the masses. Over the years advertisement have played a vital role in sales of products. Advertisements are known as nervous system of business. As our nervous system is constructed to give us all sensations like happiness, sadness, joy etc. so the advertisement which is comparable to the nervous system must awaken in the reader as many different kinds of images as the object itself can excite. It is said advertisement is heart of product, the way you present your product the same way viewers perceive it.

Psychology in advertising has long been used as an effective means to sell a product or service. Understanding the underlying concepts that affect human psychology can help a company better sell their product or alternatively can help a consumer understand marketing strategies that get them to buy products.

Persuasion is the changing of attitudes by presenting information about another attitude. This information is then processed one of two ways: centrally or peripherally. If it is processed centrally the attitude change is more likely to have permanence. If the information is processed peripherally it will be more susceptible to later change.

One commonly used technique of persuasion is that of authority. Everyone has seen ads where "2 out 3 doctors recommend..." This is based on the idea that people will respect the opinions of someone who is assumed to have a lot of knowledge about the product. People feel better knowing that someone with authority has recommended what they are about to buy. Of course, the authority

person has to have expert knowledge in that particular field. Would you buy certain toothpaste because a car salesman recommended it?

First and foremost an advertisement has to catch your attention. One way in which it does this is by appealing to your emotions. It can arouse feelings of fear, love, pleasure, or vanity. Scarcity is the fear that you may miss an opportunity to purchase a product. "One day sales" and phrases such as, "For a limited time only" or "Limited supply" are common uses of this particular technique. **Health** advertisements more often utilize **fear** to get the audiences' attention. Once this is accomplished they hope to "scare" the audience enough to produce an attitude change, be it buying their product, changing your lifestyle, etc. **Beer** and cigarette advertisements appeal to peoples' desires for **fun and pleasure**. The people in these ads are portrayed as having a good time, leading to the belief that if you purchase these products you too will have a good time. Many advertisements employ more than one technique in attempting to persuade the audience. Plastic surgery ads are a perfect example. They attempt to persuade by appealing to peoples' **vanity/egotism** by exposing their fear of ageing.

The History of Advertising in India

Anthropologist William Mazzarella divides advertising in post-independence India into four key phases. The first of these began after Indian independence from Great Britain (1947) and lasted until the early 1960s. Indian advertising in this period still operated as an outpost of the British Empire. The overall style of advertising was factual presentation coupled with an overall lack of creativity. The second phase (early 1960s to 1980s) emerged in large part as a reaction to the first and stressed creativity and an Indian professional identity independent of Great Britain. A third phase (1980s) turned away from creative and innovative advertising and toward creating efficient marketing channels that would have a wide impact throughout the country. The fourth and current phase, which also came into being in the 1980s, is characterized by a synthesis of effective marketing mechanisms and a high level of creativity.

Today Indian advertising has the enormous job of speaking to one of the world's most diverse populations. English is the only common language throughout all of India, but it is unknown in many sectors of the population. Television, radio, and newspapers rely on more than two dozen languages, thus limiting the communicative reach of many advertisements to certain geographic regions or some sectors of society. When addressing India's elite, advertising uses English. When speaking more colloquially to the masses, it uses one of the many local languages. In northern India, Hindi is widely used in ads but it is not useful in southern India where it is seldom spoken.

Some advertisements combine English and Hindi in a mixture known locally as *Hinglish*.

Most large multinational advertising agencies have offices in India—almost certainly in India's financial capital, Mumbai (formerly known as Bombay), and often in New Delhi and other cities as well. There are successful homegrown agencies that tend to focus more on locally produced brands and advertising aimed at regional populations in languages other than English.

PSYCHOLOGICAL TACTICS MARKETERS USE TO INFLUENCE CONSUMER BEHAVIOR

The vast majority of marketers aren't psychologists. But many successful marketers regularly employ psychology in appealing to consumers. Smart, skillful, honest marketers use psychology legally, ethically, and respectfully to attract and engage consumers, and compel them to buy. Here are a few tips and tricks for using psychology to your own marketing campaign's advantage:

1. RUN EMOTIONAL IDEAS

Studies have shown emotional and psychological appeals resonate more with consumers than feature and function appeals. In advertising copy, benefits—which often have a psychological component—generally outsell features. Demonstrating how that new computer will improve a potential customer's life tends to have more influence rather than explaining how it works. Salespeople have long understood the power of emotional appeals. In the 18th century, when the contents of the Anchor Brewery were being auctioned off, the auctioneer said: "We are not here to sell boilers and vats, but the potentiality of growing rich beyond the dreams of avarice." Best example of running emotional ideas in advertisement is the latest Airtel Telecom advertisement of Papa ko khush karo the way they have showcased how you can get benefits of your father's postpaid sum's My plan service in which he can share all benefits with whole family.

2. AUTHORITY

One commonly used technique of persuasion is that of authority. Everyone has seen ads where "2 out 3 doctors recommend..." This is based on the idea that people will respect the opinions of someone who is assumed to have a lot of knowledge about the product. People feel better knowing that someone with authority has recommended what they are about to buy. Of course, the authority person has to have expert knowledge in that particular field. Would you buy a certain toothpaste because a car salesman recommended it? No right because expert opinion is regarded as the most trustworthy. Experts have authority in their choices and comments which they give and these all comments and choices are regarded as most prominent.

3. REPOSITION YOUR COMPETITION

In *Positioning: The Battle for Your Mind*, Al Ries and Jack Trout delve into the limited slots consumers have in their brain for products and services, and the importance of positioning one's business in the ideal slot. They also write about repositioning—changing the position a business occupies in consumers' minds. A prominent example of repositioning the competition is when the olx brand launched the latest ad in which they show how jeep sale helped two unknown people get friendship, with this ad they showed that olx is not only an buy and sell portal it is a place for most valuable things in world like friendship, love etc

4. PROMOTE EXCLUSIVITY

At the top of Maslow's hierarchy of needs pyramid is self-esteem. People want to feel important; like they're part of an exclusive group. That's why advertising copy sometimes says: "We're not for everyone." Luxury cars, high end watches, expensive perfumes-bags etc.

5. INTRODUCE FEAR, UNCERTAINTY, AND DOUBT

Fear, uncertainty, and doubt, or FUD, is often used legitimately by businesses and organizations to make consumers stop, think, and change their behavior. FUD is so powerful that it's capable of nuking the competition. Harpic, Domex, Dettol etc, where the germs are showed in such a form that it will never exist. Still they are shown in such a manner that people are scared & are persuaded to buy their products.

E.g. Max Bupa, Lic Advertisements.

Conclusion

Marketers today should posses at least minimum psychological knowledge. Psychology forms the human beings & hence it will help you & your business make money. Companies operating in India invest lots of money in advertisement & to make sure that they are moving in right direction they use high amount of human psychology to hit the nail in consumers mind. Above are some examples by which we can conclude how successful are the advertisements of the companies who use psychology as vital part of their communication.

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ROLE OF BANKING SECTOR IN THE GROWTH OF MICRO, SMALL & MEDIUM ENTERPRISE'S IN INDIA

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Abstract— **This research paper emphasizes the role of banking sector in helping MSME (Micro, Small & Medium enterprises) grow by offering various customized products & services.**

Key words: msme, margin, disbursements

I. INTRODUCTION

The Micro, Small and Medium Enterprises in Manufacturing and service sector are defined as under in MSMED ACT, 2006 as

Particulars	Investment in Plant & Machineries in case of Manufacturing Enterprises	Investment in Equipment in case of Service Sector Enterprises
Micro Enterprises	**Up to Rs. 25/- lacs**	**Up to Rs.10/- lacs**
Small Enterprises	**Above Rs. 25/- lacs and up to Rs.500/- lacs**	**Above Rs.10/- lacs and upto Rs.200/- lacs**
Medium Enterprises	**Above Rs.500/- lacs and up to Rs.1000/- lacs**	**Above Rs.200/- lacs and up to Rs.500/- lacs**

Manufacturing Enterprises i.e. enterprises engaged in the manufacture or production, processing or preservations of goods with investment in Plant & Machinery as stated above.

Service Enterprises i.e. Enterprises engaged in providing or rendering services and whose investment in equipment as specified above. (Original cost excluding Land & Building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006).

Loans for food and agro processing will be classified under Micro and Small Enterprises, provided the units satisfy investments criteria prescribed for Micro and Small Enterprises, as provided in MSMED Act, 2006.

Small and Medium Enterprises (SMEs) play a vital role for the growth of Indian economy by contributing 45% of industrial output, 40% of exports, employing 60 million people, create 1.3 million jobs every year and produce more than 8000 quality products for the Indian and international markets. SME's Contribution towards GDP in 2014 was 17% which is expected to increase to 22% by 2012. There are approximately 30 million MSME Units in India and 12 million persons are expected to join the workforce in the next 3 years.

CHALLENGES FACED BY MSME

Despite being of prime importance in Indian economic growth, the MSME sector is facing numerous challenges without much support. The lists of the problems that are faced by existing/new companies in MSME sector are as under:

1. Absence of adequate and timely banking finance
2. Limited capital and knowledge
3. Non-availability of suitable technology
4. Low production capacity
5. Ineffective marketing strategy
6. Constraints on modernization & expansions
7. Non availability of skilled labor at affordable cost
8. Follow up with various government agencies to resolve problems due to lack of man power and knowledge etc.

It is very important to empower the SME sector to utilize the limited resources (human & economic) they have in an optimum manner. The SMEs need to be educated and informed of the latest developments taking place globally and helped to acquire skills necessary to keep pace with the global developments. SMEs are now exposed to greater opportunities than ever for expansion and diversification across the sectors. Indian market is growing rapidly and Indian entrepreneurs are making remarkable progress in various Industries like Manufacturing, Precision Engineering Design, Food Processing, Pharmaceutical, Textile & Garments, Retail, IT and ITES, Agro and Service sector.

To counter the challenges faced by SME sector and grab the opportunities in the market, the Chamber has developed key strategies to promote and support the SME sector. The Chamber encourages SMEs to adopt innovative ideas and concepts for the promotion of their business. The goal of the Chamber is to organize Seminars, Conferences, Workshops and Training Programs and other trade promotional activities to educate & create awareness amongst

the SMEs. CIMSME has decided to start various activities to empower and educate the SME Sector by organising various trade promotional activities

Government initiative

The GoI has taken several measures for protecting and promoting the MSME sector and enabling it to contribute effectively to the country's economy. Few of them include:

- **PM's Task Force on MSMEs**
  PM's task force was set up to enable in-depth analysis of the main issues having bearing on the functioning of MSME viz credit, marketing, labor, rehabilitation and exit policy, infrastructure, technology and skill development, and taxation. A separate section covers the development of MSMEs in the North-East and Jammu & Kashmir. The implementation of the recommendations made by the task force is being monitored periodically by the Steering Group Action, has been completed on a substantial number of recommendations. Further, a Council on Micro, Small and Medium Enterprises (MSMEs) has been set up under Prime Minister's Office to lay down broad policy guidelines and review the development of the MSME sector.
- **Rajiv Gandhi Udyami Mitra Yojana**
  The objective of Rajiv Gandhi Udyami Mitra Yojana (RGUMY) is to provide support and assistance to the potential first generation entrepreneurs in dealing with various procedural and legal hurdles and in completion of various formalities required for setting up and running of the enterprise. The Udyami helpline provides information about various promotional schemes of the government, procedural formalities required for setting up and running the enterprise, and how to access credit from banks.
- **Credit Guarantee Fund Trust for MSME**

The Ministry of MSME and GoI have launched the credit guarantee scheme to strengthen credit guarantee scheme and facilitate flow of credit to the MSME sector. For implementing the scheme, GoI and SIDBI has set up Credit Guarantee Fund Trust, which makes credit available to new as well as existing Micro and Small Enterprise, including Service Enterprises, for loans up to ` 10mn without collateral/ third party guarantees.

- **Development Commissioner (DC) of MSME**
  The MSME-DC is playing a very constructive role by rendering comprehensive services, including consultancy through institutional set up of its field organizations spread over different parts of the country. The organisation has a network of 30 MSME Development Institutes (MSME - DIs), 28 Branch MSME-Dis, four MSME Testing Centers (MSME-TCs), seven Field Testing Stations (MSME-TSs), 18 Autonomous Bodies, which include ten MSME Tool Rooms (MSME-TRs), six MSME Technology Development Centers (MSMETDCs), and two MSME Footwear Training Institutes (MSME-TDC-CFTIs). There are also two departmental Training Institutes (MSME-TIs).
- **Export Promotion and SSI MDA scheme**
  Under the scheme, MSME entrepreneurs are trained on scientific packing techniques, latest design of packing technology, and improving their packaging standards. DC MSME through marketing development assistance scheme for getting an exposure to the International market and exploring the possible export opportunity of their products by exhibiting them through participation in International Trade Fairs under MSME India stall.
- **National Award Scheme**
  In order to recognize the efforts and contribution made by MSME sector, the Ministry of Micro, Small and Medium Enterprises presents award annually to deserving entrepreneurs. The award categories covered include research and development efforts, outstanding entrepreneurship efforts, and quality product. Awards are also granted to banks for excellence in lending.

Help from BANKS

- Financing without security upto Rs.100 lakhs
- Guiding for project set-up & expansion
- Financing to meet working capital requirements
- Providing various other forms of finance for buying of equipments & other necessary material

Products Offered by banks to boost MSME SECTOR
Banks have introduced various products in to help MSME sector grow,
Below is the comparison of some of the products available in the market.

NAME OF BANK	UBI	PNB	BOI
PRODUCT NAME	UNION SUPPORT	PNB KUSHAL VYAPARI	STAR UDYAMI SAMEKIT
Nature	Composite Term loan	Term Loan	Demand/Term Loan
Tenure	3-5years	3-10years	Maximum of 5yrs
Margin	20%	25%	15%
R.O.I	13.25%	10.25+1.25 % (upto 50000) 10.25+ 2.25% (50000-2000000)	10.20%:Upto 50000 Above 50000 upto 500000:11.20% Above 500000 upto 1000000:12.20% Above 1000000 upto 10000000:12.95%

Products of MSME

MSMEs in India manufactures over 6,000 products including food products and beverages (14.26%), wearing apparel (13.67%), fabricated metal products (8.96%), repairs and maintenance of personal and household goods, retail trade (8.46%), textiles (6.78%), furniture (6.36%), machinery and equipment (4.66%) ,other non-metallic mineral products (3.77%), repairs and maintenance of motor vehicles, retail sale of automotive fuel, personal and household goods retail trade (3.72%), wood and wood products (3.53%) and others (25.85%).

Distribution of MSMEs

The distribution of MSMEs according to sector category and area indicates that the micro segment dominates the sector with 94.94% share. MSMEs in rural areas accounted for 55% of total working enterprises, whereas urban areas MSMEs accounted for a 45% share. The state wise distribution shows that more than 55% of these enterprises are in six states namely Uttar Pradesh, Maharashtra, Tamil Nadu, West Bengal, Andhra Pradesh and Karnataka.

STATISTICS OF MSME SECTOR

YEAR	No. of Working Enterprises(in mn)	Employment(in mn)
FY12	12	29
FY13	26	60
FY14	27	63
FY12	29	66
FY13	30	70
FY14#	31	73

#projected

As per the estimates compiled for FY14, there are 31 mn enterprises under the MSME sector, which provide employment to around 73 mn persons. The fixed investment in the MSME sector stands at ` 7,734.9 bn and production is estimated to reach ` 10,957.6 bn at the end of FY14.

MSMEs access to finance

Availability of adequate credit is a prerequisite for expansion and development of the MSME sector. While banks have been the primary source of MSME financing, other sources of funding consist of equity capital, venture financing, and fiscal incentives in the form of tax breaks.

Role of Banks

As per the RBI guidelines, all loans granted to the MSME sector are classified as priority sector lending and banks are required to lend at least 60% of the advances to the MSME sector to micro enterprises. Realising the importance of MSME sector, GoI has set up a Prime Minister's task force, whose recommendations are strictly monitored by the RBI to ensure adequate credit to the sector. The recommendations made, related to the credit of the sector, are as follows:

- All scheduled commercial banks should achieve 20 % y-o-y growth in credit to micro and small enterprises to ensure enhanced credit flow.
- To increase the flow of credit to micro enterprises, all scheduled commercial banks should lend 60% of their MSME lending to micro enterprises in stages viz. 50% in the year 2013-11, 55% in the year 2014-12, and 60% in 2012-13.
- All scheduled commercial banks should achieve a 10% annual growth in the number of micro enterprise accounts.

Credit to MSME by SCB

Source: RBI
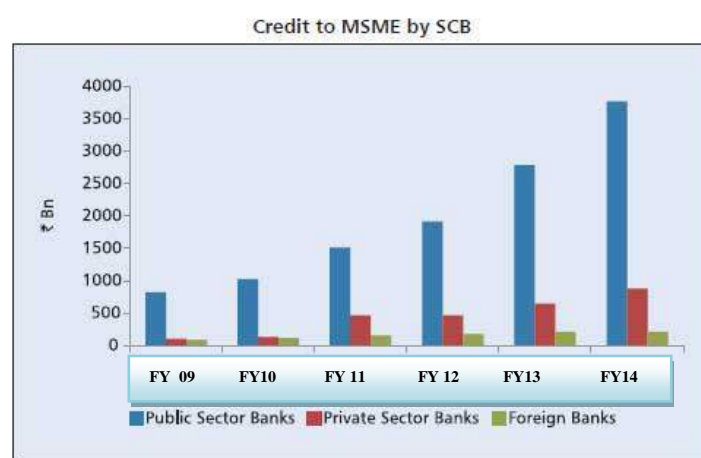
| 6,958.44 | 9,829.20 | 4,204.50 |
| 7,734.90 | 10,957.60 | 7,802.30 |

Banks have been a primary source of credit for the MSME sector and simultaneously, there has been a significant growth of credit funding by the banks to this sector. MSME sector relies on banks for varied purposes such as purchase of land, plant and machinery as well as working capital needs. At the end of FY14, total credit extended to MSME sector by the Scheduled Commercial Banks (SCBs) stands at ` 4,859.4 bn. However, the growth rate of credit by SCB has slowed down to end up at 33.50% in FY14 compared with 42.12% in FY13. The public sector banks are the largest contributors, with more than 75% share, followed by private sector banks (18.1%) and foreign banks (4.4%). The total MSME Credit, as percentage of the Adjusted Net Bank Credit (ANBC) by public sector banks during FY14, stood at 14.8%.

Trend of Sanctions & Disbursements by SIDBI

Source: SIDBI

Major reasons of sickness reported

Reason for sickness	Proportion of sick units
Lack of demand	41.94%
Shortage of working capital	20.49%
Non availability of raw material	5.11%
Power shortage	5.71%
Labour problems	5.64%
Marketing problems	11.48%
Equipment Problems	3.17%
Management Problems	6.46%

Source: Report of Fourth All India Census of Micro, Small & Medium Enterprises

For the enterprises identified as sick or incipient sick, main causes identified for sickness were lack of demand and shortage of working capital.

RBI too compiles information on sickness in respect of enterprises borrowing loan from scheduled commercial banks (SCBs).

The number of units identified as potentially viable in proportion to total sick MSME units is around 8%, whereas proportion of non-viable units is on the higher side at 84%. Banks are advised to review and put in place a restructuring policy in order to give wide publicity to One Time Settlement schemes, in order to recover NPA loans in MSME sector. RBI has also recommended GoI to set up a rehabilitation fund for rehabilitation of sick MSMEs.

CONCLUSION:
MSME form the backbone of any economy and it has also been one of the most employment generation sectors. Government of India along with the Banking Sector has realized this very fact and as seen have come out with various schemes and initiative to help the sector.. Banking sector not only offers unsecured credit but has also starts consultation services to help the sector revive and expand.
All the initiative has helped to boost Indian Economy

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Evolution of Smart Phones in the Indian Market

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Abstract

It is believed that a large portion of the population, especially the literate are more or less handicapped without a Smart Phone. Today, a Smart Phone is a necessity. Mobile phones have caught on really fast and captivated the masses considerably quickly.

The research on "Evolution of Smart Phones in the Indian Market" has been done to clearly determine how smart phones have evolved with time, in terms of sales, mobile operating systems and preferences of the customers.

The research paper moves on to provide a clear picture on the current scenario. A primary research was conducted for this purpose.

Introduction

In the past, mobile phones were mostly about making phone calls. They had a number pad, a digital phone book and a pick-up/hang-up button and not much more. Now smart phones offer so much more – they're really fully-fledged computers that you can fit in your pocket. They can run programs and games, access the internet, send email and much more. Nearly all smart phones now use touchscreen controls. Instead of having hardware buttons like before, one side of the phone is taken up mostly by a touchscreen that you control using taps and gestures. There aren't even any number buttons; when you want to make a call, a number pad will pop up on the touchscreen.

A smart phone can:

- Make voice calls
- Make video calls
- Access the internet and browse the web
- Take photos, and upload them to the web
- Navigate with GPS if the phone has GPS built-in
- Play back music and video stored on the phone
- (and connect to a PC to copy media to it)
- Manage your contacts and appointments
- Send emails
- Play in-built games
- Run new applications and games downloaded for the internet.

Objectives

1) To determine the change in the sale of smart phones over the years
2) To determine the type of smart phone most demanded
3) To determine the most successful Mobile Operating System

Hypothesis

Price, features, reliability of the Mobile Operating System and user friendliness are

the main determinants for a customer while purchasing a Smart Phone.

Research Methodology

A Primary Research was conducted among 44 people. It was conducted through questionnaires, that were mailed to the respective people. The main objective was to study people's purchasing behavior towards smart phones.

Background Information

The first smart phones, the IBM Simon and Nokia Communicator 9000 were released way back in 1994 and 1996 respectively, and integrated the features of a mobile phone and a personal digital assistant (PDA) for managing calendars and contacts. Both were much larger than regular phones. It wasn't until 2000 that the first real smart phone, the Ericsson R380, was released. It wasn't any larger than a regular phone, and in the early 2000s many others followed suit, with phones like the Palm and BlackBerry achieving big success. In 2007, Apple released the iPhone, which eschewed hardware buttons for full touchscreen control and has been the template for smart phones ever since.

A mobile operating system, also called a mobile OS, is an operating system that is specifically designed to run on mobile devices such as mobile phones, smart phones, PDAs, tablet computers and other handheld devices. Like a computer operating system, a mobile operating system is the software platform on top of which other programs run. When you purchase a mobile device, the manufacturer will have chosen the operating system for that specific device.

The operating system is responsible for determining the functions and features available on your device, such as thumbwheel, keyboards, WAP, synchronization with applications, e-mail, text messaging and more. The mobile operating system will also determine which third-party applications can be used on your device. The mobile operating system is the software platform on top of which other programs, called application programs, can run on mobile devices. Today's mobile devices are multifunctional devices capable of hosting a broad range of applications for both business and consumer use. Smart phones and tablets allow people to access the Internet for email, instant messaging, text messaging and Web browsing, as well as work documents, contact lists and more.

Mobile devices are often seen as an extension to your own PC. Work done on the road, or away from the office can be synchronized with your PC to reflect changes and new information.

Different types of Mobile Operating Systems:

ANDROID

Android is a mobile operating system (OS) based on the Linux kernel and currently developed by Google. With a user interface based on direct manipulation, Android is designed primarily for touchscreen mobile devices such as smart phones and tablet computers, with specialized user interfaces for televisions, cars (Android Auto), and wrist watches (Android Wear).

The OS uses touch inputs that loosely correspond to real-world actions, like

swiping, tapping, pinching, and reverse pinching to manipulate on-screen objects, and a virtual keyboard. Despite being primarily designed for touchscreen input, it also has been used in game consoles, digital cameras, regular PCs and other electronics.

iOS

iOS is one of the leading mobile operating system, which others trying to catch up. This OS is designed by Apple followed by Mac operating system. User friendliness is the key for this operating system. iOS is considered as the foundation of the iPhone. This is designed for the iPhone but now supports iPod touch, iPad and Apple TV. Businesses around the world are choosing iOS devices for their enterprise-ready features and powerful security. iOS works with Microsoft Exchange and standards-based servers to deliver over-the-air push email, calendar, and contacts. It protects your data by encrypting information in three separate areas: in transmission, at rest on the device, and when backed up to iTunes. You can securely access private corporate networks through industry-standard VPN protocols. And companies can easily deploy iPhone across an enterprise using configuration profiles.

Symbian

Symbian is an open source (from 2008) operating system mainly used in Nokia Mobile Devices. Symbian OS is designed to make minimal demands on batteries and to have low memory. It is a multitasking operating system and very less dependence on peripherals. All applications are designed to work seamlessly in parallel. The use of technologies based on agreed upon standards is a basic principle of

Symbian OS, ensuring that applications are robust, portable, and interoperable. Memory management optimized for embedded software environment. Symbian uses microkernel approach. The kernel manages system resources such as memory and is responsible for time-slicing the applications and system tasks.

Blackberry

The BlackBerry OS is the proprietary mobile platform developed by RIM (Research in Motion), exclusively for its BlackBerry smart phones and mobile devices. It offers native support for corporate mail via MIDP, which enables effortless wireless sync with Microsoft Exchange, Lotus Domino and email, contacts, calendar, notes and so on, while used along with the BlackBerry Enterprise Server. Blackberry provides end to end encryption. Data sent to the BlackBerry smart phone is encrypted by BlackBerry Enterprise Server using the private key retrieved from the user's mailbox. The encrypted information travels securely across the network to the smart phone where it is decrypted with the key stored there.

BADA

Bada OS is a proprietary operating system for smartphones, developed by Samsung and presented in 2009. The first Bada phone – the Samsung Wave – was launched later on, in 2010.Samsung uses Bada OS alongside Android OS and Windows Phone, but in 2012 the development of new smartphones using Bada has been quietly halted in favor of the more popular Android OS.Samsung markets all Bada devices under the Wave brand name; similar to how all of their

Android-powered devices are branded under the Galaxy name.

Data Analysis

Primary Research was conducted on a sample of 44 people, comprising on 18 males and 26 females.

From the survey conducted, the following was analysed:

- 93% of the sample use smart phones
- 47% of the sample have been using smart phones for less than 3 years, 24% have been using for 3-5 years while 22% have been using for more than 5 years
- 71% prefer Android & 22% prefer Apple iOS
- Blackberry OS, Symbian OS & BADA are preferred by none
- The major reason for preferring the above 2 Mobile Operating Systems is- features, performance & value for money
- Samsung Galaxy is used by 29% of the sample, followed by Apple iPhone (18%), Sony Xperia & HTC (9%), Motorola (2%), and others which mainly include Nexus 5, Nokia Lumia (24%)
- The price range most preferred is Rs. 15,000-30,000
- 6% of the sample use phones that cost more than Rs. 40,000
- Only 7% of the sample believes that their current phone doesn't have value for money
- 47% of the sample believes that it can substitute their computer
- Most of the sample prefers a storage capacity of 16GB

- Most phones' battery lasts for 12 hours, very few last for over 24 hours
- 56% of the population believes that dual sim phones are useful

Hypothesis Testing

The survey conducted proved that the hypothesis is true. Price, features, reliability of the Mobile Operating System and user friendliness are the main determinants for a customer while purchasing a Smart Phone. The two main smart phones that are preferred by customers are- the Samsung Galaxy and the Apple iPhone. However, price being a major determinant is partially true as some consumers do purchase smart phones over the price range of Rs. 40,000 which is expensive. Consumers are willing to pay such a price for all other reasons except price. Such phones have more features, reliability and are more user friendly than the others.

Conclusion

From the above findings it can be concluded that smart phones have evolved since they were first introduced in India. This transition has been very rapid and innovative features have been constantly brought to the users every year. This can be seen by comparing the time when the first brick phone was launched in the market to today's scenario, where sophisticated phones are being used.

The case study portrayed that Samsung has been successful in using the strategy of continuous innovation, while Nokia and Blackberry have been suffering.

Operating Systems like Android and iOS are gaining more and more patrons due to their features, value added services and fairly reasonable pricing.

Android seems to have occupied the highest position as far as desirability is concerned.

The most demanded smart phone is the Samsung Galaxy.

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Financial performance Pre and Post Merger HDFC and Centurion Bank of Punjab

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Abstract :- The banking sector is one of the key instruments in a nations development . A nations development can be predicted with the stability of its banking sector . Since the deregulation of financial markets , liberalization of the markets and economic reforms have witnessed revolutionary changes in the banking industry leading to technological sophistication and incredible competition among bankers .

Introduction :- the banking sector in india has grown considerably over the past few years. In india banks are the dominant financial intermediaries . indias banking system is very different from other asian countries , this is due to is geographical , economical and social structure . the banking system in India is dynamic and has a great potential .

Companies growth is possible in two different ways organic and inorganic . In organic growth the growth of a company is internal and is done via their own operations , the company uses the funds that it earns in the previous year to expand their company in

the current year . this is a very slow and gradual kind of growth that takes place over years .

In inorganic growth a company merges , acquire or takesover other companies inorder to increase the size of their business or inorder to gain more market share and improving cost efficiency. the main motive for merger is synergy.

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Mergers and acquisitions in Indian Banking Sector :

The banking sector started in the year 1770 , the first bank was the Indian Bank , also known as Bank of Hindustan.

In 1840 , Bank of Bombay and Bank of Calcutta and in 1843 Bank of Madras were established in India under the Charter of the British East India company.

The three Banks formed in the year 1840 and 1843 were then merged to form Imperial Bank Of India in the year 1921

Imperial Bank Of India was then partially nationalized inorder to enhance development in the rural areas as State Bank of India in the year 1950

Indian Banking Sector can be divided into two eras , pre liberalization and Post liberalization .

Pre liberalization the government nationalized 14 banks on 19 july 1969 and 6 more banks were nationalized on 15th april 1980.

In post liberalization period , various attempts were taken by the banks inorder to boost the banking system of the country .

The number of mergers that occurred during the pre

liberalization phase (1961-1968)-46

The number of mergers that occurred during the nationalized period (1969-1992)- 13

The number of mergers that occurred during the post reform phase (1993-2006)- 26 mergers took place , out of which 13 were forced mergers , 5 were voluntary , 2 were convergence of financial institution into a bank and 1 was due to regulatory compulsions.

Hypothesis :- Financial Performance of Banks enhances after Mergers and Acquisitions .

Objectives :- To study the impact of merger of Centurian Bank of Punjab on the Financial performance of HDFC Bank .

Scope of study:- This research focuses on the impact of mergers and acquisitions on a private sector bank . The merger of Centurion Bank of Punjab with HDFC Bank is taken into consideration . Their performance has been evaluated by taking into account 3 years pre and post merger finances .

Research methodology :-

- This research has been carried out with the help of following financial ratios :-
1. Gross Profit Ratio = gross profit /sales * 100
2. Net Profit Ratio = Net profit / sales * 100
3. Operating Profit Ratio = Operating Profit / sales *100
4. Return on Capital Employed = Net Profit / Total Assets*100
5. Debt Equity Ratio = Total Debt/ Shareholders Equity
6. Return on Equity = Net profit / Equity Shareholders Funds *100
   To study the impact of the merger , pre and post merger data is taken into

consideration excluding the year of merger in both the cases

- SWOT Analysis is used to project the companies environment before and after the merger

Merger of HDFC bank Ltd. (acquirer bank) and Centurian Bank of Punjab (acquired bank) :-

About HDFC :- Promoted in 1995 by Housing Development Finance Corporation (HDFC), India's leading housing finance company, HDFC Bank is one of India's premier banks providing a wide range of financial products and services to its over 11 million customers across over three hundred cities using multiple distribution channels including a pan-India network of branches, ATMs, phone banking , net banking and mobile banking. Within a relatively short span of time, the bank has emerged as a leading player in retail banking, wholesale banking, and treasury operations, its three principal business segments .The bank's competitive strength clearly lies in the use of technology and the ability to deliver world-class service with rapid response time. Over the last 13 years, the bank has successfully gained market share in its target customer franchises while maintaining healthy profitability and asset quality . As on December 31, 2007, the Bank had a network of 754 branches and 1,906 ATMs in 327 cities . For the quarter ended December 31, 2007, the bank reported a net profit of Rs. 4.3 billion, up45.2%, over the corresponding quarter of previous year. Total deposits were Rs. 993.9 billion, up48.9% over the corresponding quarter of previous year. Total balance sheet size too grew by46.7% to Rs.1,314.4 billion.

On May 23, 2008, the merger of Centurion Bank of Punjab with HDFC Bank which is considered as one of the biggest merger in domestic banking was formally approved by Reserve Bank of India to complete the statutory and regulatory approval process. The shareholders of Centurion Bank of Punjab received 1 share of HDFC Bank for every 29 shares of CBoP. The merger has been advantageous to HDFC Bank in terms of increased branch network, geographic reach, and customer base, and a bigger pool of skilled manpower. In October 2008, the bank opened their first overseas commercial branch in Bahrain.

The branch offers the bank's suite of banking services including treasury and trade finance products for corporate clients and wealth management products for Non-resident Indians. As on 31st March, 2012 the authorized share capital of the Bank is Rs. 550 crore. The paid-up capital as on the said date is Rs. 469,33,76,540. The net profit is Rs. 5,167 crore, with Total deposits of Rs. 246,706 crore, and Total advances of Rs.195,420 crore. The bank is having a strong network with number of branches are 2544 of which 70% of bank branches are outside metro areas and 8913 ATMs in 1399 cities.

Financial Ratio Analysis :-

HDFC Bank	3 YEARS BEFORE MERGER			3 YEARS AFTER MERGER		
	31st march 2005	31st march 2006	31st march 2007	31st march 2009	31st march 2010	31st march 2011
Gross profit ratio	75%	72%	60%	77%	73%	77%
Net profit ratio	22%	20%	18%	14%	19%	21%
Operating profit ratio	53%	46%	48%	55%	52%	56%
Return on Capital Employed	2.29	1.184	1.2511	1.2259	1.3225	1.4156
Debt Equity Ratio	134.50	192.80	222.75	342.04	393.99	490.39
Return on Equity	214.90	278.80	357.38	533.12	650.20	843.96

Analysis :-
The table presents the data of various financial ratios of HDFC bank. In the pre merger scenario for the preceding three years excluding the year of the merger. Gross profit ratio and Net profit ratio show a declining trend. Return on equity and Debt Equity ratio exhibited increasing trend. Operating profit ratio and Return on capital employed showed mixed trend .

In Post merger analysis , three years data succeeding the year of the merger is considered . Net profit ratio , return on capital employed , Debt Equity ratio , Return on equity ratio shows an upward trend . Gross Profit ratio and Operating profit ratio show a mixed trend

SWOT analysis :- SWOT analysis is a structured planning method used to identify the Strengths , Weaknesses , Opportunities and Threats in an organizations internal or external environment . Using SWOT analysis the organization gets more insight in their areas of improvement .

Strengths :
1. HDFC has been highly proactive on passing the cost and benefits to the customers
2. Lower response time with efficient and effective service
3. Dedicated work force aiming at making a long term career in the field
4. Better quality of assets , NPA's of o.4%
5. Free Float Available , FII's can buy its stock
6. Products have required accreditations

Weaknesses :
1. High dependence on Individual loans
2. Major stakes are held by American financial groups which are under a lot of stress due to the economic slowdown
3. Customer service staff needs training
4. Management cover insufficient

Opportunities :
1. Fast growing insurance business in the country
2. Untapped rural markets
3. Fast track career development opportunities on an industry wide basis
4. HDFC plans to set up Non Banking Finance Company(NBFC) to undertake fund based activities

Threats :
1. Loss of market share to commercial banks and HFC's
2. High Volume/Low Cost market is extremely competitive
3. Risk of NPA's due to higher rates of interest

Reasons For Mergers :

The company was amongst the first to get a banking license, the first to do a merger in the private sector with Times Bank in 1999, and now after the merger of Centurion Bank of Punjab, it was the largest merger in the private sector banking space in India. HDFC Bank was looking for an appropriate merger opportunity that would add scale, geography and experienced staff to its franchise. This opportunity arose and the bank thought it is an attractive route to supplement HDFC Bank's organic growth. The bank believes that Centurion Bank of Punjab would be the right fit in terms of culture, strategic intent and approach to business.

The HDFC Bank-CBoP merger is expected to be a win-win for both banks in terms of both asset size and footprint. While CBoP is concentrated in the northern and southern parts of the country . HDFC Bank is focused throughout India .

Conclusion:-

The banking industry is one of the rapidly growing industries in India. It has transformed itself from a sluggish business entity to a dynamic industry. The growth rate in this sector is remarkable and it has become the most preferred banking destinations for international investors. In the last two decades, there has been a paradigm shift in Indian banking industry. The Indian banking sector is growing at an astonishing pace. A relatively new dimension in the Indian banking industry has accelerated through mergers and acquisitions. Mergers in banking sector are a form of horizontal merger because the merging entities are involved in the same kind of activity. By the way of Mergers and acquisitions in the banking sector, the banks can achieve significant growth in their operations, minimize their expenses to a considerable extent and also competition is reduced because merger eliminates competitors from the banking industry

In this study with the help of Financial ratios and SWOT analysis we can come to a

conclusion that the proposed merger will position the combined entity to significantly exploit opportunities in a market globally recognized as one of the fastest growing organizations . This is particularly bullish about the potential of business synergies and cultural fit between the two organizations. The combined entity will be an even greater force in the market . Over the last few years, Centurion Bank of Punjab has set

benchmarks for growth. The bank on that day has a large nationwide network, an extremely valuable franchise, 7,500 talented employees, and strong leadership positions in the market place. It is believe that the merger with HDFC Bank will create a world class bank in quality and scale and will set the stage to compete with banks both locally as well on a global level.

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