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Indian Academicians and Researchers Association
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SIES (Nerul) College of Arts, Science & Commerce

RISE WITH EDUCATION

NATIONAL CONFERENCE

On

Emerging Trends in Computer Science and Information Technology

(EMISHA 2019)

ORGANIZED BY

Departments of BSc IT & BSc CS

SIES (NERUL) COLLEGE OF ARTS, SCIENCE & COMMERCE

Nerul, Navi Mumbai

9th March 2019

In Association with

University of Mumbai

Life Long Learning and Extension

Publication Partner

Indian Academicians and Researcher's Association

SIES
(Nerul) College of Arts, Science & Commerce
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SIES (NERUL) COLLEGE OF ARTS, SCIENCE & COMMERCE

Nerul, Navi Mumbai

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THE SOUTH INDIAN EDUCATION SOCIETY(SIES) is one of the oldest education societies in Mumbai and was pioneered in 1932. The Society strives towards excellence in all its pursuits and beliefs in strict discipline. The SIES (NERUL) COLLEGE OF ARTS, SCIENCE & COMMERCE was established in September 1998 and is affiliated to the University of Mumbai. It is one of the reputed educational Institutes in Navi Mumbai & Mumbai educating the students of Arts, Science & Commerce.

The College has been accredited with 'A' grade in 2nd cycle of NAAC and also ISO 9001-2015 certified. The culture at SIESASCN is to continuously reset standards to a higher level to ensure increased productivity.

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Indian Academicians and Researchers Association (IARA) is an educational and scientific research organization of Academicians, Research Scholars and practitioners responsible for sharing information about research activities, projects, conferences to its members. IARA offers an excellent opportunity for networking with other members and exchange knowledge. It also takes immense pride in its services offerings to undergraduate and graduate students. Students are provided opportunities to develop and clarify their research interests and skills as part of their preparation to become faculty members and researcher. Visit our website www.iaraedu.com for more details.

ABOUT EMISHA 2019

EMISHA 2019 is a prestigious national conference that aims to showcase a comprehensive outlook featuring several pragmatic areas from Computer Science and Information Technology. Over the one-day conference, participants from academia and corporate will be presenting in-depth research papers to a jury comprising eminent personalities.

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PREFACE

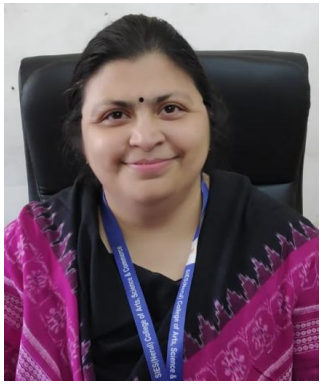
I am extremely proud of the faculty and volunteers of our college to have organized, Emisha 2019, “Emerging Trends in Computer Science and Information Technology” which aimed at developing human intellect by continuously stimulating research on various aspects concerning the world today.

Under the able guidance of SIES Management, our college has managed to lay another milestone in this academic journey. The conference has seen massive participation and enthusiasm from institutions all over. It is remarkable that the conference brought together different areas of expertise on single podium.

I thank all the researchers and presenters for sharing their knowledge and expertise with us. I also congratulate the organizing committee members, staff and students of our college for their co-operation and support in organizing this magnificent one day national conference.

Dr. Milind Vaidya
Principal & Conference Chairperson,
SIES (Nerul) College of Arts, Science and Commerce
Navi Mumbai

MESSAGE FROM THE VICE PRINCIPAL'S DESK



It gives me immense pleasure to present the one day National Conference 'Emisha 2019' on the theme of "Emerging Trends in Computer Science and Information Technology" organised by BSc IT and BSc CS departments of our college. The objective of this conference is to identify the new trends in Computer Science, Information Technology and management. The conference aims to create greater collaboration and sharing of academic understanding.

Today the world is changing with great speed. On one hand, it is throwing new challenges to us and at the same time, these challenges are providing scope for innovation in business and management. Global competition has meant that we need to be alert to the changing needs of our time. Being a part of higher education of this emerging country, we need to take care of the aspirations of our youth, our students. Globalisation of education has meant that we need to cater to the diverse requirement of our students. The conference provides a platform for researchers, academicians and students from various backgrounds to interact and exchange meaningful and relevant knowledge that will benefit our readers.

Dr. Koel Roy Choudhury
Vice Principal, IQAC Co-ordinator
SIES (Nerul) College of Arts, Science and Commerce
Navi Mumbai

MESSAGE FROM THE CONVENOR

It was a joy and privilege to convene this National Conference “EMISHA 2019” on 9th March, 2019. The theme for the conference is "Emerging Trends in Computer Science and Information Technology".

This was a premier global level annual event that provided a platform for students, industry leaders and subject experts to discuss the growth as well as different perspective in lieu with Computer Science, Information Technology and Management.

It is a proof of the importance and significance of this event that it had the presence and active participation of the most important researchers, technologists and business entities in these sectors.

I hope that the platform that we have created for ourselves for learning from each other and sharing the excitement of the profession will also be a launching pad for the future collaborations and fascinating results. I hope the deliberations, the interactions and the exchange of the knowledge and the facilitating of collaboration along with Department of Lifelong Learning and Extension, Mumbai University will provide a road map for the upcoming conferences and knowledge avenues.

Dr. Swati Vitkar
Convenor - EMISHA 2019

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Research Papers

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ANALYSIS OF ORGAN DONATION AND TRANSPLANTS

Sana Syed and Dr. Amol Joglekar
Mithibai Autonomous College

1. INTRODUCTION

This project is about Analysis of Organ Donation and Transplant data. It stores the data about various donors and receivers according to the Countries, according to the years, according to the donors and receiver types. and the main objective of the data is to perform the analysis on this data to meet the conclusion of the project. Here we are representing various types of graphs to represent the data and also the comparison between the various kinds of data.

Analyse the current organ donation and transplant environment – facts, trends, processes, opportunities and challenges. Conduct an extensive research around historical development, efforts made and lessons learnt Understand the global system and success stories in the field. Recommend action plan/future strategy for growth and effectiveness in India

Computer Science is a very broad area and we like every aspect of it so it was difficult to Choose a specific area and we had many ideas. However, we finally decided to Make Project on the Analysis of Organ Donation and Transplants because it is a great combination of many of the things we have studied: web technologies, ubiquitous computing, UI design, Data Analysis etc.

2. PROPOSED METHODOLOGY

2.1 Objectives

Organ transplant is an operation that removes an organ or tissue from one person and places it in another. Organ donation is when you allow your organs or tissues to be removed and given to someone else.

Most donated organs and tissues are from people who have died. Others get organs from living donors.Transplants can be the best treatment for most people with organ failure.

Common transplants

The most common transplants are

- Kidney transplant
- Heart transplant
- Liver transplant
- Lung transplant

Other transplants include

- Pancreas transplant
- Small bowel transplant
- Tissue such as, corneas, heart valves, skin and bone

2.2 What is organ donation and transplantation?

Organ donation is the process of surgically removing an organ or tissue from one person (the organ donor) and placing it into another person (the recipient). Transplantation is necessary because the recipient’s organ has failed or has been damaged by disease or injury.

Organ transplantation is one of the great advances in modern medicine. Unfortunately, the need for organ donors is much greater than the number of people who actually donate. Every day in the United States, 21 people die waiting for an organ and more than 120,048 (www.unos.org, Nov. 1, 2016) men, women, and children await life-saving organ transplants.

2.3 What organs and tissues can be transplanted?

Organs and tissues that can be transplanted include:

- Liver
- Kidney
- Pancreas

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- Heart
- Lung
- Intestine
- Cornea
- Middle ear
- Skin
- Bone
- Bone marrow
- Heart valves
- Connective tissue
- Vascularized composite allografts (transplant of several structures that may include skin, bone, muscles, blood vessels, nerves, and connective tissue)

2.4 Who can be an organ donor?

People of all ages should consider themselves potential donors. When a person dies, he or she is evaluated for donor suitability based on their medical history and age. The Organ Procurement Agency determines medical suitability for donation.

2.5 Technology used

- RStudio is a free and open-source integrated development environment (IDE) for R, a programming language for statistical computing and graphics.
- RStudio was founded by JJ Allaire, creator of the programming language ColdFusion. Hadley Wickham is the Chief Scientist at RStudio.
- RStudio is available in two editions: RStudio Desktop, where the program is run locally as a regular desktop application; and RStudio Server, which allows accessing RStudio using a web browser while it is running on a remote Linux server.
- Prepackaged distributions of RStudio Desktop are available for Windows, macOS, and Linux.
- RStudio is available in open source and commercial editions and runs on the desktop (Windows, macOS, and Linux) or in a browser connected to RStudio Server or RStudio Server Pro (Debian, Ubuntu, Red HatLinux, CentOS, openSUSE and SLES).
- RStudio is written in the C++ programming language and uses the Qt framework for its graphical user interface.
- Work on RStudio started at around December 2010, and the first public beta version (v0.92) was officially announced in February 2011. Version 1.0 was released on 1 November 2016.Version 1.1 was released on 9 October 2017
- Basic Visualization of data in R
- Histogram
- Bar / Line Chart
- Box plot
- Scatter plot
- Advanced Visualization
- Heat Map
- Mosaic Map
- Map Visualization
- 3D Graphs
- Correlogram

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2.5.1 Microsoft Excel

- It is a spreadsheet
- Developed by Microsoft for Windows, macOS, Android and iOS. It features calculation, graphing tools, pivot tables, and a macro programming language called Visual Basic for Applications.
- It has been a very widely applied spreadsheet for these platforms, especially since version 5 in 1993, and it has replaced Lotus 1-2-3 as the industry standard for spreadsheets.
- Excel forms part of Microsoft Office.

2.6 What is the use of showing organ transplant data in big data

- The data can be converted into Reports to supply data to transplant centres.
- The reports give transplant centres a listing of all transplantation activity at their hospital for a given month.

3. RELATED WORKS

3.1 Country: India

- **Processes and Regulations**
- Organ Transplantation falls under the Ministry of Health and Family Welfare, Government of India.
- The Indian Government passed the Transplantation of Human Organs Act in 1994, clearly highlighting the procedures and regulations to be followed for organ donation and transplantation. The same has been amended/modified periodically.
- However, health is a State subject in India. Hence, all states have their own departments undertaking the Policy formulation with respect to Organ Transplantation.
- The implementation of the Act discussed above, happened at different points across different states.
- States like Goa and Maharashtra adopted the Act in February 1995, while states like Orissa and Uttar Pradesh took around 4 years to adopt the Act in mid-1998.
- There is a clear disparity between the Government and Private Hospitals in terms of infrastructural support needed and presence of trained personnel to carry out the organ transplant.

3.2 Brief Overview of the Current Scenario and Future Outlook

- There is a lack of awareness among people with regards to deceased organ donation, the concept of brain death and the process of organ transplantation.
- NGOs and a few State Governments have taken significant steps to create awareness.
- There is a lack of clarity within the medical fraternity with regards to the rules and procedures related to organ transplantation.
- Absence of a centralized agency to maintain a registry of donors as well as recipients, and ensure maximum utilization of organs, as well as their fair and equitable allocation.
- Strong need for developing a centralized organ-sharing network among hospitals for better coordination, timely utilization and avoiding organ wastage.

- **Laws and Rules Governing Organ Transplantation in India**

The primary legislation related to organ donation and transplantation in India, Transplantation of Human Organs Act, was passed in 1994 and is aimed at regulation of removal, storage and transplantation of human organs for therapeutic purposes and for prevention of commercial dealings in human organs.

In India, matters related to health are governed by each state. The Act was initiated at the request of Maharashtra, Himachal Pradesh and Goa (who therefore adopted it by default) and was subsequently adopted by all states except Andhra Pradesh and Jammu &Kashmir. Despite a regulatory framework, cases of commercial dealings in human organs were reported in the media. An amendment to the act was proposed by the states of Goa, Himachal Pradesh and West Bengal in 2009 to address inadequacies in the efficacy, relevance and impact of the Act. The amendment to the Act was passed by the parliament in 2011, and the rules were notified in 2014. The same is adopted by the proposing states and union territories by default and may be adopted by other states by passing a resolution.

3.4 The various forms outlined in the rules are as follows:

Form 1: Near-relative consent

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Form 2: Spouse consent

Form 3: Other than near-relative donor consent

Form 4: Psychiatrist evaluation of the donor

Form 5: HLA DNA profiling report

Form 7: Self consent for deceased donation

Form 8: Consent for organ donation from family (also applicable for minors)

Form 9: Consent for organ donation from unclaimed bodies

Form 10: Brain death declaration form

Form 11: Joint transplant application by donor / recipient

Form 12: Registration of hospital for organ transplantation

Form 13: Registration of hospital for organ retrieval

Form 16: Grant of registration

Form 17: Renewal of registration

Form 18: Decision by hospital authorization committee

Form 19: Decision by district authorization committee

Form 20: Verification of Domicile for non near-relative

Form 21: Letter from Embassy

- **Role of Non-Government Organizations & other groups:**

3.5.1 Mohan Foundation

MOHAN (Multi Organ Harvesting Aid Network) is one of the front-running NGOs promoting and taking up the cause of organ donation in India, especially in the case of deceased donors.

The organization believes that the shortage of organs can be overcome if the plans are executed properly.

MOHAN foundation has taken up state-by-state implementation of the organ transplant awareness initiatives, starting with the southern parts of the country.

3.5.2 Aorta (Armed Forces Organ Retrieval and Transplantation Authority)

AORTA or the Armed Forces Organ Retrieval and Transplantation Authority have been actively pursuing the cause of Organ Donation, Retrieval and Transplantation in the country. They had organized an extensive drive to promote deceased organ donation in India. During the drive, information was disseminated on brain death and organ donation through various lectures, posters, billboards and extensive coverage via local and national newspapers and periodicals in the country.

3.5.3 Orbo (Organ Retrieval Banking Organization) By Aiims

ORBO has been setup by the All India Institute of Medical Sciences (AIIMS) Delhi with the purpose of encouraging organ donations across the country. It aims to achieve fair and equitable distribution and utilization of organs.

3.6 Country: U.S Department of Health and Human Service

3.6.1 Organ Procurement and Transplantation Network

To facilitate transplantation, the US is divided into 11 geographic regions. In each region, a regional councillor, an associate regional councillor, and a staff administrator work together to coordinate regional activities such as regional meetings and regional education events for transplant professionals. Each region is represented by a regional councillor on the Board of Directors and has a representative on each of the standing committees. The regional system:

- Provides an effective mechanism for communication among OPTN staff, the Board of Directors and the transplant community.
- Facilitates the identification of geographically diverse transplant professionals to populate both the Board of Directors and committees.

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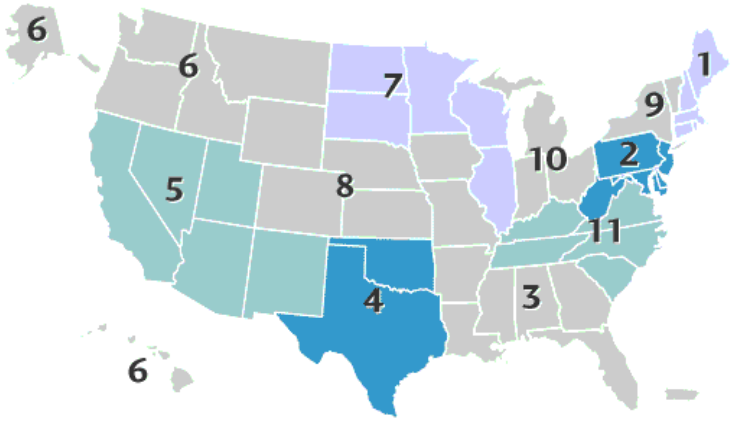
- Provides a forum for consensus building and transparency of work throughout the OPTN policy development process through regional meetings that are held twice a year during the public comment periods.
- Interactive Regional Map

Click on the number below to see information on that region.



Each section comprising of different areas one of them is:

Region-9
States include

- New York
- Western Vermont

Region 9 Profile

Donors versus Organs Donated in 2017		
Programs	**Donors**	**Organs**
All Donors	1,007	2,006
Kidney	922	1,325
Liver	382	382
Heart	134	134
Pancreas	44	44
Lung	66	120
Intestine	1	1

Based on OPTN data as of 1/9/2018

Organ registrations on waitlist as of 1/9/2018	
Programs	**Counts**
All Organs	9,758
Kidney	7,921
Liver	1,083
Pancreas	178
Kidney / Pancreas	151
Heart	353
Lung	64
Intestine	8

Based on OPTN data as of 1/9/2018

Transplants in 2017	
Programs	**Counts**
All Organs	2,259
Kidney	1,489
Liver	420
Pancreas	21
Kidney / Pancreas	31
Heart	207

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Lung	76
Intestine	15

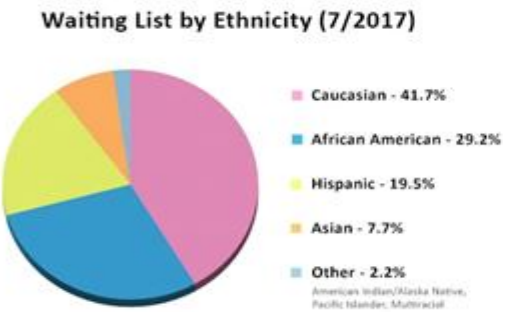
Based on OPTN data as of 1/9/2018

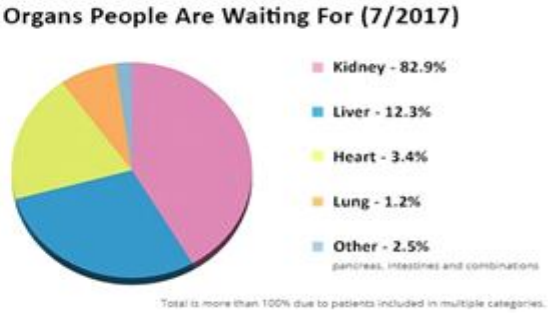
- **RESULTS**

Examples: (Data of U.S)

4.1 Waiting List Statistics

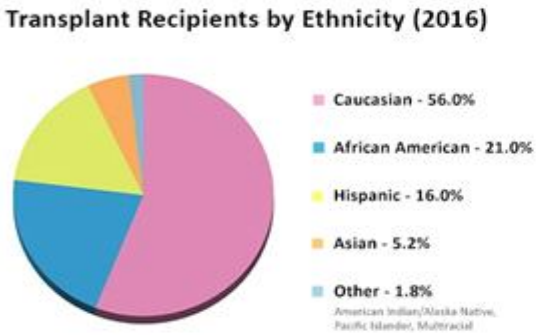
- Pie charts can be used to compare between parts of whole
- Such as below example:

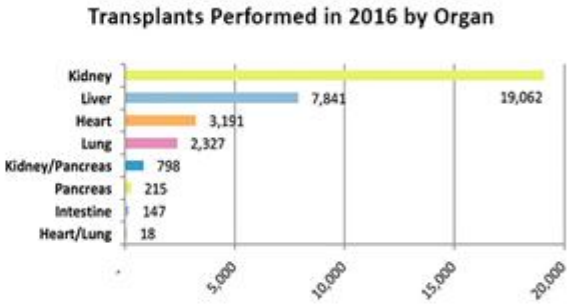




4.2 Transplantation Statistics

- In the below example: pie chart is use to show transplant of organs by ethnicity

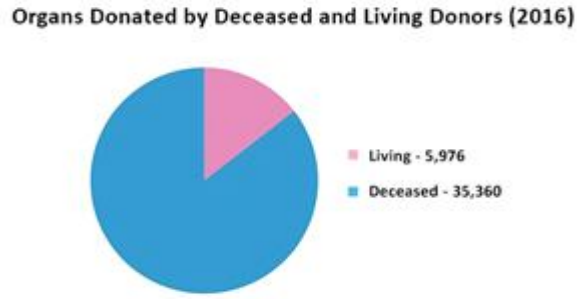


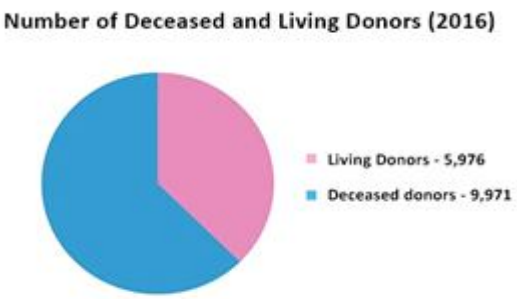


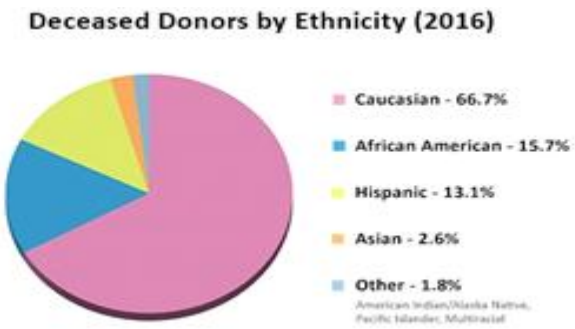
4.3 Donation Statistics

In 2016, a total of 41,335 organs were donated. Organ donors can be deceased or living.

More than 4 out of 5 donations came from deceased donors, and 1 out of 5 donations from living donors.







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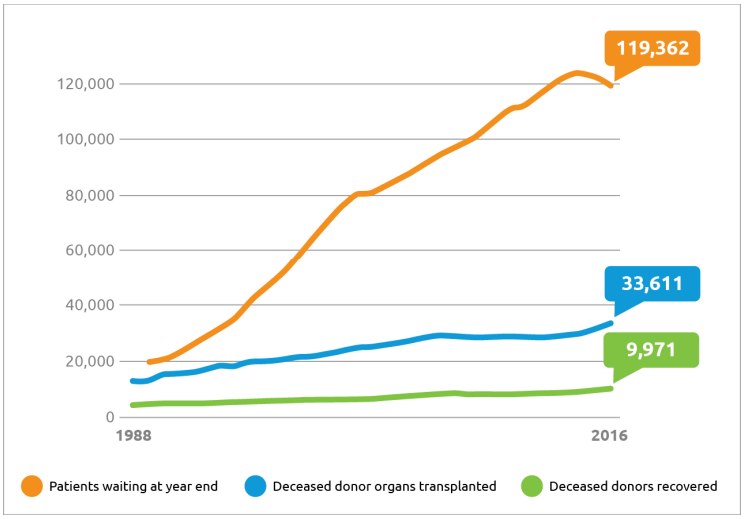
4.4 Registration Statistics

People Registered as Donors in the U.S. In 2016, more than 130 million people over the age of 18 had registered as organ donors. That's more than half of all U.S. adults. (54%)***

4.5 Still The Organ Shortage continues



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A HYBRID APPROACH OF PRIVACY PRESERVING DATA MINING USING SUPPRESSION AND PERTURBATION TECHNIQUES- A REVIEW

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Mithibai Autonomous College

ABSTRACT
Virtually all of today's organizations store their data in huge databases to retrieve, manipulate and share them in an efficient way. Due to the recognition of information bases for storing vital and demanding data, they're changing into subject to an amazing vary of threats, like unauthorized access. Such a threat may end up in severe money or privacy issues, also as different corruptions. The most successful database security mechanism is database encryption. This has the potential to secure the information at rest by changing the information into a kind that can't be simply understood by unauthorized persons. Also the problem of privacy-preservation data mining has become more important in recent years because of the increasing ability to store personal data about users, and the increasing sophistication of data mining algorithms to leverage this information. Techniques such as anonymization, randomization are used to achieve the results. But here anonymization leads to some level of information loss while preserving privacy. To dominate the trust of individuals, the data is drifted over the centralized server which has added to the more demand of preserving privacy. For most of the applications like hospitals, online shopping customers, insurance is stored online over centralized repository nowadays and it needs to maintain privacy of individuals. In all these applications, data contains many attributes/fields like email address, age, gender, zip code, nationality etc. Quasi identifiers like age, gender, zip code of a person does not seems to be very important to protect but these fields when linked with other attributes from publically available datasets can reveal the identity or sensitive information of an individual which leads to Linkage Attack. So quasi-identifiers need some special treatment in the purpose of achieving privacy. The method focuses on the goal of preserving privacy by suppressing and perturbing the quasi-identifiers in the data of online shopping customers stored on central repository without causing any information loss. The procedure is carried by setting up a local server on the system and the goal to achieve privacy of quasi-identifiers without loss of information is successfully achieved. For encryption purpose, the paper proposes enhancing the TSFS (Transposition-Substitution-Folding-Shifting) algorithm by extending its data set to special characters, as well as correcting its substitution and shifting steps to avoid the errors occurring during the decryption process.

Keywords: Encryption; Security; Protection; Transposition; Substitution; Folding; Shifting; Privacy Preserving Data Mining; quasi-identifiers; anonymization; perturbation; Suppression

I. INTRODUCTION

In this modern era of thriving technology, the data being collected by private as well as public organizations is escalating day by day. This in turn leads to the obligation of transferring this data online on the centralized server while sustaining the trust of the individuals. The collected data is used for various analysis or decision making purposes by data mining. But today's generation is more conscious about their privacy being preserved while use of their data in any way. Privacy here means identity of the person not being divulged while unveiling any sort of data or using the data for any research or business purposes. Thus Privacy Preserving Data Mining is a real challenge these days.

The project intends to solve the problem of privacy preservation by implementing techniques to achieve privacy preserving data mining. These techniques include anonymization, perturbation, randomization, cryptography and condensation, which are applied on an online shopping customer database. For most of the applications like hospital, insurance, online customers requiring data mining for analysis purposes, the data is stored in columnar way. The attributes can be divided into following categories:

i. Identifying attributes: These attributes like name, email id can explicitly identify the person.

ii. Quasi identify attributes: The attributes like age, gender, zip code when linked with some other database or attributes can easily reveal a person's identity.

iii. Sensitive attributes: This includes the data which should not be disclosed or published against a person's identity. For e.g. while analyzing the sale of particular product in online shopping, the customer's identity should not be revealed against any product.

iv. Non Sensitive attributes: These are the fields which if disclosed publically do not lead to any problem.

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The application selected here for research purpose is data of online shopping customers. The attributes are categorized as:

Attribute	Category
Name	Identifying
Age	Quasi Identifier
Gender	Quasi Identifier
Zip Code	Quasi Identifier
Product Name	Sensitive

Table-I: Desription of Atrributes

The Quasi identifiers are most vulnerable to the linkage attack. If original values of these attributes are correctly published publicly even when hiding the name or other personal information, it can give an idea of a customer's identity with the help of some other publically available database by linking the values of these attributes in the two databases.

For e.g. there are two applications stored on the web - online shopping customers and publically available e. aadhar data or voting list, both the applications contain these three fields age, gender and zip code. When the values of these fields from customer dataset are located and linked with the values in the aadhar dataset, one can infer the customer's identity by little efforts applied. Thus, need to find a solution to this privacy problem and manage datasets with no information loss.

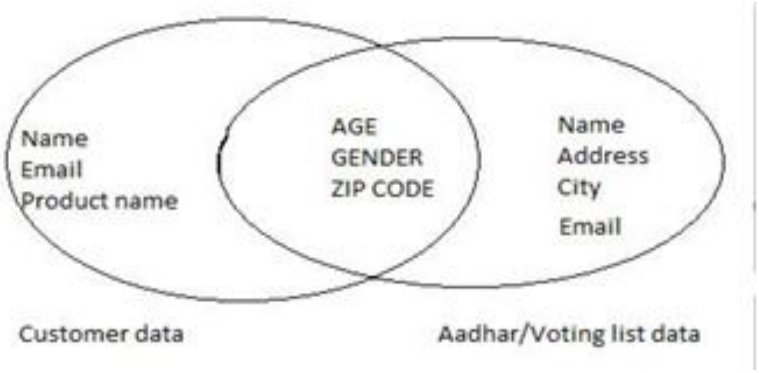

Fig-1: Linkage attack in quasi identifiers

The project first identifies and classifies attributes according to their types, and enables removing personal identifying attributes and their storage by implementing TSFS encryption algorithm. This algorithm is also used on other sensitive attributes which require security. The quasi identifiers data are distorted using perturbation techniques. The non-sensitive attributes are not encrypted. The project then implements randomization (records are shuffled vertically or horizontally) techniques. The project then implements condensation techniques by forming clusters of data sets for further analysis purposes, thus achieving privacy.

The administrator can decrypt or retrieve required information from the database without compromising on the privacy of the consumers with the help of the encryption keys. Thus, the project allows analysis of datasets by preserving private information, and quasi identifiers of customer database.

II. LITERATURE REVIEW

Xiaolin Zhang, Hongjing Bi [1] proposed the method of random perturbation for Privacy Preservation Data Mining. The author secured the data by replacing the attribute values with the code values (1, 2, 3… n) and arranging these values in a square matrix which were then randomly perturbed.

R. Mahesh and T. Meyyappan [2] proposed the method to achieve privacy preservation through generalization of quasi identifier by setting in the range and deleting the duplicate record. This approach of duplicate record elimination helps in reducing information loss and gives better performance in terms of privacy gain when compared to k-anonymity or l-diversity. Also the method gives protection from the two types of attacks record linkage and attribute-linkage. The only problem with method is that it only works well with the numeric data.

P. Usha, et. al. [3] came up with the method based on the categorization of attributes into four groups and then using non homogeneous anonymization i.e. generalization or suppression only on the quasi identifiers. The motive behind this method was to reduce the information loss caused because of homogenous anonymization. The proposed method can be beneficial for Privacy Preservation Data Publishing as it achieves high degree of data utility and data integrity.

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Khaled M. Khan [4] discussed the trust issues in the cloud environment and the reason for these trust issues. Nobody trusts the system with least control in their hands and no transparency to the way how data is stored. It is human nature that one feels safe within house system. Any organization can gain their customer's trust by providing access control to the individuals and guarantee of giving compensation due to any loss or data leakage.

Dilpreet Kaur, Divya Bansal and Sanjeev Sofat [5] discussed and presented the comparative study of the anonymization techniques. After implementing the techniques on different data sets the author came with different inferences like as the number of attributes increases the information loss gets increased showing that the information loss is directly proportional to the number of attributes to be anonymized.

Mebae Ushida, Kouichi Itoh [6] made a Proposal of Privacy- Preserving using Data Aggregation for fulfilling the major requirements of cloud which are guarantee against leakage of stored information and providing aggregation results as per authority. So the data is masked by the user before storing on cloud and then the masked aggregation results are obtained. The user gets the aggregation results by unmasking the masked results by their own secret private keys assigned as per the authority of the user.

III. PROPOSED SYSTEM

The system first provides user login page and registration pages.The registration page is required if the intended user is new to that particular service and wants to avail facilities of the system. The new user's data registered is stored in the database in encrypted form with noise added to it, so it becomes difficult to retrieve for attackers. In case of existing user login, the credential entered by the user is checked whether it exists in the database, and on approval by the system (that the user is an authentic user), it redirects to the product interface.

The product interface now provides the user with multiple options to search for needed services and also provides information to the user by accessing the product/existing services database. The system also manages payment transactions and provides necessary information to the transaction database.

The databases can be accessed by the admin using valid secret keys and also study information and analyze data datasets generated without compromising on the users' private data.

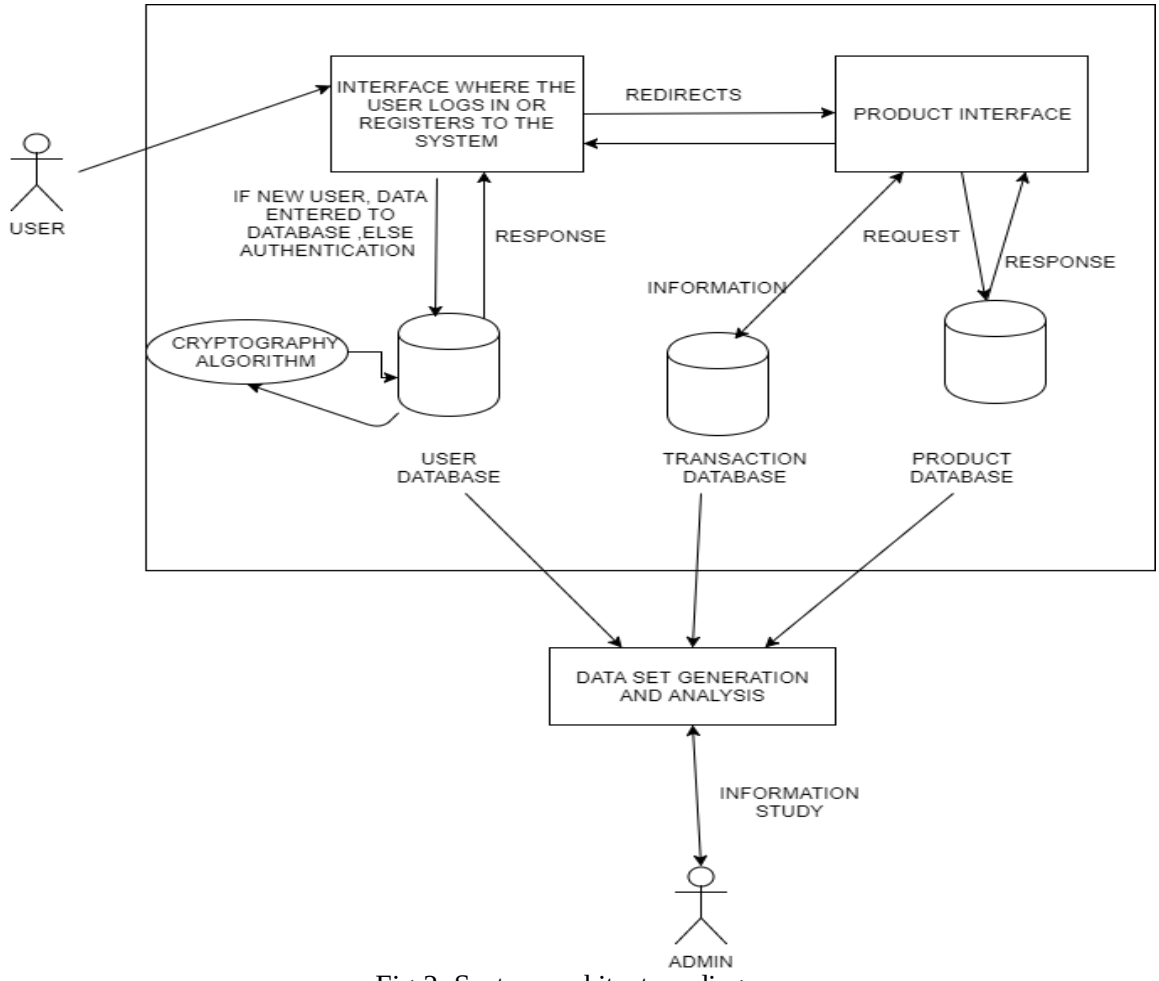

Fig-2: System architecture diagram

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IV. IMPLEMENTATION METHODOLOGY

The different modules are as explained below:

ANONYMIZATION

This technique is done to remove the personally identifiable information from the data sets by generalizing the attributes.

PERTURBATION

Perturbation refers to distorting the data with the help of noise. This noise can be categorized into two- additive and multiplicative noise.

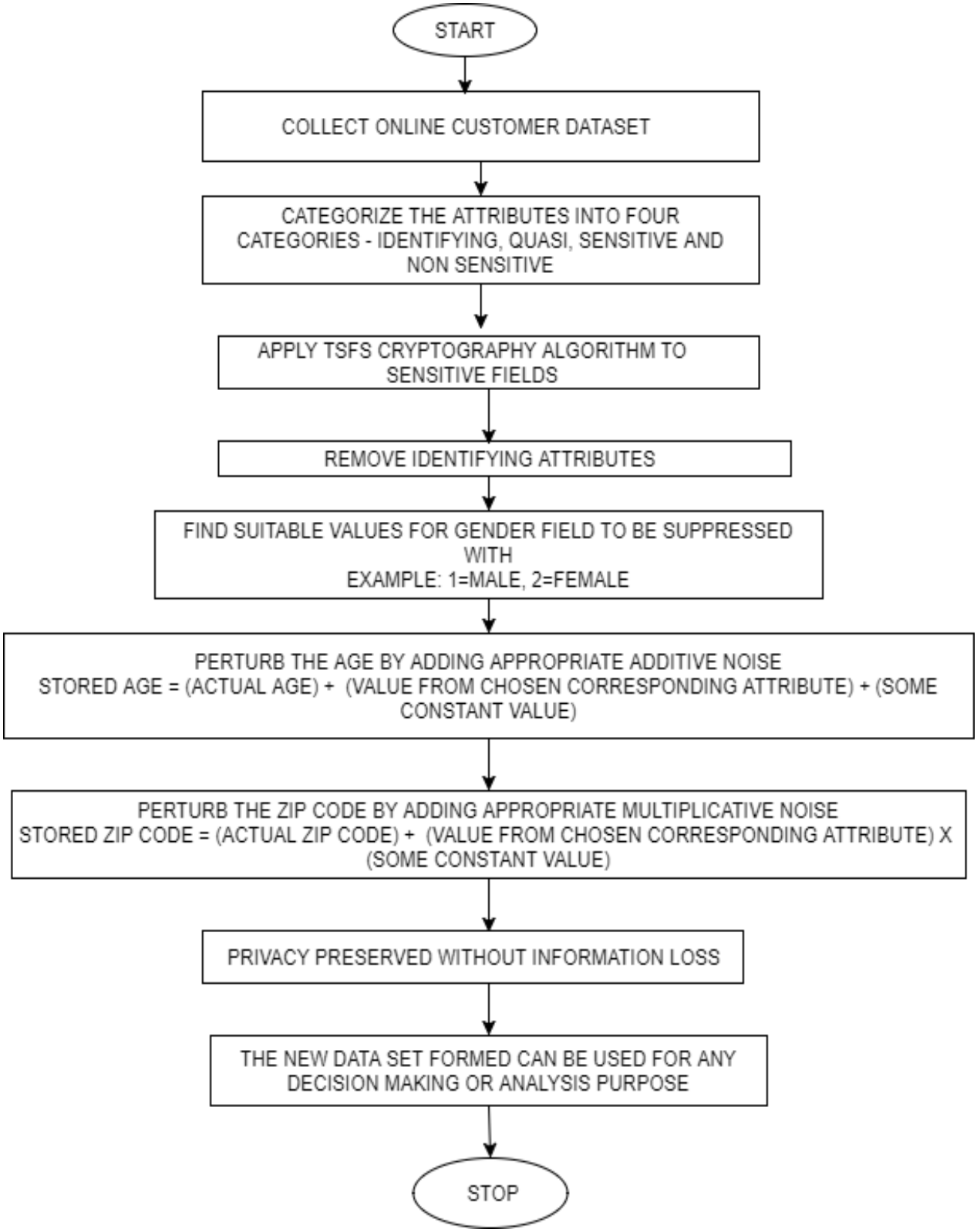

Fig-3: Flowchart to suppress GENDER field and implement Perturbation (Addition of noise)

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CRYPTOGRAPHY

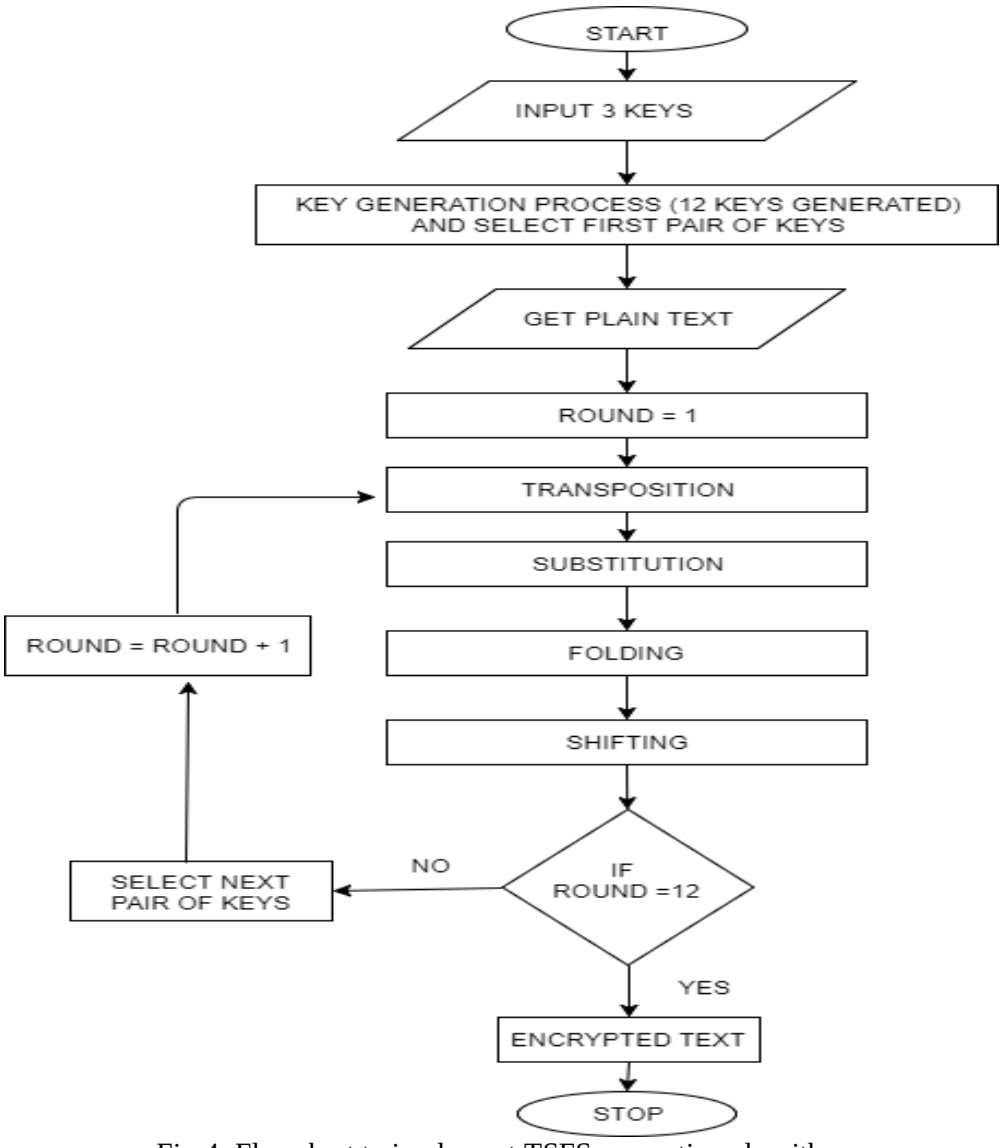

Fig-4: Flowchart to implement TSFS encryption algorithm

The sensitive information and identity here is preserved with the help of encryption of the records using TSFS algorithm. Sensitive information include those fields of the database that reveal the identity of the user and revelation of such personal information may lead to some sort of physical, network or electronic transactions attack on the user or may lead to misuse of confidential data.

The stages of TSFS database encryption algorithm are given as follows

i. Key Generation – Three different keys of 16 alpha-numeric characters each are used in this algorithm for encryption and decryption processes. These 3 keys are then stored in a 4x4 matrix. These 3 keys are then expanded to form 16 different keys. The keys are expanded based on shifting the rows.

Consider example for Key1. Key1 is expanded into key10, key11, key12, k13.

- For key10 - row 0 is not shifted, row 1 is shifted one time, row 2 is shifted two times and row 3 is shifted three times.
- For key11 - row 0 is shifted one time, row 1 is shifted 2 times, row 2 is shifted three times and row 3 is not shifted.
- For key12 - row 0 is shifted two times, row 1 is shifted three times, row 2 is not shifted and row 3 is shifted one time.
- For key13 - row 0 is shifted three times, row 1 is not shifted, row 2 is shifted one time and row 3 is shifted two times.

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This process is then applied on the remaining 2 keys as well.

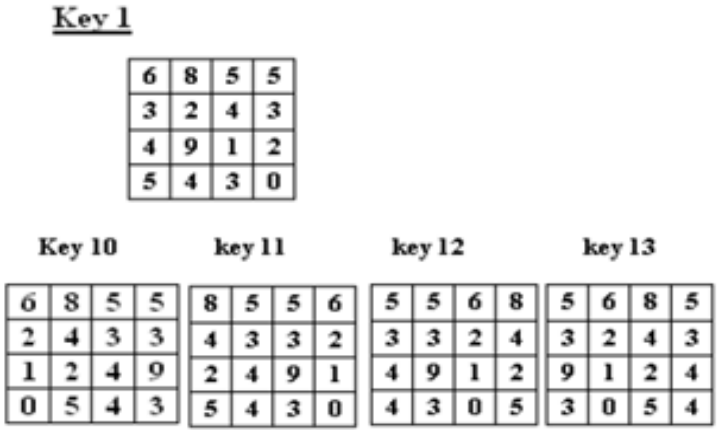

Fig-5: Example of key generation for Key1

ii. **Transposition –** The plain text data elements are stored in 4x4 matrix. Transposition transformation changes the location of the plain text data matrix elements by using diagonal transposition that reads the data matrix in the route of zigzag diagonal starting from the upper left corner after getting the data and pads it with *s if it is less than 16 characters. Fig. 6 shows the transposition process when the entered data was: 6923@domain.Sa.

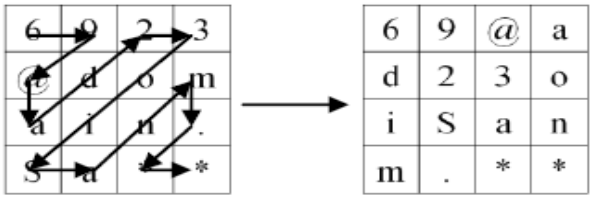

Fig-6: Transposition

iii. Substitution – A substitution cipher replaces one symbol with another. If the symbols in the plaintext are alphabetic characters, we replace with one character with another, if it is a special character then it is replaced with special character, and so on. In this cipher we tend to provide a lot of importance for choosing the 2 keys for coding. we tend to expand the 3 keys into twelve keys and keep within the kind of 4x4 matrix and additionally the entered information are keep within the kind of matrix. For encrypting the 0th row and 0th column information within the matrix we tend to take the k1 from identical row and column of the distended keys key10 and also the Dap sang from key11 and also the same format is employed for encrypting the opposite data's within the matrix. Here for the first round we use the key 10 and key11 and for the second round we take the key k1 from key11 and k2 from key12 and the same process used up to the 11th round, in the 12th round we take k1 from key33 and k2 from key10. Based on this method keys are selected for encryption process.

The encryption function E, for any given letter x is:

$E(x) = (((k1 + p) \bmod M) + k2) \bmod M.$

The decryption function D is:

$D(E(x)) = (((E(x) – k2) \bmod M) – k1) \bmod M$

During the implantation of D, the resultant value of modulus operation can also be a negative sign which does not correspond to any value. This is solved by using below equation till a positive value is obtained.

$D(E(x)) = M - |D(E(x))|$

iv. Folding - After substitution the result is taken as input to the folding technique. Folding is one of the transposition cipher, just like the paper fold, the matrix is folded horizontally, vertically, and diagonally. This folding technique shuffles the data from one position to another position. The following Fig 7 shows the result of folding. The data matrix is pleated horizontally, vertically and diagonally. The horizontal folding is finished by exchanging the primary row with the last row. The vertical folding is done by exchanging the first column with the last column. The diagonal fold is done by exchanging the inner cells, the upper-left cell with the down-right cell and the upper-right cell with the down-left cell.

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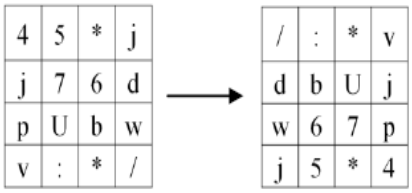

Fig-7: Folding technique.

v. Shifting– In the shifting process, the resultant text elements from the above given algorithm procedures are replaced by some other elements depending upon a predefined array of elements. This process ensures shuffling of data and increases complexity of cryptanalysis as a letter may be replaced by a digit, special character or any particular letter. This substitution of data is random and increases security of elements or the plain text.

RANDOMIZATION

Here the records are shuffled vertically in the way that the semantic meaning or the record in the attribute is not distorted just vertical position of the record is changed hiding the correct identity.

CONDENSATION

This technique constructs groups of non-homogeneous size from the data, such that it is guaranteed that each record lies in a group whose size is at least equal to its anonymity level. Subsequently, pseudo-data is generated from each group so as to create a synthetic data set with the same aggregate distribution as the original data.

V. CONCLUSION

The paper proposes a hybrid Privacy Preserving Data Mining technique using suppression and perturbation over the centralized server environment. The output results show that the method has been successful to a great extend in hiding the identity of customers and preserving their privacy. The original values of the data can also be retrieved while performing the reverse process so there is no information loss with the help of Admin Access. The critical issue of securing the Boolean gender field without information loss is resolved by the described algorithm. The major challenge of information loss in the process of privacy preservation has been successfully achieved. Also the execution time for achieving privacy is less for the new hybrid approach. The proposed method resolved the critical conflict between the privacy preservation and information loss. The proposed system is thus of utmost importance in today's world where there are many online services available which hold valuable data of its customers. These also include private information of users. Even though private information are encrypted, the quasi identifiers are easily available and pose great risk. The project thus tries to successfully prevent such malpractices.

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A STUDY ON TACT-GUARD USING HAPTIC FEEDBACK

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ABSTRACT
With increasing demand of touch-based IOT devices and emerging of all fields of industries towards technology and data-centric process, surface haptic feedback is soon to get a lot of attention and will play a significant role in the growth of various IOT devices. In this paper, we introduce a conceptual model of implementing the surface haptic feedback in a new way according to the rising era of data-centric industries. That is, by implementing surface haptic feedback using screen-guards based on data-driven algorithm approach. This paper is a focused study on haptic screen guard which we named as "Tact-guard", and its application in fields like e-commerce, fashion designing, product designing and interior & architecture designing, and gaming.

Keywords: Haptic Feedback (HF), Surface Haptics (SF), E-commerce, Tact-guard (TG), Touchscreen devices (TD).

I. INTRODUCTION

Humans have five different senses through which they interact with different things in the world. The world is getting more and more engaged with many IOT devices day by day, commonly smartphones, tablets, and computers. Interactions with these devices are based on some of our senses like visual sense, auditory sense and touch sense. The visual and auditory sense is much more enhanced in recent years with respect to IOT devices.

Throughout the day we use our smartphones through visual and tactile sense. Visual sensation has emerged a lot with graphical visual manipulation, etc. But there is still a lot of development to be done in the field of tactile sensation. Touch sense is the most powerful sense which we seamlessly use for sensing the texture of various things around us. Using of smartphone devices is bond to visual sense as there is a just flat rigid touchscreen display.

To overcome this limitation the ability of touchscreen interactions is increasing more and more through tactile haptic sensation. Various research have been done to virtually render the haptic texture effect through various types of displays.

Also, online shopping and e-commerce platform is emerging in recent years. But it is still limited to virtual shopping through electronic devices. Consumers need more realism in online shopping. According to a global survey, around 93% of consumers feel the need of emerging e-commerce platform through virtual haptic texture feedback to feel the texture of the objects sold at e-commerce websites. People are more inclined towards buying things with feelings its texture.

Through surface haptic, great level of virtual texture rendering has been made possible on vibrotactile based displays. Though still not perfectly accurate realistic rendering has been achieved through various means. Also, it has still not yet implemented by many smartphone or electronic device manufacturers, as it is still to emerge a lot.

In this paper, we have introduced a new way of implementing surface haptic for rendering tactile feedback through the electrostatic effect. In order to increase the touchscreen capacity in general for almost every possible devices in the market, we have introduced a concept of developing electrostatic based screen guards. Seamless virtual haptic rendering can be done through more enhanced haptic rendering algorithm and electrostatic surface haptic effect on the fingertip through screen guard. This will make available haptic rendering to all touch enabled devices in the market significantly changing the way of interactions with these devices on a huge scale, also helping to grow various fields of designing. This paper focuses on conceptual modelling of haptic screen guard which we named as "Tact-guard", and its application in fields like e-commerce, fashion designing, product designing and interior & architecture designing, and gaming.

II. LITERATURE REVIEW

Touchscreens have been a significant part of the mobile and computing world for user interactions. Along with audio-visual interactions the touch interactions has emerged a lot in recent years. Many kinds of research and experiments have been made in the context of surface haptics for better touch interactions and decreasing the gap between the virtual and real world. A comprehensive review of various approaches for haptic rendering is made with respect to its emerging real-world applications.

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D.Meyer[1] in his study compares the electrostatic and ultrasonic haptic rendering through various modelling and experimental results. The experiment was focused on the generation of vibrations causing tactile effect and generation of friction effect on the fingertip which supports the vibration for creating a real textured surface haptic rendering. While the evaluation showed the capability of rendering a wide range of haptics using ultrasonic technique and capability of generating faster haptics on high bandwidth using the electrostatic technique.

Further, in another study, D.Meyer[4] emphasizes on detailing of friction property of haptics rendering with electrostatic force. Due to electrostatic attraction produced by sliding the fingertips on display, it produces friction on the display giving a tactile haptic rendering effect. The study gives an overall detail about the accuracy of haptic feedback with friction. With several testing, analyzation of friction force for haptic feedback is done, concluding friction force with electrostatic give nearly accurate haptic feedback results.

J.Mullenbach[2] gives a detailed study on TPad tablet was intended for creating an affordable, easy to use and open source platform for force based surface haptic interactions. Model of TPad fire tablet was tested and gave successful results of creating haptic interactions through friction variable based vibration haptics, overcoming the limitations of its previous models.

Further J.Mullenbach[3] in his another paper, proposes a new force based haptic device that combines a variable friction device (known as TPad) with an impedance controlled planar mechanism. Through this research, the author focuses on developing force-based feedback and affordances for users of touchscreen interfaces with enhancement of rendering of surface haptic feedback.

M.Munainandy[7] in his research work, has emphasized on implementation and study about the user acceptance of advanced haptic feedback technology in the field of e-commerce. Due to the popularity of online shopping because of its wide variety, all-time availability and other factors, there is a need to develop more in that field. However, one of the major concerns of users is the inability to feel any feedback when a product is selected on any e-commerce platform. So the researchers of this paper developed a testing system consists of questions by designing seven classes of different tactile patterns which consist of different time length, different strength level, and different base effect. After thorough testing, the authors have failed to provide the same experiment for all the users which is essential in deriving a conclusion. However, through distributing surveys among 207 people and collecting data authors analyzed some concrete information on user acceptance of haptic feedback for e-commerce. Resulting from the survey some positive data came out as over 93% of respondents were interested in using haptic-based touchscreen devices, also about 88% people based on age groups on an average accepted to use haptic feedback for e-commerce and approximately 91% of times it proved to be more profitable for users in online purchasing.

As per the research article in “Data-Driven Rendering of Fabric Textures on Electrostatic Tactile Displays”[6], by forming the new electrostatic rendering algorithm through real-world tactile data of texture feeling, a similar perceptual of real-world texture feeling can be rendered. Through this paper, the author J.Jiao evaluates a realistic data-driven haptic texture rendering by doing some psychophysical experiments with a group of people which is based on data-driven texture rendering algorithm using periodic applied voltage signals. The results of experiments show virtual textures generated with the data-driven haptic texture rendering algorithm were similar to the real fabric textures. But as this algorithm was developed and tested based on inputs of real-world bare finger interaction for 10 types of fabrics, further evolution made more realistic haptic texture rendering with large-scale bare finger interaction database.

In the study done by K.MacLean[5], the author gives an overall idea about the way human tactile operates (human sense), also their capabilities, and other details. The study provides an insight into the sensors involved in human tactile feedback, also how the tactile feedback is performed in coordination with all those senses. Taking into considerations various human constraints and hardware constraints for one hand haptic tactile feedback and comparing different haptic hardware like Force feedback devices & tactile displays the author provides the evaluation of better hardware for realistic haptic rendering.

III. METHODOLOGY

The tact-guard enhances the capability of current screen guards. The proposed system consists of a haptic screen guard and its supported algorithm for efficient accurate haptic rendering.

There are several layers of different materials in regular screen guard. Tact-guard can be developed by adding a layer of electromagnetic material on top of all layers of regular screen guards (PET / TPU). The guard can be connected to the device through transparent thin silicone wires. The tact-guard will work by taking electrical

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data inputs from the device and producing a haptic rendering effect by generating vibration based on the provided data. Haptic rendering will be supported by an efficient strong algorithm which will provide data regarding displayed product texture like friction modulating coefficients, the voltage for applying proper vibration, finger positioning, etc.

The tact-guard will be placed on top of device screen connected through input mechanism. When the user touches the guard, finger position of the user is sampled and the algorithm will pass the processed haptic data of that position to the tact-guard system. The tact-guard will then generate accurate haptic vibration based on the electric voltage signals. Every time when finger position is changed this process will be carried out seamlessly giving the haptic rendering effect of that position through tact-guard.

The applications supporting haptic feedback will have to integrate the algorithm used for generating haptic data.

IV. APPLICATIONS

A. E-commerce

In recent years tremendous growth in e-commerce platform has been seen and almost all fields of business are now digitized and growing under one roof of e-commerce. Various new technologies have been implemented to overcome the gap of a virtual world and the real world. The tact-guard technology can play a huge role in changing the way users interact with an e-commerce platform, also dealing the biggest dilemma of tactile feel of various products on e-commerce. As the tact-guard technology will be globally compatible and can be easily implemented in the current market, it may prove as a big step in improving e-commerce.

B. Designing

Use of haptic tact-guard will lead to a new era in the designing world. This technology can be implemented by making use of tact-guard with various touch-based devices in various designing aspects like fashion designing, interior & architecture designing, and product designing in multiple industries. For example, Fabric texture can be felled by multiple fashion designers remotely working on a particular product through tact-guard haptic rendering with touch-enabled devices. Also, this technology can be used by interior & architecture designers to make consumers feel the texture of designed floors or walls.

C. Gaming

Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity “Magnetization”, or “Magnetization, M”, not just “M”. If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write “Magnetization (A/m)” or “Magnetization {A[m(1)]}”, not just “A/m”. Do not label axes with a ratio of quantities and units. For example, write “Temperature (K)”, not “Temperature/K”.

V. CONCLUSION

This paper proposed a new methodology of haptic rendering through touch screen guard which can enable haptic rendering over a huge number of devices present in the market. Further enhancement should be made in the system by implementing it according to industry standards and doing a feasibility study. Hence implementing this system will make some significant changes in technology-based markets and will help them to grow.

Also, this technology will be most convenient to have virtual surface haptics as it can be implemented for making screen guards of all sizes according to every device in a various cost-efficient manner.

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AUGMENTED REALITY (AR) IN EDUCATION

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ABSTRACT
Enrichment of real world through computation based information is known as Augmented Reality, which is one of the major research topics at present. There are many areas in which augmented reality is being used such as Navigation, Military, Medical, Gaming, Entertainment, library management etc. AR is used in different applications over different countries. In India augmented reality is being used as mobile android based applications, marker based library applications. The literature indicated that there is insuffcient research on the impact of using mobile AR in education. The purpose of this research paper is to understand the augmented reality in education and study provides insights into how this technology can enhance traditional learning models and what obstacles stand in the way of its broader use.

Keywords: Augmented Reality in education, mobile AR, AR applications.

1. INTRODUCTION
Augmented Reality is another new development in the area of computer science. Augmented Reality (AR) was first revealed in the 1960, but only lately technologies can be used to easily organize augmented reality applications to numerous users[1]. Tom Caudell provided the initial theory of Augmented Reality. According to him, this theory was derived in 1992 by Boeing. He converted the theory in to practical through a gigantic digital display related to the company workers assembling work of huge bundle of wires for aircrafts [2]. Enrichment of real world through computation based information is known as Augmented Reality, which is one of the major research topics at present [3]. Augmented Reality changes the visualization into a reality. It is basically a sixth generation technology, which provides a real interface of virtual objects. Now it's becoming easier for developers to create immersive, wealthy augmented reality experiences due to presence of resourceful hardware technology. Applications are more attractive and Games are more rational.

AR enables the addition of virtual objects into real environments to facilitate real time interaction [4]. Research on AR applications in education is still in an early stage, and there is a lack of research on the efects and implications of AR in the feld of education [5][6]. The use of AR has become more accessible as it no longer requires specialised equipment and may easily be used on mobile devices [7]. Most people now own mobile devices, and the use of these devices has increased, thereby enabling greater access to AR [8].

Objectives of the paper are as follows
- To study the conceptual background related to the use of AR in education.
- To understand advantages of the use of AR in education.
- To highlight the challenges in the use of AR in education.

2. LITERATURE REVIEW
Figure 1 shows Milgram's mixed reality continuum which is taxonomy of the ways in which real and virtual elements may be combined. The continuum ranges from a completely real environment to a completely virtual environment. Based on this continuum, mixed reality may be defned as a situation in which real and virtual objects are combined. AR lies closer to the real environment end of the continuum [9].

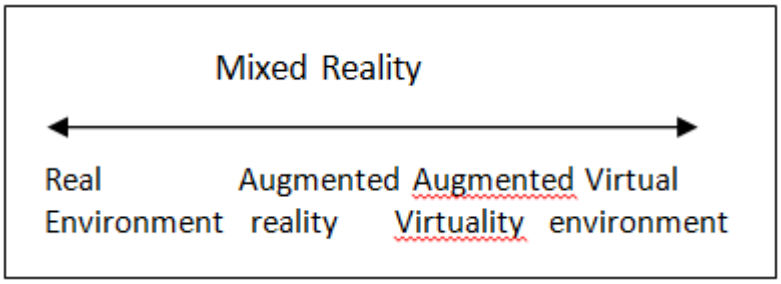

Figure-1: Milgram's mixed reality continuum

AR may be considered as a mixed reality technology which contains more reality, as this technology includes virtual objects in the user's real environment, enabling interaction with virtual content. In the case of mobile AR, the technology involves the addition of digital elements to the real world through a smartphone camera.

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Examples of mobile AR applications include Pokemon GO, which is a location-based mobile AR game that enables users to catch various digital Pokemon creatures around their area and AR GPS DRIVE/WALK NAVIGATION which provides an AR powered navigation system [10]. Augmented Reality combines real and virtual worlds, supplementing the real world with computer-generated virtual objects in real time [11]. According to one of the most commonly accepted defnitions, AR is said to be a technology that has three key requirements: combining of real and virtual objects in a real environment, aligning of real and virtual objects with each other, and real-time interaction. AR no longer requires specialised equipment and may easily be used through computers or mobile devices. A lightly AR supplements the real world with a relatively small amount of virtual information, while a heavily AR contains frequently accessible virtual information [12]. Te amount of virtuality within the real world determines the type of technology required to support the AR, as diferent display and tracking technologies result in diferent degrees of immersion. Immersive technologies such as headmounted displays are used to support heavily AR and foster more immersion than mobile devices, which can support lightly AR. An example of a lightly AR would be the Pokemon GO mobile application, which can be used through a smartphone. An example of a heavily AR is the Star Wars Jedi Challenges mobile application which requires the user to use a headset [13]. Many people now own mobile devices and therefore have access to AR. The use of AR for learning has been made more feasible due to advances in mobile technology and the increased use of smartphones. Smartphones and tablets are ideal to facilitate AR experiences, due to fast processors, graphics hardware, and various onboard sensors [14].

3. AR IN EDUCATION

The applications for mobile AR in education are increasing rapidly, and the feasibility of mobile AR has increased due to advances in mobile technology. AR mobile applications are available for several areas of education, and education related AR applications are now more commonly found on mobile devices. The use of AR may increase student learning motivation and contribute to improved academic achievement [15].

The educational value of AR is closely linked to the way in which it is designed, implemented, and integrated into formal and informal learning environments. An important consideration is how AR technologies support and afford meaningful learning. Considering AR as a concept rather than a certain type of technology would be productive for educators. The involvement of educators is important to facilitate the development of favourable AR applications for teaching, which increases the potential for AR to be incorporated in education. AR applications have been developed for many areas of education. Chiang et al. [16] tested the use of an AR based mobile learning system for natural science inquiry activities on fourth-grade students in Taiwan. The system guided students towards target ecology areas and displayed the corresponding learning tasks or related learning materials. Akcayır et al. [17] tested the use of an AR enhanced laboratory manual in science laboratories on frst year students in Turkey and there research showed that AR tools had a positive impact on academic performance.

Building and using AR scenes combines active complex problem solving and teamwork to create engaging educational experiences to teach science, math or language skills, and studies have found that this activity enhances student motivation, involvement, and engagement[18].

4. ADVANTAGES OF USING AUGMENTED REALITY IN EDUCATION

AR provides new ways of interacting with the real world and can create experiences that would not be possible in either a completely real or virtual world. AR has the unique ability to create immersive hybrid learning environments that combine real and virtual objects. AR technologies enable users to experience scientifc phenomena that are not possible in the real world, such as certain chemical reactions, making inaccessible subject matter available to students. The manipulation of virtual objects and observation of phenomena that are difcult to observe in the real world can be facilitated through AR. This type of learning experience can encourage thinking skills and increase conceptual understanding of phenomena that are either invisible or difcult to observe as well as correct any misconceptions . AR addresses learning difficulties that are often encountered with visualizing unobservable phenomena. The skills and knowledge that students develop through technology enhanced learning environments may be developed more effectively through AR technology. The cognitive workload may be reduced by integrating multiple sources of information. The immersion and interaction features offered by AR may encourage students to engage in learning activities and may improve student motivation to learn. AR provides highly interactive experiences and can generate authentic learner activity, interactivity, and a high level of realism. Interaction with the world is important in the learning process, and, apart from reality, AR is one of the best ways of facilitating this interaction . Augmented books resemble print books except that their pages have virtual graphics superimposed on them. They offer a broad perspective on the educational AR experience because the pages provide ideal images for AR visual tracking, and even young

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children know how to open and read books. The MagicBook is an example of an educational augmented book. [19]. The book's initial version featured a handheld display and transitional interface. A strong advantage of augmented books over print-only books is the additional interactivity. Users can manipulate the book by rotating or tilting the pages to experience the virtual content from different positions, or by flipping pages to show different AR scenes.

Current smartphones and tablets combine a fast processor with graphics hardware, a large touchscreen, and onboard sensors (camera, GPS, compass, accelerometers), making them ideal for both indoor and outdoor AR experiences. Researchers and commercial developers have used these platforms to create educational applications, providing novel learning experiences.

Studies show that providing AR experiences on mobile devices can have unique benefits over offering non-AR content on the same topic. One study compared the experiences of people using different mobile phone interfaces to play a location-based treasure hunt that integrated learning and environmental exploration [20]. Developing simple authoring tools that students without programming expertise can use to create AR scenes. BuildAR (www.buildar.org) is a tool which lets users design simple AR scenes through a graphical user interface without writing code. Users can load virtual text, images, video, or 3D content and attach them onto tracking markers or printed images, thus quickly creating the AR scene. They can choose their own tracking images and use an intuitive mouse driven 3D user interface to position content on the images. Teachers and students can even add AR content to existing printed educational material. AR can also add more meaning to topics that students cannot possibly experience in the real world. For example, undergraduates used AR to learn about the relationship of the earth to the sun in terms of axial tilt and solstices, which the augmented book depicted as real physical props [21].

5. CHALLENGES WITH THE USE OF AUGMENTED REALITY IN EDUCATION

Users of AR technology may experience usability issues and technical problems, and some students may find this technology complicated. One of the main challenges of AR applications is usability; however, ease of use is also reported as an advantage. There is no evidence to suggest that usability issues are directly related to AR technology and may instead stem from inadequate technology experience, interface design errors, technical problems, or negative attitudes. The combination of real and virtual objects may cause confusion as students may face diffculty navigating between fantasy and reality. The use of AR technology within a learning environment requires multitasking, as students need to engage with large amounts of information and multiple technological devices to accomplish complex tasks. This may result in a cognitive overload and a feeling of being overwhelmed or confused. The confusion indicates the authenticity of an AR system; however, this may be unproductive in a learning environment as students may lose track of the real environment. Some studies report that AR decreases cognitive load, while others report cognitive overload. Schools may place constraints on the adoption of AR technology, and educators may be reluctant to use AR as this technology ofen requires innovative teaching approaches to be implemented. The content available through AR applications is often infexible, which restricts the teacher's control over the content and prevents adaptation to accommodate student needs . The availability of authoring tools may resolve this challenge by allowing users to revise and create AR applications . Another challenge may be that the stability of mobile AR technology is not guaranteed, and diffculties may be encountered if the technology lacks well designed interfaces and guidance as this may result in the technology being too complicated. Users may also need time to get familiar and comfortable with AR technology [14].

One is the lack of content creation tools. Many educational content developers, such as teachers, do not have the highly developed programming and 3D modeling skills currently required to design AR experiences. Unless tools become usable without such skills, AR interfaces most likely will not catch on in the mainstream curriculum.

The literature indicated that there is insuffcient research on the impact of using mobile AR in education, and there is room to explore the potential of AR to improve student learning and contribute to improved academic achievement. Challenges include training of staf and students on the application of the equipment, technical difculties, possessing of a support team to assist with necessary sofware and hardware and access to internet of campus. The current education model lacks to support students with AR ready mobile phones in their pockets and easy-to-use content tools at hand. few user studies have investigated AR's educational value in classroom settings. Conclusive results require more thorough study of educational AR experiences and how they can enhance learning.

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6. CONCLUSION

AR applications can be developed to make education more engaging and relevant for students.As with any technology, important lessons must be learned about how best to use AR in an education. Teachers can use different AR content creation tools to support a range of activities by integrating AR into their traditional curriculum. This is very different from most standard educational practices in which students are meant to either passively consume lecture style classes or learn mainly through the visual channel by reading textbooks. AR technology is robust enough to deliver learning experiences, especially in augmented books and mobile AR applications, AR experiences should complement rather than replace traditional curriculum material, valuable learning occurs during the development of AR content as well as in using the AR application itself and AR provides real benefit for reading comprehension and in understanding spatial data, especially for those students with low reading ability.

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BUSINESS INTELLIGENCE: THROUGH BIG DATA ANALYTICS AND MACHINE LEARNING

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ABSTRACT
Big data analytics and machine learning have been used widely in various industry such as Retail, Finance and banking, Health care and life science etc. Industries generating millions of data every day. These data are coming from various sources in multiple formats. Problem is traditional platform are not capable to process such big amount of data and make sense out of it. In this research paper we will see how industry can use Cloud computing , big data and machine learning platform to support their decision support system and save tones of money. We will see some examples how industries can/are using Big data analytics to analyse and visualize this data for company benefits. Amazon ALEXA is key device which can later connect with these big data platform and provide output in QnA formats.

1. INTRODUCTION
Data is Gold of 21 century. Big data large pools of diverse data that are collected, stored, and analyzed to reveal unexpected patterns and relationships has rapidly evolved to shape and inform nearly all sectors of the global economy. Ultimately, big data seeks to play a useful economic role by revealing the potential value hidden in this information. The development of tools capable of extracting value from these massive collections of information has made big data relevant to all sectors of the market. Consumers and providers of products and services, as well as governments and regulators, all stand to benefit from the insights emerging from the new science of big data. Ideal situation to use big data solution is when we have Volume, Velocity and Variety in data.

1.1 WHAT IS BIG DATA ANALYTICS?
big data analytics examine large amount of data to uncover hidden pattern, correlation and other insight. With the help of big data analytics one can make informed decision without blindly relying on guesses. It can help in answering following question

- What actually happened?
- How or why did it happen?
- What's happening now?
- What is likely to happen next?

2. MOTIVATION
Big Data market is constantly increasing each year. In March 2012, The White House announced a national "Big Data Initiative" that consisted of six Federal departments and agencies committing more than $200 million to big data research projects [1]. Global Pulse which is an innovative lab that is based on the big data mining is also using the Big data to improve the life in developing countries. In today's competitive & complex business world the various aspects of business are intermingled. Change in one aspect has direct or indirect effect on the other aspect. Within an organization, this complexity makes it difficult for business leaders to rely solely on experience (or intuition) to make decisions. They need to rely on data structured, unstructured or semi structured to back up their decisions. Existing tools don't lend themselves to sophisticated data analysis at the scale the user requires. Tools like SAS, R, and Matlab support the decisive analysis but they are not designed for the massive datasets & neither DBMS nor Map Reduce can handle the data that are arrived at high rates. To bridge this gap the "Big Data" came into the scene. Big Data has given the organization a new way to analyze and visualize their data effectively. For example: Business: Customer Feedback, trends etc.

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2.1 TRADITIONAL ARCHITECTURE

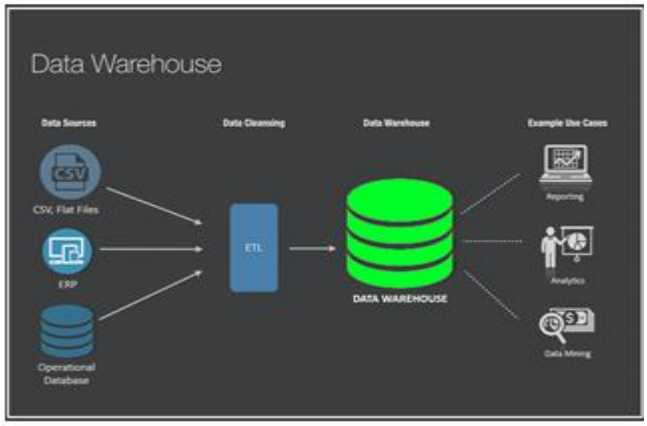

Fig-1: Business intelligence architecture. [14]

Fig. 1. shows the Business intelligence architecture. The raw data migrate to data warehouse eventually use by end user for analytical purpose. [2]

Analytics: Analytics is the discovery, interpretation and communication of meaning full patterns in data. Organization may apply analytics to business data to describe, predict and improve business performance.

Data mining: is the process of discovering patterns in large data sets involving methods at the intersection of machine learning, statistics, and database system. It is an essential process where intelligent methods are applied to extract data patterns. It is an interdisciplinary subfield of computer science. The overall goal of the data mining process is to extract information from a data set and transform it into an understandable structure for further use.

3. MORDERN ARCHITECTRE

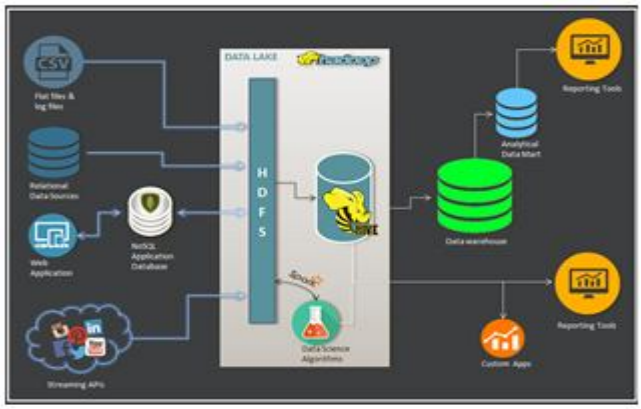

Fig-2: Hadoop data warehouse architecture [3]

According to above architecture data is coming from different source such as CRM, Oracle data base, ERP system, Excel & Csv format and some different sources such as social media and some structure data. With the help of ETL tools or sqoop data from these sources comes into Data Lake.

Data Lake: A data lake is a method of storing data within a system or repository, in its natural format, that facilitates the collocation of data in various schemata and structural forms, usually object blobs or files. The idea of Data Lake is to have a single store of all data in the enterprise ranging from raw data to transformed data which is used for various tasks including reporting, visualization, analytics and machine learning. The data lake includes structured data from relational databases (rows and columns), semi-structured data (CSV, logs, XML, JSON), unstructured data (emails, documents, PDFs) and even binary data (images, audio, video) thus creating a centralized data store accommodating all forms of data.

Performant View: This is view created on the basis of data stored in Data Lake. This view is used by organization to created interactive report for the different department. Apache Spark has as its architectural foundation the resilient distributed dataset (RDD), a read-only multiset of data items distributed over a cluster of machines that is maintained in a fault-tolerant way. In Spark 1.x, the RDD was the primary application programming interface (API), but as of Spark 2.x use of the Dataset API is encouraged even though the RDD

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API is not deprecated. The RDD technology still underlies the Dataset API. Spark is 10 times faster than map reduce. Hence we use apache spark to store data.

Actuarial View: This view mainly use for data analytics purpose .This view uses some SAS as tool to perform statistics modeling and some data analytics. There are many department in organization who use this tool to do data analytics and show the result in some visualization tool such as Tableau and power bi.

Canonical view: This view has all the historical records of organization which is used by data scientist to build machine learning modeling. Data scientist use data from this view and later they perform Data cleansing, Exponential data analysis etc according to organization requirement.

For example client wants to find their next dream home with a reasonable price tag. They have their locations of interest ready. Now, they want to know if the house price matches the house value. With this study, they can understand which features (ex. Number of bathrooms, location, etc.) influence the final price of the house. If all matches, they can ensure that they are getting a fair price.

Client House seller: Think of the average house-flipper. This client wants to take advantage of the features that influence a house price the most. They typically want to buy a house at a low price and invest on the features that will give the highest return. For example, buying a house at a good location but small square feet. The client will invest on making rooms at a small cost to get a large return.

Organisation can use SQL Server Where all latest data for organisation stores. Organisation can use this relational data to create different type of report on day to day basis or latest organisation performance data.

Mainly in organisation On CXO level employee want to know specific information about organisation performance. Here we can use Amazon Alexa to give them option of voice based analytics. Benefits of these techniques are it save time of CXO level. They don't have to go through each performance of dashboard. For example CXO want to know Revenue of organisation in month of july, they can simply ask "Alexa what is total revenue of company in month of july".

4. ADVANTAGE OF IMPLEMENTING NEW ARCHITECTURE [13]

The importance of big data analytics does not revolves around how much data a company has but how company utilises the collected data. Every company uses data in its own ways. The more effentiallty a company uses its data, the more potential it has to grow. The company can take data from any sources and analyse it to find answer which will enable:

- Cost saving:
- Time Reduction:
- Accessibility:
- Big data is relavent:
- Security:

5. ARTIFICIAL INTELIGENCE AND MACHINE LEARNING

AI: Artificial Intelligence is the broader concept of machines being able to carry out tasks in a way that we would consider "smart".

Machine Learning: Machine Learning is a current application of AI based around the idea that we should really just be able to give machines access to data and let them learn for themselves.

5.1 MACHINE LEARNING APPLICATION

Another categorization of machine learning tasks arises when one considers the desired output of a machine-learned system:[12]

- In classification, inputs are divided into two or more classes, and the learner must produce a model that assigns unseen inputs to one or more (multi-label classification) of these classes. This is typically tackled in a supervised way. Spam filtering is an example of classification.
- In regression, also a supervised problem, the outputs are continuous rather than discrete.
- In clustering, a set of inputs is to be divided into groups. Unlike in classification, the groups are not known beforehand, making this typically an unsupervised task.
- Dimensionality reduction simplifies inputs by mapping them into a lower-dimensional space.

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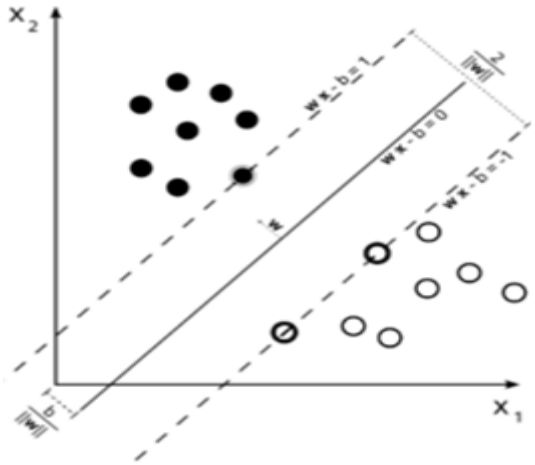

Fig-3: A support vector machine

A SVM is a classifier that divides its input space into two regions, separated by a linear boundary. Here, it has learned to distinguish black and white circles

6. BIGDATA AND MACHINE LEARNING EXAMPLE

6.1 IMAGE RECOGNITION

One of the most common uses of machine learning is image recognition. There are many situations in which you can classify the object as a digital image. For digital images, the measurements describe the outputs of each pixel in the image. [15]

In the case of a black and white image, the intensity of each pixel serves as one measurement. So, if a black and white image has N*N pixels, the total number of pixels and hence measurement is N2.

In the coloured image, each pixel is considered as providing three measurements of the intensities of three main colour components, i.e. RGB. So in the N*N coloured image, there are three N2 measurements.

- Face detection: The category might be face present vs. no face present. There might be a separate category for each person in a database of several individuals.
- Character recognition: We can segment a piece of writing into smaller images, each containing a single character. The categories might consist of the 26 letters of the English alphabet, the ten digits, and some special characters.

6.2 SPEECH RECOGNITION

Speech recognition (SR) is the translation of spoken words into text. It is also known as automatic speech recognition (ASR), computer speech recognition, or speech to text (STT).

In speech recognition, a software application recognizes spoken words. The measurements in this application might be a set of numbers that represent the speech signal. We can segment the signal into portions that contain distinct words or phonemes. In each segment, we can represent the speech signal by the intensities or energy in different time-frequency bands.

Although the details of signal representation are outside the scope of this article, we can represent the signal by a set of real values.

Speech recognition applications include voice user interfaces. Voice user interfaces include voice dialling, call routing, and demotic appliance control. It can also be used for simple data entry, preparation of structured documents, speech-to-text processing, and planes.

many industry such as retail, healthcare etc are using this technology. below are the some examples

6.3RETAIL.

In retail, relationship-building is critical for success. Technologies powered by ML capture, analyze, and use data to personalize the shopping experience in real time. Algorithms discover similarities and differences in customer data to expedite and simplify segmentation for enhanced targeting.

Based on learned preferences, deeper analysis is reaching individuals and pushing undecided visitors toward conversion. For example, ML capabilities can present online shoppers with personalized product recommendations while adjusting pricing, coupons, and other incentives in real time.

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With customer experience top of mind, Wal-Mart is working to develop its own proprietary machine-learning and artificial-intelligence technologies. In March of 2017, the retail chain opened Store №8 in Silicon Valley, a dedicated space and incubator for developing technologies that will enable stores to remain competitive in the next five to ten years.

7. GIVING VOICE TO ANALYTICS

One of the unique peace of this paper is voice based system (look like Bluetooth speaker) where user can check company performance with help of Alexa / Google home in form of question and answer.

Fig-4: Amazon Alexa [Source google image]

For example if user ask "alexa, what's my total revenue in mumbai region in month of may", alexa will repond with "revenue of Mumbai region is $2million in month of may".

Alexa can give response in two ways

- It can give answers in speech /audio formate
- If we connect alexa with some visualization tool such as tableau it will show response on screen inform of charts and graphs

7.1 ALEXA ARCHITECTURE.

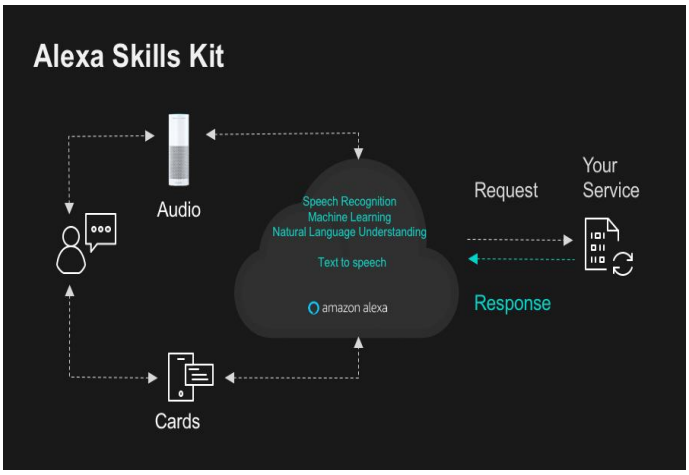

Fig-5: Alexa Architecure

Source: Google Image

When user ask questions to alexa. it goes to AWS cloud server and it request to our skill set which we have created with help of alexa kit. once it find skill our service response back with answer in json format. we must have AWS account and AWS echo app to start developing Alexa skill.

7.2 WHAT IS ALEXA KIT?

According to AWS [10] The Alexa Skills Kit (ASK) is a collection of self-service APIs, tools, documentation, and code samples that makes it fast and easy for you to add skills to Alexa. ASK enables designers, developers, and brands to build engaging skills and reach customers through tens of millions of Alexa-enabled devices. With ASK, you can leverage Amazon's knowledge and pioneering work in the field of voice design.

for using alexa as voice interaction developer has to create skill with help of alexa kit. developer has to create intent and entity in skills.

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7.3 STEPS

Understand the Design Process

The first step to voice design entails establishing your skill's purpose. Start with what your customers want to accomplish, and determine the capabilities of your skill and the benefits of using it. Then, identify stories that describe what people need to and can do. Later, use scripts and flows to identify details and variations for the interactions.

Consider What Users Will Say

Conversational UI consists of turns starting with a person saying something, followed by Alexa responding. This is a new form of interaction for many people, so make sure that you're aware of the ways in which users participate in the conversation so that you can design for it. A great voice experience allows for the many ways people might express meaning and intent.

Plan How Alexa Will Respond

There are a number of best practices to consider when designing Alexa's responses to customers. For example, a response should be brief enough to say in one breath. Alexa should also prompt users when needed and provide conversation markers like "first," "then," and "finally." And Alexa should have responses for the unexpected—for example, when Alexa does not hear or understand the user.

Check Your Design

Once you've designed your voice interaction, make sure your design is sound before you start building. Refer to our design checklist to ensure your interaction feels natural, delivers value, and works as you imagined when put to the test.

8. CONCLUSION

Both architecture are good for business intelligence, they solve different set of problem according to organization requirement but when organization want to take benefit of new technology such as Artificial Intelligence and Machine Learning ,new architecture perform better. Company where data is not generated in big numbers they can still use traditional architecture for business intelligence process. Main benefit of using new big data architecture is its speed and amount of data it can store. New architecture can give real time data hence organization can see latest performance overview of their organization. We can use Amazon Alexa for both architecture for designing Voice interaction functionality. Because information retrieval is faster in big data architecture, Amazon Alexa will work faster and efficiently in new architecture.

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SSS (SAFETY SECURE SYSTEM) WITH RASPBERRY PI

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ABSTRACT
The paper presents device that will focus on LPG leakage and also on LPG wastage. We are going to set device with stove to achieve accurate results. There are three parts or modules of project that is input, processing and user indicator. Where I am using weight sensor, temperature sensor and gas leakage sensor at particular locations for accurate results. Processing module consist of Raspberry Pi which is going to decide danger situations depending on inputs from sensors. Now if Raspberry Pi detects danger then it will start indicator that consists of sound and light indicators.

Keywords: Internet-Of-Things, Raspberry Pi, Sensors, Detectors, Python

1. INTRODUCTION

Liquefied petroleum gas is used as fuel in heating appliances, cooking equipment and vehicles, also on domestic level LPG is one of the important parts of kitchen for cooking heating and other uses. But LPG is also dangerous because it is highly flammable concentrations as low as 2 % will ignite in air and it is also heavier than air so it can travel along floors, downhill into gullies faster, it can cause toxic effect with high amount of concentration. That is why proper precautions should be taken while handling LPG.

While transporting LPG there are several precautions and equipment's are used to keep it safe and technology is still improving but when it comes to domestic level, we can see there are not many improvements. The total number of accidental deaths by cooking gas cylinder/ stove burst in India was 3525 during 2014 and many critical injuries. In this am going to build equipment that can reduce these accidents.

2. OBJECTIVES

There are few human mistakes that can cause wastage and accidents are as follows

1. When we keep stove keys turned on without lighting it or Due to wind blow fire goes and LPG starts leaking, this issue is very danger in some cases.
2. Sometimes we remove vessel from stove but forget to turn off, in this type of mistake there is wastage of LPG and also chances of blow down through wind are more.

I am going to point these issues to achieve safety and as well as save from LPG wastage.

2.1 Purpose

To achieve safety in LPG leakage my research project can be good tool to avoid accidents and we will try to achieve portability in project so it can be easy to install in our kitchen's stove and also can be pre-install in Stoves.

Important purpose of this is to achieve safety and as well as to avoid wastage of LPG with low cost and easy portable installation.

2.2 Scope

There are not many improvements we have seen in domestic LPG over years, important part of project is portability that we are going achieve, so that we can use device to upgrade safety old stove.

Even for new stove we can use this device pre-installed by manufacturing in it so customer can get safety level.

2.3 Problem Definition

LPG is one of the important part of kitchen. But LPG is also dangerous because it is highly flammable, it can cause toxic effect with high amount of concentration. That is why proper precautions should be taken while handling LPG.

While transporting LPG there are several precautions and equipment's are used to keep it safe but when it comes to domestic level, we can see there can be improvements.

3. PRELIMINARY PRODUCT DESCRIPTION

Important part of project will be Raspberry Pi that is going to control whole device based on inputs and output will be sound as well as bright light to indicate danger situation. To on the circuit, it is connected to the ignite key of stove so whenever we start key for gas our circuit will get on. There will be three sensors one is gas

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sensor temperature sensor and other is weight sensor, all of them will be connected to the Pi. Depending on situation Pi program will decide the danger situation and activate output accordingly. Using modern technology this is how I am going to achieve high level safety for our domestic LPG uses to avoid critical accidents.

There is also one important feature we are getting with this project is that if we forget to keep vessel on stove and keep stove on none of other device can't detect that but weight sensor it will be easy for us to detect that and inform user that will save LPG misuse.

We are going to use combination of hardware and software to get desire output from system. We can simply classify project into three parts depending on their functionality first is input module after that system processing module and finally indicator module.

3.1 Input Module

- **Sensors**

1. Weight Sensor

Weight sensor will be as input device for Raspberry PI, Important use of this sensor is to detect if there is any vessel on stove. It will indicate if there is no load on stove, if we keep stove on and forget to put vessel on it that will be wastage of LPG and that is how we will save wastage of LPG with help of weight sensor

2. Temperature Sensor

Temperature sensor is important part of our project which is going to help to detect temperature changes near stove, when temperature is below 50°C that means there is no flame on stove and if key is on then it means that gas is directly leaking through stove and that will indicate Raspberry Pi to indicate danger situation.

3. LPG sensor

This is direct LPG leakage sensor that is going to indicate leaking LPG which will be placed at moderate distance from gas cylinder. This is important if there is any other leakage taking place other than stove and which will indicate if there is any LPG leakage.

3.2 Processing Module

- **Raspberry pi**

The Pi 3 runs at 1.2 GHz, and also has an upgraded power system and the same four USB ports and extendable 'naked board' design. 50% more processing power and a Quad Core 64bit processor. It also opens up even more possibilities for IOT and embedded projects. The new Raspberry Pi 3 Model B offers higher level of performance than any other Raspberry Pi.

This is heart of our project which is going to work according to our program and activate indicators according to criticalness of situation and going to program it with help of python programming.

There is chart below which will be proper presentation of python program working for Raspberry Pi with input sensors and accordingly outputs of program.

Weight Sensor	Temperature Sensor	LPG sensor	Output Indicator
1	1	0	No
1	0	1	High
1	1	1	Moderate
0	0	0	High
0	1	0	Moderate
0	0	1	High

1 - Presence of input

No - Normal situation

0 - Absence of input

Moderate - Only sound indicator

High- Both sound and light indicator

1. No Danger

This is usual situation in which weight is present on stove flame is there on stove and there is not any LPG leakage detection on.

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2. Moderate Danger

This is danger situation in which there are two possibilities one is weight is missing from stove in this case flame is there on stove but there is no weight on stove which LPG is getting utilized this is wastage of LPG and user should get indicated but not in danger level. Case two is LPG is leaking through cylinder or any other joints this is important but user can act on it.

In this level of danger, we are going to use only sound indicator to inform user.

3. High Danger

This is danger situation in which flame is directly missing from the stove and LPG is leaking through stove. This is actual urgent situation where user have to act quick and should be indicated as fast as possible and properly so in this, we are going to use both indicator devices sound and light.

3.3 Indicator Module

- **Sound**

There will be two levels as we showed in programming chart Moderate and High level so sound is going to play in both level and it will be loud so we have to provide external battery source.

- **Light**

In light indicator we are going to use red light for sign of danger and it will be there only for High level risk, and because of this user will react quickly.

4 CIRCUIT DAIGRAM

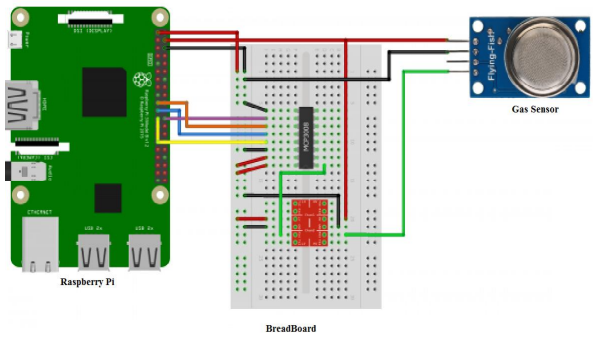

Fig-4.1: Gas Sensor (MQ-2)

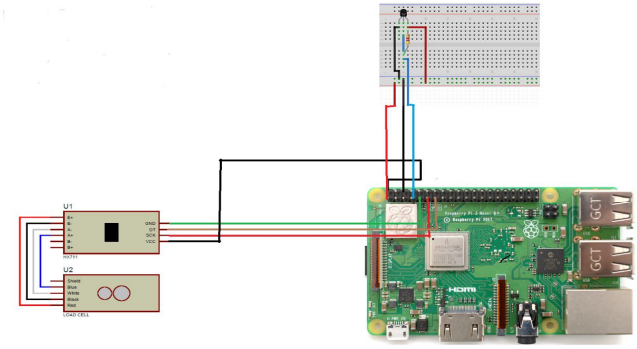

Fig-4.2: Weight Sensor (HX711) and Temperature Sensor (DS18B20)

5 FLOW DAIGRAM

Using flow diagram, we are going to explain now different type of situation we are going to handle in this project

5.1 Gas leaking directly through stove

In this type of case gas will be directly leaking through stove may be because flame of stove gets blown away by air or some other reasons. In this case now reaction of three sensors will be like weight present so '1' from weight sensor, LPG sensor will detect LPG but too late as we are going to place it away from stove and temperature will fall down low as flame is absent on stove so temperature sensor will give '0' analogy input to Raspberry Pi. As we have already set in python programming whenever temperature sensor gives '0' raspberry will activate high level indicator.

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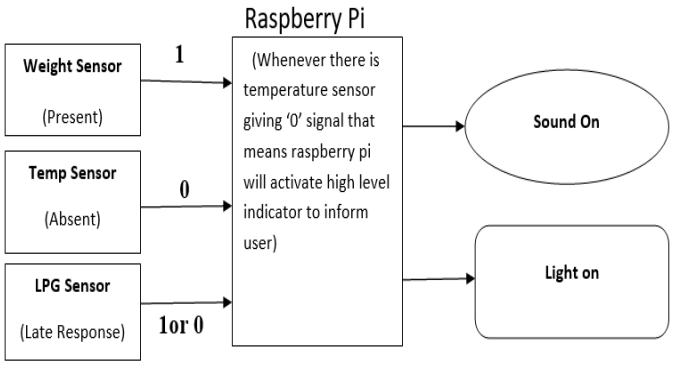

Fig-5.1: Gas leaking directly through stove

5.2 Stove is on we forget to put vessel on it-

In this type of case temperature sensor will give signal '1', LPG sensor will give '0' as no LPG leakage and weight sensor will give signal '0' as there is no weight on stove. This case directly shows that gas is on but it is getting wasting because there is not any vessel. Flow chart for this case will be as below.

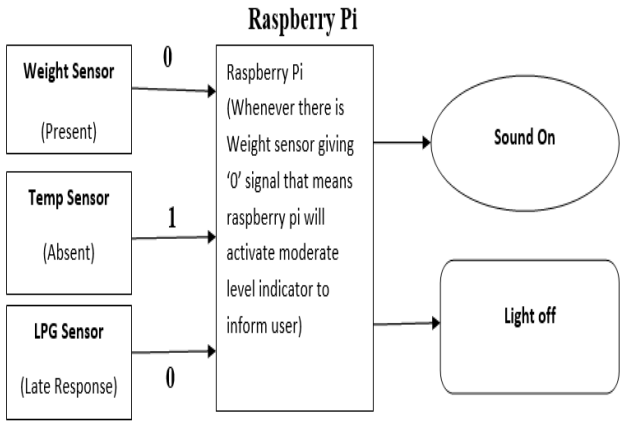

Fig-5.2: Stove is on we forget to put vessel on it

5.3 LPG is leaking through pipe, joints or cylinder.

In this type of case leakage is not taking place through stove but from other places and this sensor working will be irrespective of other sensors. When there is LPG detected by sensor it will give signal '1' and raspberry will activate moderate level indicator.

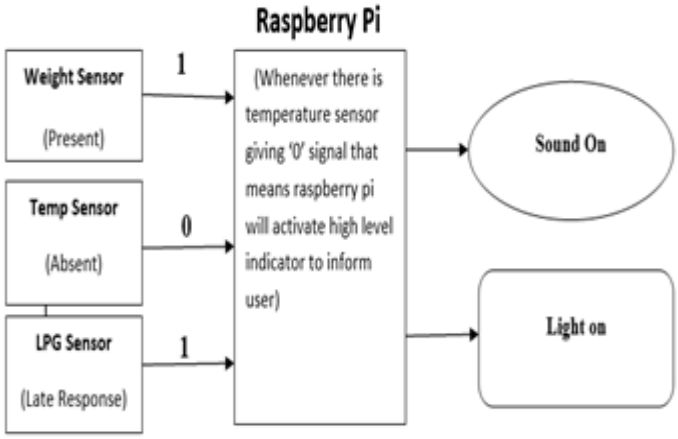

Fig-5.3: LPG is leaking through pipe, joints or cylinder

CONCLUSION

In our device by using weight, LPG sensor and Raspberry Pi we can secure kitchen from LPG leakage accidents. And also, with the help of temperature sensor near stove we can detect LPG wastage and reduce it.

This device is portable and can be install in existing kitchens easily.

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EMERGING TRENDS IN COMPUTER SCIENCE AND INFORMATION TECHNOLOGY–GREEN TECHNOLOGY

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ABSTRACT
Green Technology is also known as Clean Technology or Environmental Technology. The term "green" refers to eco-friendly environment and "technology" refers to application of facts, information and skills for practical use. In short, we can say green technology is an eco-friendly technology which is used to take care of the environment and natural resources. The main aim of green technology is to apply waste hierarchy which is called "three R's" – "REDUCE, REUSE and RECYCLE" to achieve success in conserving our environment and nature.

This paper presents how one can help protecting nature and environment using another "three R's" that is "RESPECT, RESPONSIBILITY, RESOURCEFULNESS" to make India greener so that we can proudly say our country as "GREEN INDIA".

Keywords: Green, Technology, Preserve, Pollution, Environment, Natural Resources, Eco-friendly.

INTRODUCTION

The word green comes from Latin word "viridis" and the word technology comes from two Greek words "techne" and "logos" where techne means art, skill, craft and logos means word or utterance. The technology came into existence in the later half of the 19th century. In the late 1980's less than 1% of the worlds technologically stored information was in digital format, while it was 94% in 2007 with 99% by 2014 and now in 2019 it is almost 100%. As the use of technology increased, the harm caused by it also increased rapidly because of growing population and due to consuming more natural resources carelessly. If it continues without proper care then in few years it will be very difficult for human beings to survive in this polluted world.

This paper is a report of how we can overcome the problems caused due to growing use of technology and how to save environment by making it "green", so by using green technology we can make "Green India".

INITIATIVES

Many people are not aware of green technology and eco-friendly products. As the time passes, people started using technology for their convenience and to adapt and gel with new generation and also for being stable in companies. But they don't have knowledge of what harm they are causing to themselves by not taking care of environment and not using technology in right sense. Here we educated people or we can say computer science and information technology related people needs to take initiative to educate other people related to green technology and its long term advantages. Using technology is not bad but it must be used in proper way to preserve our precious environment and natural resources. We can start various campaigns related to green technology to make public aware about its importance.

EFFECTS

Using technology without the knowledge of its side effects, harms the environment badly. First major change we can see now a days is climate change. We have observed that it can rain anytime anywhere here. Sometimes there will be very low temperature and very next time the temperature can rise like anything, causing health issues. People start suffering from cold, cough, respiratory problems, various infections and vector borne diseases.

Secondly we can see almost all rivers, lakes, dams etcetera from where we are getting drinking water are all polluted. We can't drink that water directly. And if someone drinks it then he is caught by many types of diarrheal diseases including Cholera and other serious illnesses such as Guinea worm disease, Typhoid and Dysentery. Water related diseases cause 3.4 million deaths every year and the rate can grow in future. Even fishes are not safe in that water, so now you can think how harmful it will be to human beings.

Thirdly man is cutting down trees to find better place for living by constructing buildings, bungalows in place of jungles. As there as no more trees we are seeing climate change frequently and also animal species are getting rare now-a-days. Because we are cutting trees in large number everyday it also causing harm to ozone layer. Ozone layer is the one which absorbs most of Sun's ultraviolet radiation protecting life on Earth from its potentially harmful effects. But as we are not taking care of an environment ozone layer has started becoming thinner day by day. This will increase chances of skin cancer and many other diseases.

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Next we are using vehicles for short distance also. We should use vehicles less as petrol, diesel also causes harm to an environment. Rather start using cycles which will cause zero side effect on environment. Even if we are using vehicles see to it that we are contributing less towards pollution and harming environment. Use vehicles which runs on compressed natural gas (CNG) as diesel and petrol causes more pollution. Or start using electric vehicles. When we use diesel vehicles, unburnt carbon is emitted from vehicles into atmosphere which is very dangerous for our health and also environment.

There are many more harmful effects of technology on human beings and environment. Some of them are discussed above. This all is because most of us lack knowledge of green technology. But if it continues then we will be in very danger situation in coming years. Rather than us our future generation will be in very difficult situation.

GREEN SOLUTION

With the help of above examples we can observe that we are going in wrong direction and need to change our path. Changes seems to be difficult but are not so. We can start change from our home, office, building itself. Some of the changes which we can start are mentioned below.

- Try to use less plastic goods.
- Buy only what is needed.
- Use cloth napkins rather than paper napkins.
- Buy eco-friendly products.
- Use organic products.
- Avoid using shower while taking bath.
- Open curtains for natural light rather than using electricity.
- Turn off technology when not in use.
- Use recyclable bags and containers.
- Recycle, sell or give away old devices.
- Buy LED, CFL or other long lasting bulbs.
- Go paperless.
- Go walking for shorter distances than using vehicles.
- Try to repair technology instead of replacing it completely.
- Use electric car or bike.
- Use power saving mode.
- Use rechargeable batteries.
- Check for leaky pipes.
- Purchase recycled paper.
- Implement light sensors in areas that not used often.
- Make sure boilers, AC units and radiators are properly maintained.
- Maintain your vehicles properly.
- Remember: Reduce, Reuse, Recycle.

Everyone should try to implement above things in their day-to-day life. Because of this we can definitely bring some good changes in environment. The one who is aware of green technology should educate at least five people about it and take them on the right path with him. They in turn should educate another five people and the chain must go on. By following this, green India will not be a dream to us.

So it is our responsibility to adopt “three R’s” - Respect, Responsibility, Resourcefulness - for “Green India”. Respect yourself, your health and try to help environment to become green. Be responsible and start following

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positive steps towards achieving “Green India” and be a responsible citizen. You can use many resources to think out of the box and create unique ways to achieve “Green India”.

CONCLUSION

Green Technology is an important concept that every individual should be aware of. Everyone should understand what technology is along with Green Technology for good future of our country. Modular technology offers a solution for this and it is more sustainable and better for an environment and also consumer. Even though modular technology is not a complete solution as it creates e-waste more but it can be a great step in right direction.

The main aim of “Green Technology” is to enable individuals to live better and luxurious life but in greener way without causing harm to the environment. So we can conclude that if all of us adopt Green Technology, which our economy and environment is absolutely capable of then we can give our future generations a cleaner world and healthy air to live better.

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JOBSTER- THE ONLINE JOB PORTAL

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ABSTRACT
The Online Job Portal helps both the job seekers and recruiters finding the right organization for the employees. In the case the job seekers , according to their educational qualifications, experience and their preferences, the job portal shows the list of companies to the job seeker. And to the recruiters, provides the suitable candidates from a pool of lacks.

Keywords: Jobster, Online Job Portal, Job seekers, Recruiters.

1. INTRODUCTION

The aim of this project is to at develop an online Job search Portal for the recruitment Details for job seekers. This system is an online application that is accessed by the organization and outside as well with proper login provided . This system is named as Jobster - used as an Online Job Portal for those who are searching for suitable.

Job Seekers should login and be able to upload their information in the form of a CV. Visitors/Company representatives also may login in and access/search any information put up by Job aspirants/Job Seekers.

Company representative and job seekers both uses Online Recruitment System medium to have direct interaction with best selected ones. By uploading resumes and setting job search criteria by the job seekers, they can browse through this online application . freedom is given to the recruiters that they can post the particular jobs with their own requirements, they can filter their search query, check out the resumes of job seekers, can create their profiles and much more .

Online Recruitment System is a platform with some unique features where they make recruitment process easier by providing flexibility to the recruiters. It will provide recruiters to conduct online aptitude test for different sections as per their requirement and generate the result according to the marks they have scored

Objectives

The main objective of the web application is to provide flexible and efficient process to the jobseekers by providing the functionalities of both job search and job application as well as aptitude examination test in a single application. In addition, this web application provides an effective way for the employers to post job vacancies and view the job applications by the interested applicants in a single application. Employers can also see the reviews provided by the jobseekers in this web application

Purpose

This web application can be used as an Online Job Portal for the Placements providing to the un-employees and for those who are seeking for a jobs. Job Seeker login into the system and he/she can should be able to upload their information in the form of a CV.Visitors/Company representatives login and can also access/search any information put up by Job Seeker.

Scope

The Jobster – Online job Portal System that is to be developed provides the members with jobs information, online applying for the jobs and many other facilities

The job seeker can apply for the match jobs and search as per his/her requirements

It should maintain proper records and contain information related to job expiry or registration

Problem Defination

Job Portals are like the meeting points for the recruiters as well as the job seekers where both aims at meeting their individual requirements . Job seekers try to find a job opportunity where they can apply their knowledge, acquire new skills and grow as a professional. On the other hand, recruiters try to fill their job openings with the right candidate who has the perfect aptitude and qualification to handle the responsibilities efficiently. Job portals are like a market place where the demand meets the supply.

Let me start as a job seeker.

- Duplication of jobs - Sometimes job seekers could not reach the employers who originally posted the job.

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- No proper feedback through portal after employer viewed the profile.
- Top job portals in India does not have jobs from start-ups.
- Not all the portal has cover letter in the job application.

Now as a recruiter I have a lot to tell.

There are 2 kinds of job portals.

- Portal as a Database of Job seekers
- Portal as job boards/company websites with career sections.
- In India recruiters majorly use "DB of job seekers". Job portals are not only used for recruitment and also for "Employer Branding". Problems with existing job portals Not all the portals are connected to social media.
- Even if they are connected they are not allowed to post in "job" section of groups. Pricing - each facility of a job portal cost individually , for e.g. ATS, SMS to candidates , postings , usage of DB.
- It would be great if we can have DB for reference candidates also.
- Options such as Notice period, preferred employer, preferred technology , preferred domain should be there. I wish to have freshers, experienced and executive level employees in the same DB. At present no job portal has all these in a single DB.

2. PRELIMINARY PRODUCT DESCTRIPTION

Earlier Attending walk-ins by the job seekers is always not possible by visiting from one place to another. Even at the recruitment centre lots more paper work involved such as form filling, attaching necessary certificates and documents etc. A lot of investment has to be made from both the side. Recruiters have to give their advertisement in paper media such as newspaper, pamphlets etc which is again extra cost and even not reachable to wider region.

Job seekers were not able to know about latest recruitment and not able to get their job even if they satisfy the eligibility condition. But in this job portal, Jobster the recruitment process became more easier the requirements are the information from the applicants . In the system the applicant need to fill the form and search for the job. In case if you are a fresher and are confused about the carrier so they can give the aptitude test based on this examination marks will be generated an the result are display guiding you about the choosing the stream.

After the test you can upload the resume and apply for the job. Based on the criteria set by the companies if you are suitable match you can directly have a interaction with the company or job Provider

3. SYSTEM MODULES

1. Job Employer

Job Employer section, This module contains details about Job Seeker, i.e. employee or un-employee details. Like employee name, email, experience ……. Here employee can do update, modify and delete. He can update experience and skills details also Call for an interview date Call for an interview time Call for an asking Job Seeker want to go for an interview? Call for an asking Job Seeker about feedback of interview facing ? Check the status true if selecting in the job.

2. Job Administrator

Job Administration section, which is further sub-divided into four subsections:

Check the status true if call back from the company. Also check the status false if Job Seeker is rejected. Viewing members. Emailing Register New Administrator Add Country Add State Add City Edit/Delete Recruiter Edit/Delete Job Seeker View Reports

3. Employee Section

- Registration Online Job Portal requirement Specification Upload Video/ Audio Resumes – giving an extra edge to the deserving candidates References/Video References.
- Option of Video Interviews Advance search by keywords, location, job title, skill, industry, company, profile Interest list for Jobs and the option of posting resumes to the entire list in one-go-Option of tracking pervious applications Directory Services like – “Best places to work” Creative Resume writing service (paid service).
- Option of having Personal Web Page (Profile Builder) - The professional details could be filled through simple designed form.

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- Option of taking Industry endorsed tests for better employability and put them on the personal web page along with the resume Confidentiality feature to define privacy level example: block current employer from accessing profile. Access to Customer care Spell Check facility for the resume Interview Scheduler - an alert through the email or mobile phone

4. Examination

The job providers prepared questions and update the providers and conduct examinations to the job seekers and also send the particular examination results .And the job seeker searches the particular job then attends the exam and also views his results after completion of the exam.

4. CONCLUSION

Jobster - The job portal provides an efficient search for online information on job vacancies for jobseekers. The main goal of this project is to attempt to select the right employees for the right job with their proper requirements

However it is important that to be aware the job web portals can never fulfill all the problems of the jobless graduates. It also focuses the issues faced by fresher candidates confused about their carrier selecting jobs, in this they can give an aptitude test and get the result and select their carrier. Project focused on improving the online job portals and tried to reduce problems that are encountered in the existing system.

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THE IMPACT OF DIGITAL EDUCATION IN INDIA

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ABSTRACT
Education has been a formal process over many generations and is changing day by day. Technology in digital era has ushered a new paradigm in learning and transformed from verbal communication like in gurukul system to computerized one. Innovation and technology have been predominant in every sector in India which is undergoing vast change in the past few years. Digital Technology has made transformed teaching and learning methods easier and faster which compulsion to adapt to the new technology or fear to become obsolete.

In today's scenario digital learning and teaching enhances learning beyond curriculum. Present day we are living in a generation where technological innovations are so fast that each day a new technology is evolving and giving rise to more advanced technologies. Digitalization is expanding the education system from traditional lecture halls and classrooms to accommodate learner's interests. Digital content is more focused on an interactive online model rather than conventional textbook representations. Digitization is imparting education using electronic media.

The scope of this paper is to bring out the changing nature of resources and perspectives and their use in the digital age and to support diverse teaching and learning needs but also to highlight some of the risks and strengths which may help to improve the role of teacher.

Keywords: Digitization, teaching and learning

INTRODUCTION
Digitalization is an inclusive term. Digital education system is software based and hardware integrated system. Digitization in education industry is changing the teaching and learning process to a very great extent. New discoveries in education have made stress free for both students and education system. Digital learning is an institutional practice that uses technology to strengthen students learning experience. The concept of resource based learning is not new, pre digital environments have been constrained by how resources were created and distributed. Existing resources may be consistent with the needs and goals of designers, teachers and learners and can be used largely intact in many instances; however this is not the case. Every human being must find and adapt resources to meet learning needs unlike those for which it was initially created.

Digital learning resource include in the context of the course that supports the learner achievements of the set learning goals. The term "e-learning "has really emerged in the last few years. E-learning should be energetic, emotional, extended and excellent education. E-Learning is the use of electronic media like interactive media learning, computerized instruction, when based learning process. So it is a blended learning along with the offline digital learning using local video conferencing support and structured learning activities which can be of great use in improving teaching methodologies.

If we need to educate the people in such manner then we need to bring learning to people instead of people to learning. The invention of internet is inarguably greatest and biggest game changer in the education system.

DIGITAL LEARNING
Definition: It is a combination of learning services and technology to provide high value integrated learning: anytime, anywhere.

Thanks to the technology which gave access to digital learning to the masses which started its inception from inter connected computers , lecture recording, e-learning that has seen it all forms from distant courses to virtual classrooms. Today digital learning has become a new approach of learning that is tailored to fit around the users interface.

Digital learning may be synchronous or asynchronous. Synchronous learning happens when all the participants are learning at the same time.

Asynchronous learning use technologies like emails, blogs and wikis.

We are sure that no technology can replace teachers. But sometimes traditional classroom teaching methodology is not fruitful for all level of students. Some of the responses observed from our students are shared in this paper:

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- No facility of learning at one's own pace.
- Sometimes monotonous teaching is boring
- Individual attention is lost.
- Teachers rely on explaining topics verbally
- No recording or replay of concepts or topics for missed classes.

Digital learning is structured on four essential objectives

1. Develop the skills and confidence of teachers
2. Improve access to digital technology for all learners.
3. Ensure that digital technology is a central consideration in all areas of curriculum and assessment delivery.
4. Empowers leaders of change to drive innovation and investment in digital technology for learning and teaching.

Digital learning technologies for students enables them to

- **Learn more efficiently** allowing both students and instructors to focus on their efforts on further understanding where it is required and find out problems real time.
- **Learn more fully**: Rapid assessment, simulations, visualization, games and videos provide a richer learning environment towards a fuller understanding of concepts. Discussion boards, online support provide additional forums for discussions, debate etc.
- **Learn anytime anywhere**: Asynchronous classrooms allow students create interest to learn anywhere, anytime they are most ready to learn.

Digital learning technologies for instructors

Leverage time better: Digital learning provides quick feedback to instructors on where students are finding difficulties either online or in person.

Spread knowledge widely: instructors can disseminate new ideas touching more people and impacting more lives.

Build learning modules quickly: Digital learning empowers instructors to build courses using best content and improve instructional techniques.

Smart teachers use digital learning to

- Explore and experiment
- To think critically and work creatively
- Reflect and plan
- Use feedback and self assessment
- Create new knowledge
- Make teaching and learning more effective
- Select appropriate strengths and needs, select appropriate technologies that will enhance the learning.

THE FUTURE OF DIGITAL LEARNING

Online education has been adapted by many universities, it has made approachable and shorten the distance between a student and his/her success. E-learning has seen it all forms from distant courses to virtual classrooms.

CONCLUSION

After statistical analysis, most students agreed that digital learning help students to have access to unlimited source of information; reveals connection between subjects promotes critical thinking and encourages students way of learning. The study further shows that majority of the teachers agreed that digital learning is easier and effective; helps to further develop teachers ;computer skills and brings out the best in students. The future of digital learning thus looks extremely promising. Whether or not digital learning will completely revolutionize the way we learn things and completely replace classroom learning into something only time can tell. But one thing is certain that classroom learning is never going to be the same again as it used to be years back.

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MINE SEEKER: A GAME BASED IMAGE SEGMENTATION ENVIRONMENT

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ABSTRACT
The paper introduces and embodies a method for segmenting images using a game environment. The game environment is inspired by a game called Minesweeper. In essence, the game is an inverted minesweeping exercise, whereas, in the original game, the objective was to avoid "stepping" on a mine, the objective in this proposed environment is to actually "step" on the mine. The mines here are representative of the pixels that one would eventually want to segment out of an image.

An agent in the original game can be given an indication of a nearby mine using numerical proximity indicators on safe boxes, thereby signaling which box to avoid. Here a mine can be indicated for the training phase using color-based annotations or other masking techniques.

INTRODUCTION
The image segmentation domain is rife with a great number of methods for extracting parts of interest. The most popular is that of creating a bounding box around the object of interest. These methods can contain forms of intelligence or be purely computer vision based segmentation algorithms. There are applications of intelligent methods that leverage a technique popularly known as the sliding window methodology. These intelligence based methods can be based off feature vectors, such as classifiers trained on SIFT or SURF keypoint vectors. Essentially these algorithms are trained using such keypoints, and subsequently, they perform the keypoint detection and classification steps on chunks of the image to be segmented.

In effect, the algorithm performs a classification operation on smaller crops of the image of interest and returns an appropriate response for said region of the image. This operation is possible with non feature vector based algorithms such as a convolutional neural network. In this case, the convolutional neural network essentially evaluates the crop of the image in predefined regions and orders to conclude if it belongs in a class. Along with this methodology, there are several important hyperparameters associated, that are separate from the hyperparameters of the recognition methodology itself. To provide an intuition, there are parameters such as stride length and window size that affect the size of the cropped sub-images and the resolution of travel within the original image. Finally, there might also be a need to perform a non maxima suppression step in order to discard matches from regions that either obscure the region of interest or are only part of the region itself.

There are several non-bounding box based algorithms at work too. These return a mask or colorized region for the image areas to be segmented. The state of the art, for instance, Mask RCNN utilizes a region proposal methodology, which essentially computes bounding boxes for regions in the image thought to be of interest. These bounding boxes are then sorted by the confidence of containing an object of interest and the top n boxes are processed for the mask generation. Finally, the algorithm returns masked or region colorized images of refined masks generated from the boxes with the most confidence. The aforementioned methods are general case segmentation algorithms. While some of them might perform well even in low data scenarios, they need extensive hyperparameter tuning and not to mention computational resources to tune. Many of these methodologies exist as pretuned models that can be tweaked for one's applications from the open source community. However, in the specific case, implementing some of these on limited resources and to suit the use case would take extensive tuning and a large toll on the resources. It is intended to mitigate some of these problems by proposing a game based approach to segmentation. The approach outlined in this study attempts to ease the generation of training data and also to attempt at mitigating the need for non-classification related hyperparameters. That being said, the algorithm can also be applied in conjunction with the aforementioned techniques. The approach is essentially the setting up of an environment, and given the environment, there are a number of approaches one can take, which shall be outlined in the following sections.

METHODOLOGY
The methodology involves setting up the image as an arena for minesweeping (rather minestepping in this case). The image can be divided into a grid, with each cell being a pixel. Subsequently, for training the algorithm, the user annotates training images by marking the regions of interest in a particular color. The annotated image essentially plays the role of a mask image. Succeeding this annotation step, the environment is set up such that the agent traverses across the grid capable of labeling a cell as a cell of interest, aside of course from movement actions. Associated with each cell is an appropriate reward function. The agent’s goal in this instance is to

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maximize payback and to minimize the penalty levied upon it for wrong labeling of pixels. At the end of an episode, which can be decided by termination conditions, or in case of trivial array sizes, by the act of visiting every pixel.

The reward matrix can be altered if need be by the user to coax the agent into possible regions of interest. In this manner, the agent is trained with use case specific annotations in order to segment regions of interest in the image. In case of high to very high-resolution imagery, the training and segmentation could possibly be performed on some reduced level of a Gaussian pyramid or allied structure in order to save on computational resources and on time.

The beauty of the environment lies, however, in its flexibility of usage. The environment can be used in conjunction with a number of game playing agents, right from a simple Q-learning algorithm all the way to highly involved deep to double deep Q-networks. Game playing reinforcement learning agents have developed into rather powerful and robust algorithms in recent times. Their prowess can well be leveraged in this scenario for achieving a desirable result. Algorithms developed by agencies such as DeepMind have managed to upstage human level prowess in game playing, to leverage such capabilities in a critical domain such as image segmentation would be a great boost to the domain.

Further, an added benefit of such an environment is to bring image segmentation closer to the human cognitive process of object identification. From a knowledge representation point of view, it is far less convoluted to interpret and represent than some of the methods outlined earlier.

Finally, the environment can also be used in extension of some methods discussed earlier. Taking Mask RCNN as a working example, the Mask RCNN can be used to generate training masks in use cases where such algorithms have a proven record. These images can be further used to train an agent using the environment envisioned, in order to obtain a final agent that is not as computationally intensive to deploy as the original general case segmentation methodology.

CONCISE WORKING

The game world is defined as a matrix of dimensions:

$$mXn$$

Where $m = n$ can be true.

The agent has an action set:

$$A = \{u, d, r, l, m\}$$

Where the actions *u, d, r, l* move the agent up, down, left, and right, and the agent uses the action *m* to set a pixel as a pixel of interest.

A possible reward matrix can be:

$$r = \begin{cases} +10, & m(x,y)\ is\ annotated \\ 0, & otherwise \end{cases}$$

Where *m(x, y)* is the location of the agent in the user created mask image.

The reward matrix can be modified by the user to suit their specific use case. However, the aforementioned is a basic suggestion.

DISCUSSION AND FUTURE SCOPE

The environment described is beneficial in providing a method to leverage some rather powerful deep learning algorithms for a segmentation purpose. Aside from this, it can also be used in conjunction with pretty basic algorithms such as Q-learners or even TD-learners. The flexibility bestowed by the environment for the choice of agent allows for a scenario specific usage for solving a segmentation problem.

The environment also has improved knowledge representation for a segmentation problem, making debugging and process tracing easier. Finally, the environment although can become intensive in the training phase of the agent, is light on resource use in the deployment phase, thus facilitating ease of deployment. Finally, it also works in conjunction with general case segmentation algorithms, thus acting as a bridge between the general case algorithm class and a specific use case.

Future work could involve attempting further optimization with the use of compression methods and pyramid algorithms in order to reduce the area of the image being processed.

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RENAISSANCE OF TECHNOLOGY IN HUMAN RESOURCE

Rohini Pillai and Dr. Lalitha P Pillai

ABSTRACT

The thinking of HR experts in this VUCA (Volatile, Uncertain, and Complex & Ambiguous) world has to be dynamic. The rules, the trends, the books that one referred to are all redundant now. Considering Talent Acquisition, gone are the days of CV scanning and scrutinizing, speaking to consultants and haggling over terms of contract. Mechanization is now used for sourcing CVs for bulk hiring.

Today there are software applications available for scheduling of interviews. Companies today are concentrating on "Candidate experience and convenience" where the interview is being taken through HI revue and Skype. With this renaissance of new technologies there are also limitations seen in this area. Introducing HRM software tend to be costly for many small businesses. It can be problematic especially when same employee play multiple roles in an organization.

The study covers the initiatives taken to acquire and manage talent with the help of the software packages that are used by corporates by carrying out their HR functions. The software packages used are those that are highly customized thereby providing better solutions in HR work. The objective of the study was to know the trends in software that is disrupting the market, to study the impact of such software packages, to determine challenges while making decisions for implementation of the software.

Identifying best software for company's ERP (enterprise resource planning) or any specific function among the pool of software is challenging. It is because every software tends to provide similar function but in a different way. Hence based on the requirement and future growth company needs to decide which software can be best suited for adding value to their business. Moreover, a highly customized software with enhanced features is always preferred.

INTRODUCTION

Today, Human resource has been transformed to that epoch that demands technology designed teams, entities, and networks—tools that implement agile talent practices and also help people be more productive. In addition to systems that are easy to use, employees today need systems that enhance productivity.

Driven by this market reinvention, the past year has been one of the hottest ever seen among investors in HR technology. Companies invested **$1.87 billion** in HR and workforce-related products, have been invested in by venture capital and private equity during the past two years and that does not even include the wellbeing or educational technology markets. In 2017, during the first seven months, an investment of more than **$900 million** had taken place. In 2018 many companies are moving towards chatbots for recruitment and query handling, whereas enabling the use of augmented reality and virtual reality for learning and development of the employees**.**

Presently HR software systems (it is well over a **$15 billion** industry) is being completely redesigned to emphasize on continuous performance management, real-time employee engagement, team management, and the usage of analytics and AI to help managers improve productivity and change in HR framework thereby creating new space for technologies.

Key areas of HR technology include the following

1. ***Migration towards cloud*** : Workday, Oracle, SAP, and Cornerstone On Demand together possess more than **150 million** users on their cloud systems (and again, with the global workforce of around **3 billion**, there is still plenty of room for growth), and lot of other vendors all have millions users as well. Regardless of this incredible growth, only **39 percent** of large companies and **49 percent** of midsized companies are on cloud.
2. ***Use of analytics for deeper insights***: The business world has spent a large volume of money optimizing customer analytics, financial analytics, marketing analytics, and advertising analytics before finally turning to people analytics. Recently **40 percent** of companies have acquired a new cloud-based system. And now, with platforms such as **Visier** (a product that can accurately integrate all your HR data into one prevailing analytics environment), **Cornerstone on Demand** HR Suite (a system that integrates diverse HR data), and the help of many experts from skilled service administrations, you can associate all your people data in one meaningful place.

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3. ***Switch to AI and automation***: Analytics and AI are closely related. A drive from operational reporting to predictive reporting is now being enriched with AI, which is essentially real-time analytics using larger data sets and more advanced algorithms. Different vendors such as **Crunchr**, IBM (using Watson), and others are now delivering smart analytics with AI out of the box. **Over a period of time AI will redefine the marketplace for analytics solutions**

LITERATURE REVIEW

Reports

- Josh Bersin. (2018).*Disruption in HR Technology.*USA: Deloitte gives a brief explanation on disruption of HR due to introduction of various software providing solutions for carrying out each HR functions. It explains the various software used by top MNC companies and determines AI, Migration towards cloud and Analytics as future of HR.
- Varma (2017).*Performance Management in Reliance,* Mumbai Support the fact that performance management should not be done in the old traditional way but in new way i.e. "check-ins" and Continuous Feedback which help increase productivity and morale of the employees thereby reducing attrition rate.
- Varma (2016).*HR Technologies (Reliance),* Mumbai tells about the latest trends, tools and technology in HR space. It describes the integrated framework of HR that is practised in the organisation with the use of latest trend in software that is now disrupting HR.

Articles

- Josh Bersin (2018).*Cornerstone on demand. Momentum is rising* stated the development of customized software which is now evergreen in the technology market. It shows various benefits software is providing, its projected growth, competitors, investors, investments, and market value.
- KPMG. (2017) *HR Transformation survey,* KPMG USA states the overall growth of KPMG due to introduction of technology in their HR functions. It covers responses from managers as well as employees who stated the ease of operating the mundane jobs.

Magazine

- *People Pulse* (2018).Mumbai: Human Touch describes the role of HR in this VUCA world. How this digitization can help HR in decision making in carrying out the different functions.

OBJECTIVE

1. To analyse latest trends in HRMS (human resource management software) companies that provide solutions for various functions of HR(Human Resource)
2. To study the impact of such software packages that brought change in the working of Human Resource
3. To determine challenges while making decisions for implementation of the software

RESEARCH METHODOLOGY

Primary Research

First-hand information was collected by interacting with deputy manager HR of Reliance which formulated a base study of technology in corporate arena thereby keeping Reliance majorly as a source of study for this research paper. Primary research was carried out through a questionnaire survey. Convenience sampling was done based on the responses collected from the sample size of 50.

Secondary research

Secondary data was collected. Data was collected from books, magazines, Reliance HR's database, research papers, articles and web sites.

Qualitative analysis was carried out pertaining to the reports given by the mentor along with the articles, and reports by HR analyst and corporate author Mr Josh Bersin.

Reliance Jiu was taken as a base company for the study. Apart from Reliance Jio studies were carried on other companies like Accenture, GE for getting an insight on the application of the software in HR verticals.

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ANALYSIS

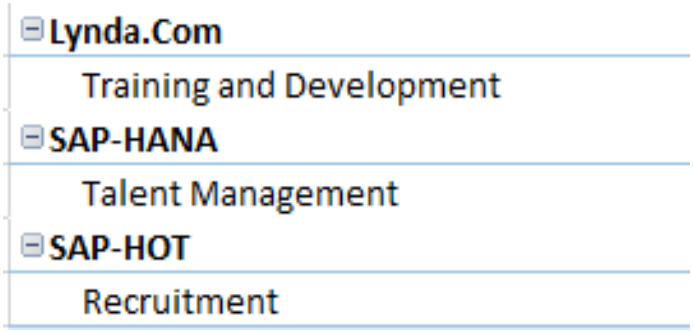

Fig-1.1

Software's used in Reliance

Reliance uses SAP-HOT (hiring-on boarding-training), Lynda.com (acquired by LinkedIn) for training and development and SAP-HANA for their Talent management practices.

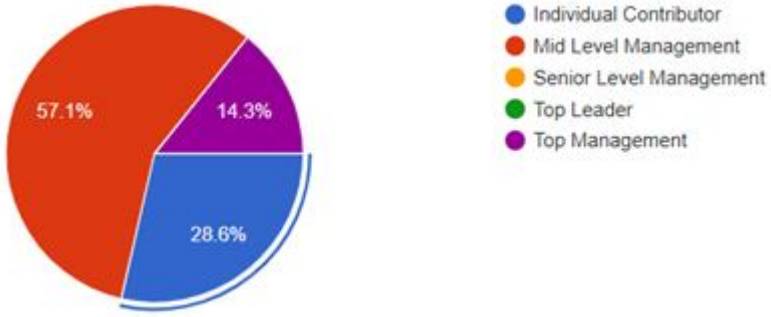

Fig-1.2

Heirarchy in the organisation

Above fig 1.2 states the responses as per the heirarchy in the organisation. 57.1% of the responses was collected by the mid level management.

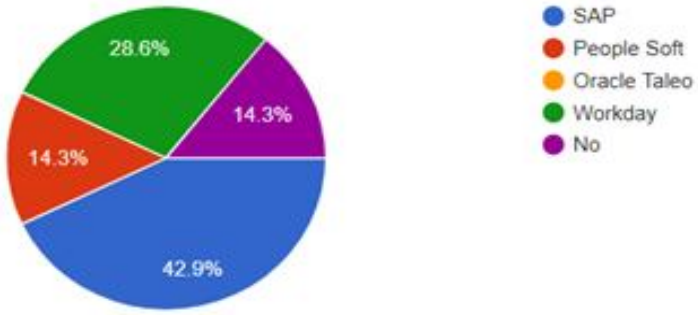

Fig-1.3

Entreprise Resource Planning software

Fig 1.3 states that 42.9% of the organisation prefer SAP as the best software for their ERP planning followed by Workday with 28.6%

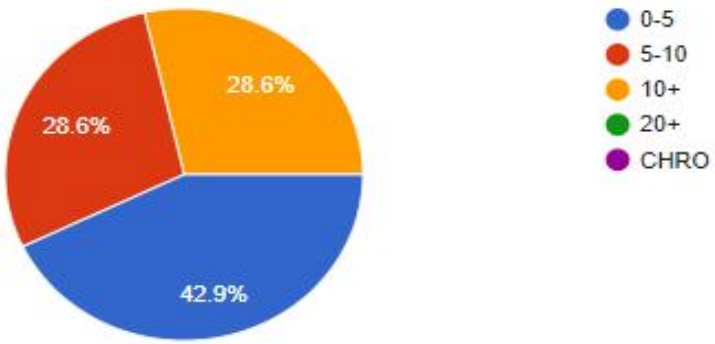

Fig-1.4

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The above fig 1.4 shows the responses collected from employees having number of years of experience in an organisation.

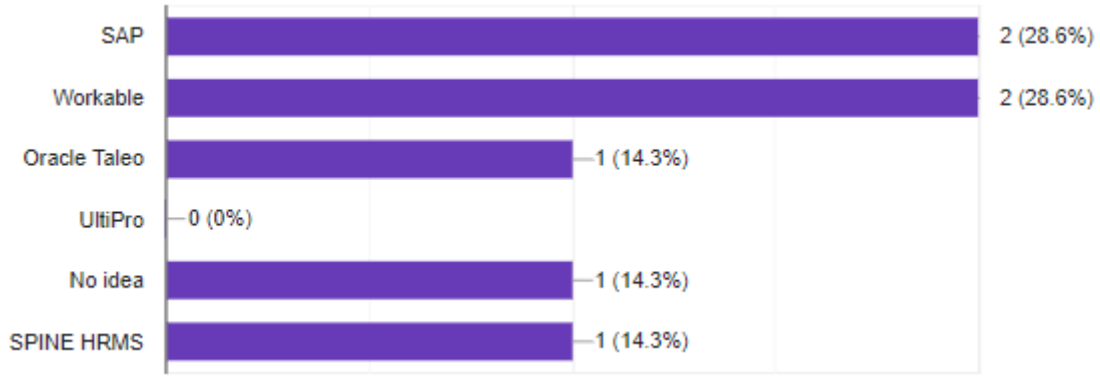

Fig-1.5

Fig 1.5 displays the responses across the HR verticals and it states that **SAP and Workable** are highly used software in most of the companies.

FINDINGS

The findings states that 45% of large companies and 51% of midsized companies spends on technology for carrying out their HR functions. According to the secondary research, Oracle, SAP Workday, UltiPro and people soft provide 55% of market in the industry whereas only **150 million** users are on their cloud which states that **39%** of large companies and **49%** of small companies are on cloud.

Fig 1.1 focuses on the software's used by Reliance which was the base study of this research paper. Technology surged in all areas of HR functions. MNCs like Accenture started using personalized Nano learning for its employees wherein they scrapped the old method classroom training. They started using a mobile app as a digital interviewing device for easing their recruitment process.

Netflix uses catalogues called Docebos for training their employees.

GE uses Ascendify for hiring and PD@GE that helps managing performance of the employees

CITI India adopted Blue Jeans and Video Recruit to enable business managers to interview candidates remotely from across locations. These apps eliminate the need for traditional video conferencing facilities, enabling candidates to connect to the interviewer via their mobiles or tablets.

Talent management, Payroll management and Time management software have turned the way this area was traditionally. The core HR technology and the payroll services markets are not same, while one is a software business and the other is a service business. As companies persist more globally, they face the challenges of global payroll—so many of the payroll-centric vendors (such as **ADP, Ceridian, Paychex, Paylocity, and SAP**) are growing as well, particularly those that offer hybrid managed payroll package options with their cloud solutions. Also most big companies buy payroll services from a variety of local providers around the world. **Gusto, Zenefits, Xero, Onpay** are top software providing platforms for payroll management. So this market remains somewhat distinct from core HR software for many vendors.

Ramco software is a boom for many IT industry that helps in handling Payroll process and are used by Big Tree entertainment Pvt Ltd and NetMagic solutions.

Fig 1.5 states the responses taken from midlevel management employees (fig 1.2) working for relevant years of 0-20 years. (fig1.4) that most of the MNCs opt **SAP and Workable** for carrying out their HR functions viz; talent management, payroll management and time management. Adobe is highly used software in training and development.

RECOMMENDATIONS AND CONCLUSIONS

Currently companies purchased SAP, PeopleSoft and other on premise HR software and in full swing to integrate HR into other enterprise resource planning (ERP) systems. In 1990s and initial 2000s, the

businesses was focused on expanding capabilities to support recruiting, training, and performance management, and integrated talent management systems developed. Around 2010, businesses began the move to the cloud, switching their old core systems of record and constructing systems of engagements that employees could actually use on their own.

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SAP and oracle being the two major players in the market, SAP acquires highest market value of 47**%** followed by oracle **24%**. Workable is still in practice by most of the companies and stated as an agile software for carrying out HR functions more than oracle.

HireVue is the emerging software that will ease recruiting jobs. Hence top companies has to look in as per their company standards which will reduce mundane job and digitize the work process.

Further, we are about to go through a substantial global shift away from email as we know it and toward conversation-based systems such as Slack, G Suite, Workplace by Facebook, Microsoft Teams, SAP Jam Collaboration, and many more. Over time, this will likely include voice-recognition software similar to Amazon's Alexa and Apple's Siri11, as well as intelligent chatbots.

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- G2 crowd;10th September 2018

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CONSUMER PERCEPTIONS TOWARDS ONLINE RETAILING – AN EMPIRICAL ANALYSIS

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ABSTRACT
The customer's perception is your reality. –Kate Zabriskie Retailing is one of the largest sectors in the global economy and is going through an evolutionary stage in India. Retail is currently a flourishing sector of the Indian economy. The Indian Retail industry has grown at a 14.6% CAGR during FY07-12. This growth can be directly credited to the emergent Indian economy as well as increase in Private Final Consumption Expenditure (PFCE) and bring revolution in Indian peoples" consumption pattern. This tendency is expected to continue for at least the next two-three decades, magnetizing huge attention from entrepreneurs, business heads, investors as well as real estate owners and builders segments of the economy.This study aims to identify the factors influencing the perception towards organized retailing from unorganized retailers.

Keywords: Retail Industry, Organized Retailers, Customer's Perception

INTRODUCTION
Retailing is a set of activities which allow the end customers to purchase and avail the product or services without a direct communication with the manufacturers. Often people mistaken the concept of retail. Retail is not about sale of goods in a store. In present business scenario, Retailing is the most versatile filed which deals with product, services, experiences etc. Manufacturers use retailers as an intermediary who can make their products easily available to the end consumers. Now a days, a haircut, a stay in a hotel, witnessing an event everything is considered as a part of Retail.

Indian retail industry is one of the fastest growing in the world. Retail industry in India is expected to grow to US$ 1.2 trillion by 2020 from US$ 680 billion in 2017.

India is the fifth largest preferred retail destination globally. The country is among the highest in the world in terms of per capita retail store availability. India's retail sector is experiencing exponential growth, with retail development taking place not just in major cities and metros, but also in Tier-II and Tier-III cities. Healthy economic growth, changing demographic profile, increasing disposable incomes, urbanisation, changing consumer tastes and preferences are the other factors driving growth in the organised retail market in India.

India's population is taking to online retail in a big way. Online retail sale is forecasted to grow at the rate of 31 per cent to reach US$ 32.70 billion in 2018. Revenue generated from online retail is projected to grow to US$ 60 billion by 2020. Online retail penetration is expected to increase to 10 per cent in 2020 from 7 per cent in FY17. India is expected to become the world's third-largest consumer economy, reaching US$ 400 billion in consumption by 2025. Increasing participation from foreign and private players has given a boost to Indian retail industry. India's price competitiveness attracts large retail players to use it as a sourcing base. Global retailers such as Walmart, GAP, Tesco and JC Penney are increasing their sourcing from India and are moving from third-party buying offices to establishing their own wholly-owned/wholly-managed sourcing and buying offices. The Government of India has introduced reforms to attract Foreign Direct Investment (FDI) in retail industry. The government has approved 51 per cent FDI in multi-brand retail and 100 per cent in single brand retail under the automatic route which is expected to give a boost to ease of doing business and Make in India, and plans to allow 100 per cent FDI in e-commerce. India will become a favourable market for retailers on the back of a large young adult consumer base, increasing disposable incomes and relaxed FDI norms.

LITERATURE REVIEW
Ramanathan & hari(2011) observed from their study that due to the recent changes in the demographic system of consumers, and the awareness of quality conscious consumption, consumers preferred to buy different products both from the organized and unorganized retailers. Joseph, Soundararajan, Gupta, & Sahu, (2008) concluded that unorganized retailers in the locality of organized retailers were adversely affected in terms of their volume of business and profit. According to him with the emergence of organized outlets consumers gained through the availability of better quality products, lower prices, one-stop shopping, choice of additional brands and products, family shopping, and fresh stocks. According to report of ICRIER "organized and unorganized retail not only coexist but also grow substantially. "The reason behind that the retail sector is gradually growing on an overall basis hence the benefit of this growth goes to both the sectors. Kearney, (2006) found that traditional markets are transforming themselves in new formats such as departmental stores, hypermarkets, supermarkets and specialty stores. Martineau, (1958) first time used the concept of store image.

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This store image was partly based on functional attributes and partly on psychological attributes. In functional attributes he included variety of commodities, layout, location, price value relation, and service that consumers could independently compare with other stores. Whereas in psychological attributes attractiveness and lavishness symbolized special attributes of that store. Munjal, Kumar, & Narwal, (2011) through their research concluded that the kirana shops‟ being affected by malls is only a myth. He further concluded that in spite of the available opportunities to the organized retail to grow in India these kirana shops also were benefited from this growing economy. Sivaraman.P, (2011) from his study concluded that the impact of organized retailers was clearly visible on the business of unorganized retailers in terms of sales, profit and employment. Due to their financial infirmity these small retailers continuously struggled to introduce changes in their existing retail practices. Some kind of intervention was required for their future existence. Another study by Ali, Kapoor., & Moorthy, (2010) in their study indicated that consumers shopping behavior was influenced by their income and educational level while gender and age had no significant impact on their behavior. While Dodge, Robert, Summer, & Harry, (1969) and Aaker, Jones, David, & Morgan, (1971) concluded that consumers‟ socio economic background, their personality, and past purchase experience were those factors upon which the customers‟ decision lied. Nair & Nair, (2013) in their study revealed that the perception of service quality was influenced by various natures among various customers and some of the general factors like personal interaction, physical aspects on which customer perception remained constant and common. But Singh & Agarwal, (2012) revealed that customer‟s preferences for grocery shopping were gradually shifting from local kirana stores to organized convenience stores. Brand choice and credit card facilities were the main determinants which influenced preferences from kirana to organized retail. Payment through credit cards increased purchases from organized retail store. Sinha & Banerjee, (2004) in their study concluded that store convenience and customer services positively influenced consumers store selection. Gupta , (2012) concluded in her study that store attributes like convenient operating hours and accessibility were the factors which lead to customer loyalty and not store appearance. Similarly, product attributes like freshness of the product and availability of products range according to the pocket were major determinant of loyalty. It was also evident that even today Kiranas are preferred by customers because of various reasons viz. convenient location, home delivery, personal relations with shopkeeper, giving products on credit, payment in installments. Srivastava, (2012) in his study showed that the overall customers‟ perception across urban and suburban was not varied. The customers were ready to pay higher prices for branded goods across the urban and suburban areas. They gave priority to purchase grocery from nearby shops while for purchasing of apparel they liked to travel some distance. The outcomes of the study showed that the exposure of marketing strategy through electronic and print media made the customers more choosey and knowledgeable. Whereas Solagaard & Hansen, (2003) identified several store attributes that were considered important for the consumer‟s evaluation of stores. These attributes were merchandise, assortment, merchandise quality, personnel, store layout, accessibility, cleanliness and atmosphere.

OBJECTIVES OF THE STUDY

1) To study the factors influencing the consumers to buy from online retailers.

2) To study the influence of demographic factors on buying decisions from online retailers.

3) To study the perception of customers towards online retailers.

RESEARCH METHODOLOGY

Research design is exploratory, descriptive and/or experimental in nature. It is helping the investigator in providing answers to various kinds of social/economic questions. After collecting and analysis of the data, the researcher

In the present study, researcher has followed Exploratory and Descriptive research. Descriptive research is usually a fact finding approach generalizing a cross - sectional study of present situation. The major goal of descriptive research is to describe events, phenomenon and situations on the basis of observation and other sources.

KEY DRIVERS OF RETAILING IN INDIA

Consumer Pull: In the pre-liberalization supply- led market, the power rested clearly with the manufactures. In today’s demand-led market, it’s the consumer who calls the shots. Over the last decade, there has been a significant evolution in the Indian consumer, mainly due to the liberalization of the consumer goods industries that was initiated in the mid-eighties and accelerated through the nineties, combined with a growing consumerism driven by the media, new opportunities and increasing wealth.

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Rising Incomes: Over the past decade, India's middle and high income population has grown at a rapid pace of over 10% per annum. Further the number of households earning above Rs. 1,50,000 per annum is about 30 million today and is expected to grow to 120 million by 2017.

Explosion Of Media: There has been an explosion in India as well during the past decade. Kick-started by the cable explosion during the Gulf-war, television has accelerated to a point where there are more cable connection than telephones in Indian homes (225 million v/s 23 million), and about 70 channel are being aired at all time.

Change In Consumer Behviour: The urban woman today is literate and, in many cases, employed. There is get a work pressure and increased commuting time. And with a shift in family structure, nuclear families have become a significant component of urban market. According to the urban market recent research conduct in Bangalore, the share of nuclear families is estimated to as high as 70%.

Consumerism Cycle: The consumer cycle start with the industry dictating the market. Eventually over time the distributor gains control, over the market; at this stage the retailers becomes an important link between manufacturer and customer. When the market starts developing and expanding it's horizon, retailers turn into the vital link in the supply chain. India is entering this third stage, where retailers control the market.

The Rural Market: The rural market is beginning to emerge as an important consumption area, accounting for over one-third of the demand for most key consumer durables and non-durable. In response, manufacturers of consumer goods; both FMCGs and durables; have begun developing new products (LG television, shampoo sachets, Ruf 'n Tuf jeans)and marketing strategies(using a village "haat" for brand promotions) with the rural consumer in mind.

Indian Retail industry is facing challenges and it needs to cross the following hurdles.

1. Automatic approval is not allowed for foreign investment in retail.

2. Absence of developed supply chain management.

3. Lack of integrated information technology management and study options.

Recommendations to the managers should not focus on the specific customer segment defined by age, gender, income and education.

Adopt more general approach or segmentation based on other factors;

Adopt appropriate strategies to address the consumer's fear of purchasing online (high quality standards, maintaining appropriate transportation conditions, certification and professional advice provision could be examples);

FINDINGS & CONCLUSIONS

India is at the crossroads with respect to the retail sector. Both modern and traditional retailers will co-exist in India for some time to come, as both of them have their own competitive advantages. Modern retail offers product width and depth and a better shopping experience. One of the prime objectives of this study is to find the consumers' perception towards organized and unorganized retailers across demographic profiles. This study indicated that Customers like to buy fruits & Vegetable from air-conditioned supermarkets because of its quality products but due to the high prices they still feel conservative to buy these kinds of products either from the local mobile vegetables seller or from the nearest sabji market. The study further revealed that Proximity is a major comparative advantage of unorganized outlets. The online retailers are having a greater advantage because of the store image, product availability, and price discounts. From this study it is observed that due to changes in the disposable income and increased awareness of quality, the consumers' perception towards online retailers changed on the basis of quality and price. They prefer to buy different products from the online retailers. There are enormous potential and growth opportunities available for the online retail sector.

SUGGESTION TO MANAGERS

The organized retailers should provide attractive offers to compete with the unorganized sector.

The organized retailers should offer lucrative schemes, discounts to generate costumers‟ stimulus.

The organized retailers should provide necessary arrangements for home delivery of goods. ¬ Organized retailers have been adding value to their products through prices, services and offers to attract and retain customers. ¬ Organized retailers should organize efficient and effective loyalty programs. This could help in providing recognition to the customers. ¬ Organized retailers should make necessary arrangements for consumer complaint management because customer complaints are the schoolbooks from which they could

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learn. For Government ¬ Foundation and implementation of a legal and regulatory framework and system to ensure that large retailers are not able to displace the position of unorganized retailers by unfair means. ¬ Make the necessary arrangements for extension of institutional credit at lower rates to improve efficiencies of small retailers especially through the public sector banks. ¬ Undertaking of a proactive program for assisting small retailers to upgrade themselves. ¬ Enactment of a National Shopping Mall Regulation to regulate the fiscal and social aspects of the entire retail sector. ¬ Access of credit for small retailers to expand and compete. ¬ Formation of retail cooperatives to help increase unorganized retailers' bargaining power and exploit the advantages of bulk buying.

SCOPE FOR FURTHER STUDY

The present research study has undertaken in the field of organized retailing. The specifically covered the application of Michael E. Porter five competitive forces model in organized retail sector. The further research can be conducted in the following area of retail sector.

- ❖ FDI and its impact on Indian retail sector.
- ❖ Information Technology and cashless transaction in Indian retailing trade.
- ❖ Supply chain management in retail sector.
- ❖ Quality standards in retailing business

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REVIEW STUDY ON BUSINESS INTELLIGENCE

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ABSTRACT
This paper addresses the concepts and approaches of Business Intelligence. Main enabling factor of his promising paradigm is the development of Information Systems. In today's challenging business environment, it is necessary for organization to access useful information and knowledge.

Business Intelligence encompasses software and development of information systems and makes it possible to detect the necessary data of any company And helps managers to understand business situation. Business Intelligence analyzes unprocessed data and developing accessible information from it in order to improve business performance.

Keywords: Business Intelligence Approaches, Data Mining, Fraud Detection.

INTRODUCTION
Today, in the rapidly changing environment, need to correct and just-in-time information is not only necessary for success but also is required for remaining in competition.

Business intelligence (BI) refers to a managerial philosophy and a tool used to help organizations manage and refine business information with the objective of making more effective business decisions (Ghoshal & Kim, 1986; Gilad & Gilad, 1986).

Different organizations with different tasks context and dimensions may meet some problems in efficiency use of the existing data in their systems such as Sale, financial and storage. (Mehrani, 1388).Data can be a valuable resource for extracting knowledge and making important managerial decisions in different business scopes. Regarding to increase data in organizations, today, using these data and analyzing that has become one of the most modern management tools. Making on-time and Review Study: Business Intelligence Concepts and Approaches 63 correct decisions requires the domination on real and comprehensive information, that the traditional information systems can't generate such reports to the desired. Management Dashboard, because bringing all of data together on one page and easily interpreting those using charts and forms for managers and employees, is a valuable tool in today's competitive environment. Managers of organizations that utilize dashboards, instead of wasting time to read the contents of complex and incomprehensible reports, and extracting information from them, allocate their time to achieve to simple and accurate decisions also they use their competitive advantage which implies through rapid reaction and changes to conditions. Nowadays the organizations that realized the value of getting on-time information, using this modern and valuable technology and that is way this phenomenon is utilized increasingly.

In the first section of this paper the concept and approaches of business intelligence is introduced.

Section 2 – Here data mining model as a Business Intelligence tool for detection of fraud on tax data and analysis is explained.

Section 3-Analysis of Tweets for Popularity Detection of Television Media in Business Intelligence is introduced.

Section 4- Use of Business Intelligence in Educational System is introduced.

Section-5- Use of Business Intelligence in Food Business is introduced.

BUSINESS INTELLIGENCE
Business Intelligence, often referred to as BI, is a popularized, umbrella term introduced by Howard Dresner of the Gartner Group in 1989 to describe a set of concepts and methods to improve business decision making by using fact-based computerized support systems (Nylund, 1999). The term is sometimes used interchangeably with briefing books and executive information systems. A business intelligence system is a data-driven DSS that primarily supports querying of an historical database and production of periodic summary reports. Data-driven DSS have been called various names over the years including data-oriented DSS (Alter, 1980), retrieval-only DSS (Bonczek, Holsapple, & Whinston, 1981), Executive Information Systems, OLAP systems and Business Intelligence systems. Business Intelligence (BI) is a set of abilities, tools, techniques and solutions that help managers to understand business situation.BI tools get a view of previous, now and future situation to people.

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With implementation BI approaches the existing contact information gap between top managers and middle managers will disappear and managers required information in each levels and any time acquire with high quality, also experts and analysts can improve their activities with simple tools and obtain better results. BI implement base on a goals: "Improving performance by create a suitable context to make decision in organization". When the manager's view to organization data is comprehensive can be certain of made decisions and sure that these decisions keep organization in competitive environment, also the defined goals will gain. But for complete usage of BI capabilities, BI must be flexible and can provide various facilities for employees, teams and total organization levels. Also BI must be uses all structured and unstructured data to make decision. Fast access to data and analysis them regarding to users need is critical for modern organizations. BI is a new approach in business and organization architecture.BI means identification and grouping hidden concepts relevant to decision and mass of business data to improve aware of business environment and help to organization decisions. BI is an organized and systematic process by which organizations acquire, analyze, and disseminate information from both internal and external information sources significant for their business activities and for decision making. (Lönnqvist & Pirttimäki, 2006) The BI is software that analyzes data from different sources and provides a kind of view, pattern and useful interface.

Business Intelligence is about providing the right data at the right time to the right people so that they can take the right decisions.

There are three approaches in BI

1. Management approach with focus on improving management decision making.
2. Technical approach by focusing on tools supporting the processes associated with Intelligence in management approach.
3. Enabling approach by focusing on value-added capabilities in support of information.

The BI term refer to

1. Relevant information and knowledge describing the business environment, the organization itself, and its situation in relation, to its markets, customers, competitors, and economic issues.
2. An organized and systematic process by which organizations acquire, analyze, and disseminate information from both internal and external information sources significant for their business activities and for decision making.(Lönnqvist et al .2006) Several related terms include competitive intelligence (CI), market intelligence, customer intelligence, competitor intelligence, strategic intelligence, and technical intelligence. In North American literature, the term CI is frequently used and the external environment and external information sources are emphasized (Cottrill, 1998; Fuld, 1995; Kahaner, 1996; Vibert, 2004). In European literature, the term BI is considered a broad umbrella concept for CI and the other intelligence-related terms mentioned above. Nevertheless, almost all the definitions share the same focus, even if the term has been defined from several perspectives (Casado, 2004), and they all include the idea of analyzing data and information. The purpose of BI is to aid in controlling the vast flow of business information inside and outside of organization by first identifying and then processing the information into condensed and useful managerial knowledge and intelligence. As such, the BI task includes new topics, addresses very old managerial problems and it is one of the basic tasks among the many management tools: analyzing the complex business environment in order to make better decisions. Organizations have collected information about their competitors since the dawn of capitalism (Gilad & Gilad, 1986). The real revolution is in the efforts to institutionalize intelligence activities. BI presents business information in a timely and easily consumed way and provides the ability to reason and understand the meaning behind business information through, for example, discovery, analysis, and ad hoc querying.(Azoff & Charlesworth, 2004). The BI literature suggests that much benefit can be derived from using BI (Thomas, 2001). However, applying BI takes resources, and the benefits actually occurring in practice are not always clear. The measurement of business performance has long traditions in organizations. In the BI literature, authors have identified BI measurement as an important task (Solomon, 1996; Viva Business Intelligence Inc., 2000), but a common view among scholars is that it is difficult to carry out (Gartz, 2004; Hannula & Pirttimäki, 2003; Simon, 1998). According to a recent survey, only a few organizations have any metrics in place to measure the value of BI. (Marin & Poulter, 2004).

BUSINESS INTELLIGENCE CONCEPTS AND APPROACHES

Around the world today, tax authorities are experiencing growing pressure to collect extra tax revenues, to discover underreporting taxpayers, and predict the irregular behavior of non-paying taxpayers. Most tax authorities require collecting tax data from a number of independent sources and performing data matching and

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checking with other sources to find cases of non-compliance. As a result, tax evasion detection performance has been rather limited in the absence of information technology tools. The amount of business data that is generated has risen steadily every year and more and more types of information are being stored in unstructured or semi structured formats. Traditional data mining has no power anymore to deal with the huge amount of unstructured and semi structured written materials based on natural languages. Zambia Revenue Authority is a quasi-governmental organization which is mandated to collect revenue on behalf of the Government of the Republic of Zambia. Its mandate is derived from the Zambia Revenue Authority Act 321, Section 11 (1), (2) and (3).

Some of its main responsibilities include

a) To properly assess and collect taxes and duties at the right time.

b) To ensure that all monies collected are properly accounted for and banked.

ZRA houses several critical corporate Databases used to store enormous business data commonly known as Taxes and Taxpayer Information. Information sits across different databases in different Division and Departments. Therefore, Business intelligence (BI) generally, and data mining in specific, may be effective tools for enhancing the efficiency and effectiveness of the detection of illegal activities in relation to Taxes.

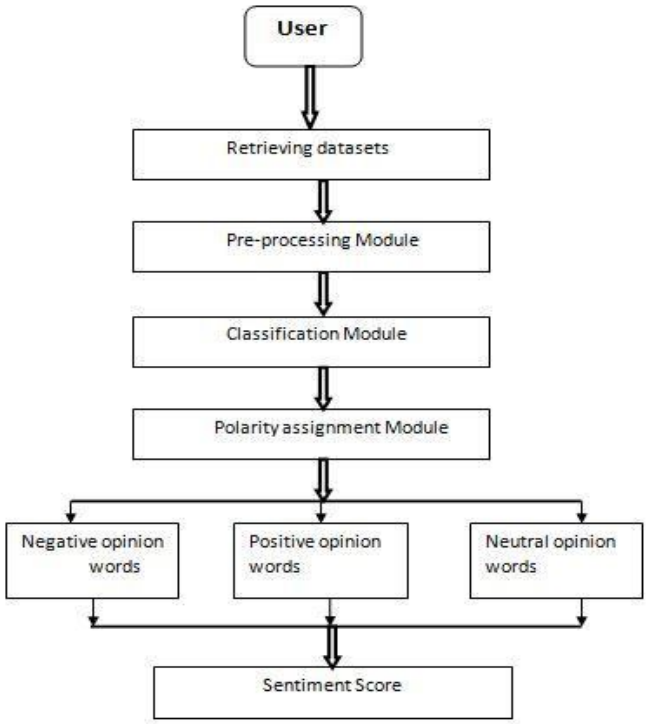
In Indian, the Chairman of the Central Board of Direct Taxes [9] confirms that Income Tax Department (ITD) has embarked on an ambitious computerization plan including implementation of a comprehensive Data Warehouse and Business Intelligence (DW & BI) to improve taxpayer services, promote voluntary compliance and deter tax evasion. The main objective of this plan when implemented is to [9] Discover non-filers with potential tax liabilities, Identify potential under-reporting taxpayers, Improving compliance of tax deductors, Identify non-compliance in service sector and implicit linkages for effective investigation

ANALYSIS OF TWEETS FOR POPULARITY DETECTION OF TELEVISION MEDIA IN BUSINESS INTELLIGENCE

Now social media contains the user data in the form of comments, reviews, posts, likes dislikes contains the user data in the form of comments, reviews, posts, likes dislikes.

The data on the social media includes the emotions of the user i.e. how positively or negatively the user is writing his comments or reviews. The positivity and the negativity comprise the important attributes depicting user's mood and emotions.

The system extracts the tweets after the TV show has been broadcasted on television, using the #hashtag created by the official account of TV show. Further these posts are preprocessed using data mining techniques. We use the concept of sentiment analysis to classify the tweets.



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- The system uses twitter an unofficial java library for the twitter API with Twitter, one can easily integrate the Java application with the Twitter service. The query for extraction can be performed 1 hour after the aired shoe episode ends on TV. Using Twitter the system interacts with Streaming API of the Twitter to access the real time tweets.
- The tweets are written by the users by use of informal words, adding hyperlinks to the tweets, use of local language etc. The proposed system makes use of Tool like WEKA classifier to preprocess these tweets hence all slang words, hyperlinks, local language etc. are removed from tweets to generate the processed meaningful data also the concept of NLP (Natural Language Processing) is used to design a library to convert the informal words to formal words for e.g. converting gud nght to good night.
- During this phase the sentiment analysis is done on the processed tweets. i.e. Positive, Negative, Neutral Words library.
- From the processed tweets which match with the words present in the libraries. Further counts are assigned to the no of matching words.
- Here, classification algorithm is applied on the keyword from the tweets. This classification algorithm classifies keywords in three classes namely Positive, Negative, Neutral. We use the Quality Threshold (QT) clustering algorithm to cluster words based on similarity measure. Each cluster is a set of words. To add each tweet to cluster we treat each tweet as query and each cluster as document. We used TF-IDF weighing scheme to calculate distance between tweets and cluster. We then pick the clusters based on highest score.
- The proposed system provides the graph ans the system also provides with comparison option to compare graph of multiple TV shows simultaneously thus serving for comparative analysis for Business Intelligence.

BUSINESS INTELLIGENCE IN EDUCATIONAL SYSTEM

Education is a key factor for achieving a long-term economic progress. During the last decades, the educational level of Many University has improved.

In a country like India, where there is a high demand for quality education, lots of universities adopting newer technologies and here Business Intelligence finds its applications in many areas like measurements in performance, analytics, reporting, collaboration, knowledge management. Business Intelligence is also used as a planning and monitoring tool for modeling the student number plans and then monitoring during the plan period, for planning courses, for budgeting and financial planning and then monitoring the year outcomes. Also there are many challenges to implement Business Intelligence in universities in India because of lack of centrally available data. For example in U.S. we know the entire demographics of a student, like where he is from, what background, school studied, scores for every subject throughout the life cycle. By using this we can from the profile of the student and match every new student to that profile. And based on how students performed in the past, we are able to predict how these students will perform in the future. But if we have to do that in Indian, we have to do it in buckets. For example if IIT's might have data of students who have applied for IIT or graduated from there, but it gives them very limited profile. Secondly even if they have all these data and demographics, it's very difficult to match profiles exactly as some students might have done schooling from interior parts of some states.

The market for Business Intelligence in educational sector in Indian market is around $140 million. This is only for software licenses only. The overall Business Market would be around $7 billion.

BUSINESS INTELLIGENCE IN FOOD INDUSTRY

Food delivery can be highly optimized and timed using various data analysis tools and techniques. Many data collected from many sources like road traffic, weather, temperature, route etc and provide a proper estimate for the time taken to deliver goods. It can also predict the impact of all the above factors on food quality.

Customer always expects the same taste but it is very challenging task, because the taste of the food not only depends on the ingredient but also the quality, storage and season of the ingredients. Business Intelligence can also analyze the impact of storage and transportation on quality of food.

CONCLUSION

At the end, by accomplishing this review research, concepts related to business intelligence classied in three groups: Managerial with focus on excellence in decision-making, Technical with focus on tools supporting business intelligence and Enabler with focus on value-added capabilities in support of shared information. Although the focus was at first on managerial approach, but over time and by doing more researches, focus

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shifted to technical approach and ultimately enabler approach. Finally, recommend to researchers for improve organization systems such as EnterpriseResource Planning (ERP) consider making-decision support requirements in Business intelligence.

The road to successful BI adoption has to include possible reengineering of information relations. By its nature BI technology is just a managerial tool to develop advanced informing and present decision information. It may be compared to an implant that has to be accepted and co-exist with people and processes in the organization, and this co-existence largely depends upon the state of "health" of the organization itself. User expectations towards IT are based more on advanced in-forming logic than on processing power and efficiency of IT. BI implementation requires substan-tial preparations and investment of effort into "soft" infrastructure – people, procedures, culture, motivation, skills, communication.

This study confirms that Data mining is a key to many of the shortcomings of the traditional approach in combating error and fraud, and it also gives reasons to believing that data mining could meaningfully contribute to making the tax administrations fraud detection

Positivity, Negativity are the two important attributes of Human behavior which depict human emotions as well as the mood. This attributes can be used for business intelligence.

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STUDY ON GREEN TECHNOLOGY

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ABSTRACT
Green Technology is an effective study in which disposing, recycling and manufacturing of computers and electronic devices is taken into consideration. The goal of green technology is to lower down the use of hazardous materials, maximize energy efficiency and popularize biodegradability or recyclability of outdated products and factory waste.

The degradation of the environment has negatively affected the human health and societal wellbeing. Considering the importance of the environment, now environment problems have been recognized and discussed at various forums. Consumers are becoming sensitive to the environmental issues and have started preferring businesses that practice environmentally friendly/green initiatives. Seeing the positive response from the consumers towards eco-friendly products & services, Indian Organizations are adopting green practices like their counterparts in developed countries.

Keywords: efficiency, Green Initiatives, Green IT, friendly technology, recyclability, factory waste

I. INTRODUCTION

Many people are simply not even aware of green technology's existence, as well as not knowing how to live a greener life, many just do not understand the concept of green technology or think of it as something that is costly, or too difficult to do. It is important for the us to understand that due to the way technology progressed, it has made us dependent on certain resources, such as coal.

The concern for environmental conservation is not limited to developed country such as the United States and Germany but this concern is getting receptiveness in less industrialized & developing nation such as India. With the time, the Indian organizations have understood the importance of environmental sustainability and implementing green practices. According to a report about 80 Indian organizations are providing their sustainability report on the basis of the Global Reporting Initiative framework as the sustainability issues related to the environment has become an important concern for the Indian organizations.

The present paper attempts to study the Green Technology practices adopted by Information Technology (IT) organizations in India. The focus of this paper is on IT sector as this sector is considered as one of the sectors in the service industry that contributes to environmental degradation, as it contributes to 2% of global CO_2emission which is equivalent to CO_2 emitted by airline industry.

II. GREEN IT PRACTICES ADOPTED BY INFORMATION TECHNOLOGY ORGANIZATION IN INDIA

A. Tata Consultancy Services (TCS): TCS is an Indian based multinational information technology company, belongs to the renowned Tata group. TCS was founded in the year 1968, now it provides IT services, business solutions and consulting in forty-six countries. TCS is largest India based IT service company on the basis of 2012 revenues. Along with its core business, TCS is also involved in community services such as education health and environmental protection. The triple line bottom approach of people, planet & profit has been adopted in TCS.

Following are the green initiatives adopted by TCS

a) Various renewable energy practices, such as solar lighting, solar water heater are being used in the select offices.

b) (b) TCS follow green procurement policy for electrical and electronic appliances. For e.g. Energy star rated appliances are being used in TCS offices.

c) The organization prefers suppliers & vendors who conduct their businesses in eco-friendly way.

d) The organization is also playing a vital role in creating awareness about environmental issues among their employees and business associates.

e) Most of the TCS offices are certified by EMS (Environmental Management System) certification, ISO 14001: 2004.

f) The 3R\policy of Reduce, Recycle and Reuse in followed by TCS.

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B. Infosys: Infosys is an Indian based multinational information technology company, founded in the year 1981. It provides various services and products related to information technology such as: software development, business consulting, technology outsourcing, maintenance and independent validation services to other companies. Infosys is the second largest IT Company in India on the basis of2013 revenues. The company has global presence with 94 development centers& 7 offices in India, China, Japan, Middle East, Europe, United States etc. The company is also involved in the development of society through the Infosys foundation

Following are the Green IT initiatives adopted by Infosys Ltd.

(a) The organization plans to be carbon neutral by the year 2017. Moving towards this, the organization has already reduced its energy consumption by 50 percent by using various energy saving appliances.

(b) The entire new infrastructure constructed in the past few years have been constructed using mechanism and design that helps in energy conservation.

(c) Renewable energy such as wind and solar energy is used in selected offices.

(d) The entire campuses of Infosys are conformable and certified with Environmental Management System (EMS) certification.

(e) Several measures such as desktop power management, audio-video conferencing and virtualization have been adopted to reduce the energy consumption in IT infrastructure.

C. Wipro: Wipro is multinational IT company in India headquartered in Bangalore, India. Wipro founded in 1945, but it enters in IT domain in 1980. Wipro is the third largest IT Company in India having its presence in sixty-two countries. Wipro mainly deals in IT consulting and system integration. In the year 2010 Wipro was ranked first among Indian companies & sixth among Asian companies by Asian Sustainability Rating for their sustainability performance.

Following are the Green IT initiatives adopted by Wipro Limited

(a) Wipro has launched a new range of eco-friendly desktop called Greenware. These eco-friendly desktops are energy saving in nature and follow European norms for restricting hazardous substances.

(b) The organization provides its sustainability report on the basis of Global Reporting Initiative (GRI) framework; which show the organization's commitment toward transparency toward ecological issues.

(c) The organization has initiated various e- wasted disposal, collection centers for responsible disposal of the e-waste.

(d) Automated power management system has been implemented in the offices. This automated system automatically identifies the power savings.

(e) The organization follows virtual policy system which enables the existing hardware to be used by multiple operating systems.

D. HCL Technologies: HCL is multinational IT company based in Noida, India. The company was founded in the year 1991 and currently it is operating in 26 countries. HCL is the fourth largest IT Company in India on the basis of year 2013 revenues. HCL mainly deals in software consulting, R&D services, business process outsourcing, remote infrastructure management, enterprise solution etc. HCL runs a multi-layered corporate program 'Go Green' to drive its sustainability initiatives.

Following are the Green IT initiatives adopted by HCL Technologies

(a) The organization has reduced its power consumption by 1.7 per cent in the company owned facilities.

(b) Received 66/100 ratings in carbon disclosure projects in the year 2012 which is higher than average industry ratings.

(c) The organization has initiated ways to measure carbon footprint & water footprint in their offices.

(d) The organization has managed to dispose its e-waste and printer cartridges in eco-friendly way.

(e) More than 60 % waste of plastic, tiles etc. are recycled or reused.

III. METHODOLOGY TO CHECK GREEN IT: GREEN AUDIT

With the Green Audit, beyond the simple analysis of the current, we define "green" thresholds in order to determine, in addition to the traditional study of the Information System, what improvements should be considered in a sustainable development.

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Methodology that follows for auditing are divided into several phases

- An accurate inventory or mapping, of the company's Information System
- A qualitative analysis of material
- An evaluation of computer security
- A simple modeling of business processes related
- A logical interpretation of information flows
- An analysis of IT management information
- An assessment of energy consumption related levels
- A check of the existence of procedures and methods of organization
- The determination means for improvement of IS
- An editorial stage of drafting and issuing audit report
- The presentation of conclusions

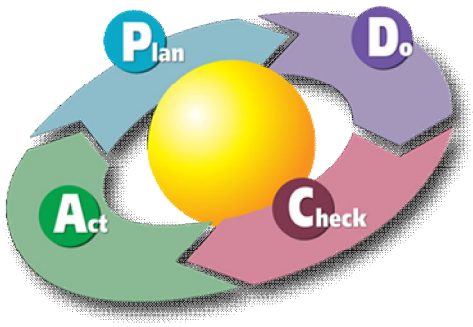
Green IT consultants Consulting begin their audit work by two complementary approaches

- A technical analysis of existing and the formalization of an Information System cartography
- A functional analysis of the use of IS through interview users and managers

These two steps are the most important of the green audit and will allow us to really understand the use made of the Information System of the client's company.

The objective of the green audit is to examine all or part of the company's computing to deliver a clear overview and precise object studied which allows to provide recommendations for improvement or change.

The green audit can lead to other expert missions and other accomplishments.



IV. GREEN INITIATIVES AND CERTIFICATIONS

Green technology and other Eco-friendly products are still a new concept to many. Technology has made quicker advancements as time goes on, but many have not stopped to think about the effects it could have on the environment. It was not until 1992 when Energy star was launched by EPA (Environmental Protection Agency) in the United States of America. They created a voluntary program that helps organizations to save money while also reducing their emissions when they successfully identify products that have superior energy efficiency. These products generally use 20–30% less energy than required by federal standards. The list below are some major green initiatives. There are plenty more, but these are the most well-known:

- Climate Savers Computing Initiative (CSCI) an effort to reduce electric power consumption of all PCs in active/ inactive states.
- The Electronic Product Environmental Assessment Tool (EPEAT) can assist in buying greener computing systems. A Council evaluates computing equipment on 51 criteria - 23 required and 28 optional, measuring a product's efficiency and sustainability. Products are rated Gold, Silver, or Bronze.
- The Green Grid is a global association dedicated to advancing energy efficiency in data centers and business computing ecosystems. Companies such as AMD, APC, Dell, HP, IBM, Intel, Microsoft are responsible for its founding.

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- Energy star is an association started by the Environmental Protection Agency (EPA) in 1992 which labels products that use 20–30% less energy than required by federal standards. As of 2006, more than 40 000 energy star products are available.
- TCO certification promotes sustainably designed IT products. Certified products meet a broad criteria scope including requirements for socially responsible manufacturing, environment as well as health and safety throughout the products life cycle.

V. BENEFITS OF GREEN TECHNOLOGY

After successfully implementing greener lifestyle changes in the home, you may find that most of these ways become second nature. Living greener may inspire the reader to make their workplace greener. The most startling part of this is that 90% of this waste is recyclable.

Easy ways to be greener

- Implement recycling in the office
- Remember: Reduce, reuse, recycle, repair and think
- If recycling already exists, make sure employees are aware
- Educate employees on what can and cannot be recycled (cardboard, plastics, cd's, glass fluorescents, and IT equipment
- Remove personal trash bins, centralize it
- Purchase recycled paper
- Install water hippos in toilets (a device that sits in the cistern of the toilet and reduces water used with each flush) or use low-flow toilets
- Encourage employees to keep scrap paper for notes
- Buy organic and fair-trade products (tea and coffee)
- Ban non-reusable containers
- Use eco-friendly cleaning products
- Digitize
- Implement double-sided printing
- Start a campaign to switch off inactive lights and office equipment
- Switch to green web hosting, this means you can reduce carbon emissions and can use an eco-label on your website
- Measure your carbon footprint to see areas of possible improvement
- Install printer, and computer timers, so they shut down after office hours
- Replace inefficient technology, such as lightbulbs with more efficient technology (lower wattage, compact fluorescents and LEDs)
- Implement light sensors in areas that are not used often (bathrooms and meeting rooms)
- Make sure boilers, AC units and radiators are properly maintained
- Make sure heating and cooling systems are set up optimally (not used during holidays, evenings or weekends) and are around 20-22c

If the company follows these tips, they may become carbon neutral. The term carbon refers to processes that are related to releasing carbon dioxide into the atmosphere. Such processes include transportation, energy production and other industrial processes.

VI. CONCLUSION

The term green has become a part of strategic decision making among the IT firms in India and the green practices have become the part of their day to day business activities. Like their counterparts in the developed and industrialized nations, the organizations in India have understood the importance of green marketing

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strategies. The green strategies adopted by the IT organizations have helped them to reduce their energy consumption and helping them to be earning carbon credit which will help them to be carbon neutral in the near future.

The green initiatives implemented and adopted by the IT firms in India shows their approach toward 'Green IT' but the time demands the including the concept of 'Greening by IT' along with Green IT. The concept of 'Greening by IT' will help organizations to deal with environmental issues in a better way, as this concept emphasizes on helping the other organization in implementing green/eco-friendly practices i.e. providing green solutions to other firms.

One of the greatest aspects of green technology is that it enables individuals to live their lives, but in a greener way that is not harmful to the environment. Since green technology covers a variety of appliances, making it within reach to be greener in everyday life.

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A REVIEW ON IMPLEMENTATION OF ANN AND FUZZY SYSTEM FOR PERSONALIZED E-LEARNING

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ABSTRACT
Today e-learning system plays important role in adaptive learning paths. Technology integration in teaching helps to teach content based curriculum effectively and efficiently to build learning interest among students. Personalize learning system focus on learning behavior, interest, skill, knowledge level and design curriculum according to learner's ability and their knowledge level. It is flexible teaching methodology to meet individual needs of students. E-learning performance is improved by recommending suitable e-contents. Personalize learning approach optimize the needs of each learner. For effective e-learning system it is necessary to understand learners and develop a system that cope up with the individual learning need, interest of student. This paper describes review on implementation of Artificial Neural network, Fuzzy System for developing personalized e-learning system.

Keywords: LMS, SCORM, FCM, MLP, COA, OWA, RBF

1. INTRODUCTION

Now a day's E-learning is buzzword for educational field. New revolution in the education field is e-learning or web based learning. Due to e-learning evolution there is global change in higher education. There are different forms of e-learning from distance learning to virtual reality. It is convenient learning methodology to deliver knowledge to anybody, at anytime, anywhere to reduce efforts, time and cost [12]. Objective of e-learning is flexibility, personalized learning, knowledge development, intelligent system, continuous assessment of learning progress in e-learning. Learning style is different from learner to learner may based on mood, time, and course content and environmental factors. Learning style is based on static and dynamic factors. Static factors does not change any circumstances whereas dynamic factors means the learning style and preferences may change from time to time due to their cognitive and psychological parameters.[12] Success and failure of e-learning system depend on delivery of learning contents, knowledge management, performance evaluation.

II] E-LEARNING CHANGING PARADIGM

First Generation: Due to revolution in internet technology demand of E-learning is increased. Concept of e-learning evolved from 1990's. CD-ROM's, Pdf files are used for online learning. As it was monetarily more beneficial, online courses became more and more popular. In this decade major drastic change in educational system was seen, where personal home computers, online environments, online education courses, publishing digital content was enhanced.

Second Generation: From 2000-2005 the upgraded technologies, methodologies and software attracted more people to use PowerPoint tools and learning management systems (LMS). Increased access to wireless, scalable vector graphics, improved PowerPoint capabilities, learning objects, educational games, e-Learning repositories, SCORM, LMSs and social media networks were some of the notable achievements in this field.

Third Generation: From 2006-2010 there ware development in e-learning technology rapid e-Learning tools became quite standard in the learning industry. The "anyone can build" functionality of online learning tools enabled every common person to learn more. Introduction of methodologies like podcasting, mobile Internet, augmented reality, cloud computing, e-books, gesture based computing, library digitization and educational gaming.

Fourth Generation: From 2011-2014 e-Learning courses are popular among students, businesses and trainers. The tools used in the industry have become more easy to use. There is more content, expert advice, virtual classrooms, and a lot of interaction. Students use technology to learn new concept. Professional also prefers e-learning tools to enhance their skill and achieve better position in their career path. Advancement in e-learning technology is done through social platforms, learning analytics, MOOCs, and wearable technology.[16]

Fifth Generation: From 2015 onwards there is demand for personalized e-learning. Intelligent tutoring system becomes popular technique among e-learners to learn from his/her learning expectations and requirements.

Due to different needs of learner and cognitive abilities of student's web based educational application is not useful to assume that all learners follow the same instruction model. In traditional e-learning system learner

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forced to read the same material in the same order. Some learners not interested to read every domain concept because they already having basic knowledge while other need to revise. Learning and student diagnosis is complex process. Personalize learning system focus on learning behavior, interest and design curriculum according to learner's ability and their basic knowledge. It is flexible teaching methodology to meet individual needs of students. Personalize learning approach optimize the needs of each learner. For effective education system it is necessary to understand learners and develop a system that cope up with the individual learning needs, interest of student. Intelligent Tutor system is an expert system to monitor performance of learner and provide personalize coaching to student. E-learning applications include web based learning, computer based learning, virtual classrooms and digital collaboration. Artificial intelligence plays important role in personalize e-learning. Artificial Neural Network, Fuzzy logic, Case Based Reasoning, and Genetic Algorithms these techniques are implemented for adaptive learning environment in e-learning.

III] ARTIFICIAL NEURAL NETWORK

Researchers implemented feed-forward neural network for identification of learning style of learners. Felder & Silverman model is used for classification of students according to their perception and learning process. Back propagation ANN architecture help to learn the association between students actions in learning environment using Felder & Silverman model algorithm.[1]

According to researcher ANN based personalized e-learning system is an effective method of learning as per their ability. Researchers has designed test for learner to identify learners ability, according to the learners ability training material is provided and adaptive test is conducted. Learners' recommendations are collected from review test for further adaption in learning material. Backpropagation network is used for learning from dataset using supervised learning. Output generated from system is compared with result of learning style index method.[2]

Soft computing technique is handling uncertainty and incompleteness of problem. ANN is one of the soft computing techniques for concept base classification of learning object. Adaptive Education Hypermedia System (AEHS) and soft computing techniques support for prediction, recommendation, filtering and classification of data. ANN helps to classification of nonlinear data according pattern, speech recognition and control. Researchers design framework in three models like user model, domain model and adaption model for providing personalized learning paths for learner. Self Organizing Map (SOM) is unsupervised learning technique used for clustering of learning objects. It combines an analytics and graphical technique to group data into two dimensional displays and organizes data into cluster by these projections. Backpropagation ANN is implemented for concept based classification of learning object. Multilayer perceptron network is trained using classical backpropagation algorithm. Output Weight Optimization (OWO) technique is used for selecting optimal learning path for particular student using Conjugate Gradient Technique. According to research ANN is able to select learning objects and path for learner according to student learning expectation.[3]

Multilevel Perceptron (MLP), Radical Based Function (RBF) are used for data analysis. Error rate is calculated for processed and unprocessed data and comparative analysis is performed for the output generated through RBF and MLP network. It is observed that RBF network has less error rate than MLP network and error rate is more due to large number of classes. To solve this problem researcher has suggested implementation of ANN.[4]

ANN is used to identify learning styles of learner. Researchers used Felder-Silverman learning style model to generate four ANNs as per dimensions- Active/Reflective, Sensing/Intuitive, Visual/Verbal, Sequencing/Global respectively. Neural network result is compared with result of Index Learning Style questionnaires, whereas learning rate is calculated. Stratification technique is used to improved result of ANN. Ten fold cross validation technique is used to separate result into independent dataset.[5]

Researchers implemented Dragonfly Neural Network algorithm for student's progress identification in personalized e-learning system. DA model is used to predict student's marks scoring pattern from dataset.[6][7]

ADVANTAGES OF ANN

1. ANN provides parallel processing capability.
2. It can predict result even complete data is not available.
3. It is used to handle complicated as well as imprecise data using multi layer peceptron model called deep learning.
4. It works with non linear data and big data analysis.
5. ANN provides fault tolerance by handling missing data.

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6. Back propagation learning algorithm is used to solve classification and forecasting problems.
7. ANN algorithm used for learning from experience called adaptive learning.

LIMITATIONS OF ANN

1. ANN techniques useful for handling large dataset.
2. Time require for execution of ANN is very large as compared to other algorithm.
3. ANN is efficient technique where input data correlate to output and linearly separable.
4. In ANN network finds solutions to the problem by itself and it can be unpredictable.
5. Amount of computational power needed is depending on size of neural network. It is computationally expensive than traditional algorithms.

IV] FUZZY LOGIC

Researchers implement fuzzy inference mechanism for learners profile analysis and choosing suitable English language article according to learner's needs, interest and ability using e-learning. Adaptive learning method presented in this study helps to enhance the English learning ability of learner's and improves their learning interest. Item response theory is used to recursively calculate the current vocabulary ability of learner. Fuzzy logic and memory cycle theories implemented to choose suitable article for each learner among large dataset of article. Trapezoid membership function are use to show suitable article difficulty levels for a learner for each linguistic terms namely low, medium and high each of which has a membership function to represent its degree of membership. Researchers implement fuzzy inference mechanism for finding suitable difficulty level of article for learner in four steps:

Input step: Linguistic features of each article are defined.

Fuzzifier step: Calculate degree of membership for the linguistic feature using trapezoid membership function.

Inference step: Design fuzzy inference rule with three linguistics teams and five fuzzy input variables using AND/OR operation.

Defuzzifier step: Researcher uses discrete Center of Area (COA) computation method to state how suitable an article for a specific learner based on quantized value between 0 and1. The larger value means more suitable article for learner.

Analytic Hierarchy Process is used for evaluation of matrix for three criteria for each Learners performance according to experimental group and control group is calculated. For evaluation result of pre test and post test for both groups are computed using statistical t-test and z-test method.[8]

Researchers reveal that providing e-material as per learner's characteristics is a major challenge in the web based e-learning system. Researchers' highlighted problem of web based e-learning system. They have suggested use of student model to identify learners' knowledge and traits in adaptive learning system. To handle uncertainty in student's model researcher has developed nonlinear-Fuzzy Knowledge State Definer system for learning computer programming languages. Fuzzy Cognitive Map technique is used to determine relation between domain concept and learners domain knowledge. Researchers designed different stereotypes as per knowledge of specific concept. Data collected for each stereotypes form learner. This data in imprecise so fuzzy membership functions are used. This paper describes how fuzzy set combined with users' stereotype and overlay model to promote adaptively and personalization in web based e-learning application.[9]

Fuzzy logic is used for multi-agent recommender system for personalized e-learning system. Here researcher proposed multi-agent system which has following components:

1. Interface agent: It provides communication between learner and e-learning material.

2. Task Agent: It handles user query and resolve conflict among queries.

3. Information Agent: It receives users query from task agent and provide learning material to task agent.

4. Recommender Agent: It recommends new learning material as per users feedback and its needs.

5. Database Management Agent: It is repository for storing course material, user account details, feedback reports etc.

Here fuzzy logic is implemented for handling recommender agent. Center of Area, Center of Maxima, center of Minima techniques are used for defuzzification. Researcher also suggested Fuzzy cognitive maps technique for supervised learning using Neuro-Fuzzy system.[10]

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Researcher developed fuzzy logic based personalized e-learning system for providing e-learning material to the learner as per their knowledge level. Fuzzy Rules are designed to decide appropriate course for learner as per their domain knowledge and skill set prediction by analyzing learner's database. Experimental result of research shows that adaptive e-learning system improves performance of learners.[11]

Learning style identification is an important challenge in e-learning environment. Researcher has used psychology based Felder Silverman model of learning style prediction of learner. They developed fuzzy model to handle active and reflective learners. Uncertainty in learning style of learner is identifying using fuzzy logic. Researchers evaluate learner style by analyzing learners profile information and web interface parameters. Fuzzy rules are designed on parameters and Fuzzy inference engine along with Gaussian membership function is used to categorized learner into active, medium active, medium reflective and reflective. Applicability of model is tested on various e-learning environments.[12]

ADVANTAGES OF FUZZY SYSTEM

1. It can handle incomplete and imprecise data.
2. Handles complexity of data using non-linear functions.
3. Describes system using numeric and linguistic variables.
4. It measures the certainty or uncertainty of membership of elements of the set.
5. Requires less development time than conventional methods.

LIMITATIONS OF FUZZY SYSTEM

1. Rules defined in fuzzy logic are not robust.
2. Outcome of fuzzy system is depending on selection of membership function.

IV] NEURO-FUZZY SYSTEM

Researcher has implemented adaptive Neuro-Fuzzy inference system for providing e-learning material as per learner's need and knowledge level. They used ontology based e-learning system to design concept and determine relationship between concepts by implementing Fuzzy Cognitive Map technique. Researcher has implemented ANFIS model to built fuzzy decision tree to categorized data into as per learner's knowledge. Fuzzy inference techniques are used to designed rules to check whether concept understood by learner or not. Different linguistic variables are used to categorize learner as per their knowledge level. A trapezoidal membership function is used to fuzzifying input and detects the knowledge level of student. ANIFS uses back propagation techniques for parameter computation. Gradient Descent Function is used to adjust parameters in fuzzy system.[13]

Neural networked base fuzzy model is implemented for Intelligent Tutoring System. Researchers implemented fuzzy logic for diagnosis of student knowledge and cognitive abilities. Fixed weight neural network is used to evaluate and aggregate membership function for categorization of students as per their characteristics. Neuro fuzzy model is used to collect information during student and ITS interaction. Student's knowledge and skill data transferred into linguistic term for implementing data fuzzification. Model is worked in four stages-fuzzifier, fuzzy relational system, fuzzy aggregation network and defuzzifier. Back propagation neural network is used to categorize student as per their knowledge level.[14]

Following table shows algorithms, models and techniques implemented for developing adaptive e-learning system.

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Sr. No	AI Technique	Algorithms /Models/Technique
1.	**Artificial Neural Network**	Feed-forward neural network[1][5] Back propagation network[1][2][3], Multilevel Perceptron (MLP)[4], Radical Based Function (RBF)[4], Dragonfly Neural Network algorithm[6][7] Ten fold cross validation technique[5] Felder & Silverman model[1], Self Organizing Map[3], Output Weight Optimization[3]. Conjugate Gradient Technique[3]
2.	**Fuzzy System**	Center of Area Computation technique[8] Center of Maxima[10] Center of Minima[10] Fuzzy Cognitive Map[9][10] Gradient Descent Technique[13] Gaussian Membership function[12]

Table 1: Algorithms/models/techniques used in personalized e-learning

V. CONCLUSION

Objective of adaptive personalized e-learning system is to decide learning path of the learner, readjustment of instructional process and teaching strategy by considering students need and abilities. Learning style identification is very important factor in development of e-learning system. Felder Silverman model of learning style identification is facilitating to identify static and dynamic factors of learner. Fuzzy Interface Rule base technique is used to handle uncertainties in learning style prediction. Fuzzy Cognitive Map technique is used to determine relation between domain concept and learners domain knowledge. Back propagation and Multilayer Perceptron (MLP) network are implemented for categorization of learner according to their knowledge level. It also helps to deciding learning path of the learner. ANFIS model is implemented to build fuzzy decision tree to categorized data into as per learner's knowledge.

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AN INVESTIGATION TO DESIGN AN APPLICATION WITH WEB AND MOBILE INTERFACE TO DEVELOP SKILLS FOR LIVELIHOOD IN A LOCALITY BY UTILIZING THE HUMAN RESOURCES WITHIN THE GIVEN RURAL SECTOR

Dr. Vijayalakshmi Ravi

EXECUTIVE SUMMARY

The Government of India has taken many initiatives to bring about development in the rural areas. The Government of India has launched different initiatives to promote the development of skills for livelihood. They have also launched The establishment of the State Wide Area Networks (SWAN) to facilitate electronic access of the state and district administration services to the citizens in villages in several states has been a major step in this direction to motivate many organizations to come forward to contribute to the progress of people living in the rural areas. With the SWAN as the backbone the entrepreneurs and NGOs have been given a foothold and have developed many ICT applications thus contributing to the progress of the rural population in their own way. This has also given rise to many efforts to develop suitable IT applications based on models with public and private partnerships in order to ensure that the solutions are cost effective and also sustainable.

The Government of India's initiative for development of the rural population can be extended by enhancing people's awareness about different options to work or pursue as a career in rural areas itself. They can also be given access to resources for training to hone their skills, and assistance to get work or career options within the rural set up. To achieve and address this problem, is proposed a web and mobile based IT solution called Ajeevika Kaushal - means Skills for livelihood, that will help them to get trained online and give them access to offline trainers, also assist them for prospects based on different skills, some of them which are based on tele-commuting. This will ensure that the people need not leave the villages, but we build this on the model of B2C (Business to Customers) where we take the business to the customers. This training will mainly focus on empowering them with skills needed for sustainability and a general progress in life in the rural set up itself. Progress of every individual, will lead to the progress of an entire village community.

Keywords: Rural, Skills, Livelihood

INTRODUCTION

The country of India has a population of 121 crores (Census of India 2011) out of which, nearly 83.3 crores of the population live in rural areas so, we can say that almost 70 per cent of the Indian population lives in rural the sector. The up-liftment of the rural population can be achieved by improving their literacy level, which can help them to secure employment and hence lead improvement in their lifestyle. The progress of the rural population will thus bring a progress to the entire nation. With this focus the current Prime Minister of India Narendra Modi has announced a nationwide "Skill India" movement to provide skills which ensure employability. It is the responsibility of the Indian citizens to join hands with the Government of India and support them for making this initiative successful.

RESEARCH METHODOLOGY

The research methodology involves review of pertinent literature to understand the initiatives taken by the Government of India, NGOs and other organizations for this cause. The secondary data from the proprietary reports would be analyzed to understand additional work that needs to be done to support their initiatives. This will be followed by the proposal for an IT based solution to resolve the issues and gaps identified from the literature review. Primary data would be collected by interviewing experts working for the cause.

REVIEW OF PERTINENT LITERATURE

The findings from the literature indicate that Government of India requires support for administration, and work force to run the programmes3. The model for sustainability for rural development projects within the rural sector has been approved by many stakeholders from Government and rural districts4. Finally skills development initiatives are already on by the Government of India and they have proposed that this model can become even more effective by partnerships between different stakeholders and build an eco-system for skills development, employability and livelihood5.

PROBLEM DEFINITION

Developing skills for livelihood for the people of the rural areas is the need of the hour. This is the effort taken by the Government since the time we have attained independence. But for the huge population that we need to touch upon, the Government of India alone cannot achieve this. They require the support of many organizations and volunteers, and business enterprises. Only the collaborative effort can help the Government of India to

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achieve this. The problem is to find a solution that can help to build an eco-system for collaboration and integration of an array services under one umbrella that enables the rural aspirants to attain skills for livelihood. The scope is to take a particular locality and try the solution as a pilot.

SOLUTION STRATEGY

"To design an application with web and mobile interface that, provides the accessibility, awareness and assistance for the skills aspirants in the rural areas to develop skills for livelihood within the rural sector. The app will help the skill aspirants, skill trainers, NGOs or any other organization to collaborate, and thus give rise to a favorable eco-system for the rural population to develop skills for livelihood."

Figure-1: Analysis of Requirements

Design of the Application

Fig-2: High Level Design of App

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SYSTEM WORKFLOW

1. Invoke the Mobile/ Web app
2. The skills aspirants can sign up or login to the app. They can request for new skills category, they can request for new skills training resources may be in their local language. After they get assistance for setting up their enterprise using the skills assistance option that exist or they can post a new request.

Fig-3: Skills Aspirants Menu options

3. The skills aspirants can get access to different skills categories. The skills category list can be augmented as per the new requests that come in from the skills aspirants and the skill trainers who are interested in providing the training for the particular skill.
4. After selecting the skills category, the skills aspirants can get awareness about the prospects of the skills like if there are telecommuting jobs, online jobs, business partnerships, freelance options or options for employment. If there are new prospects which an aspirant needs they can post it, if there are any new option which the skills assistants want to add they can add a new prospect.
5. The skill aspirants can get access to the online and offline trainers for the skill they are looking and they are provided a location and language based search. They can also post their training need like for example training in a particular language or location. The trainers can sign up and the skills aspirants can have live chat or video chat with the trainers.
6. The skill aspirants can get access to different skills training courses both online and offline courses. They can give the skills test and get access to forums for discussions of doubts and ask queries and they can sign up as a trainee.
7. The skill aspirants can get access to different skills resources like videos, tutorials, audio books. They can post their skills resources need like resources for a new skill or a resource in a different language, or request for a type of resource like a video for a particular resource. If anyone wants to share their resource then they can upload it.
8. The skill aspirants can get assistance to get jobs, talk to consultants in the area; they can get awareness and assistance for micro finance options for the particular skills category. They can also do video chatting with the consultants and post additional needs if they do not find the assistance they need. The consultants who are willing to spare time and assist the skills aspirants can sign up through the system.

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Fig-4: Skills Categories Menu Options

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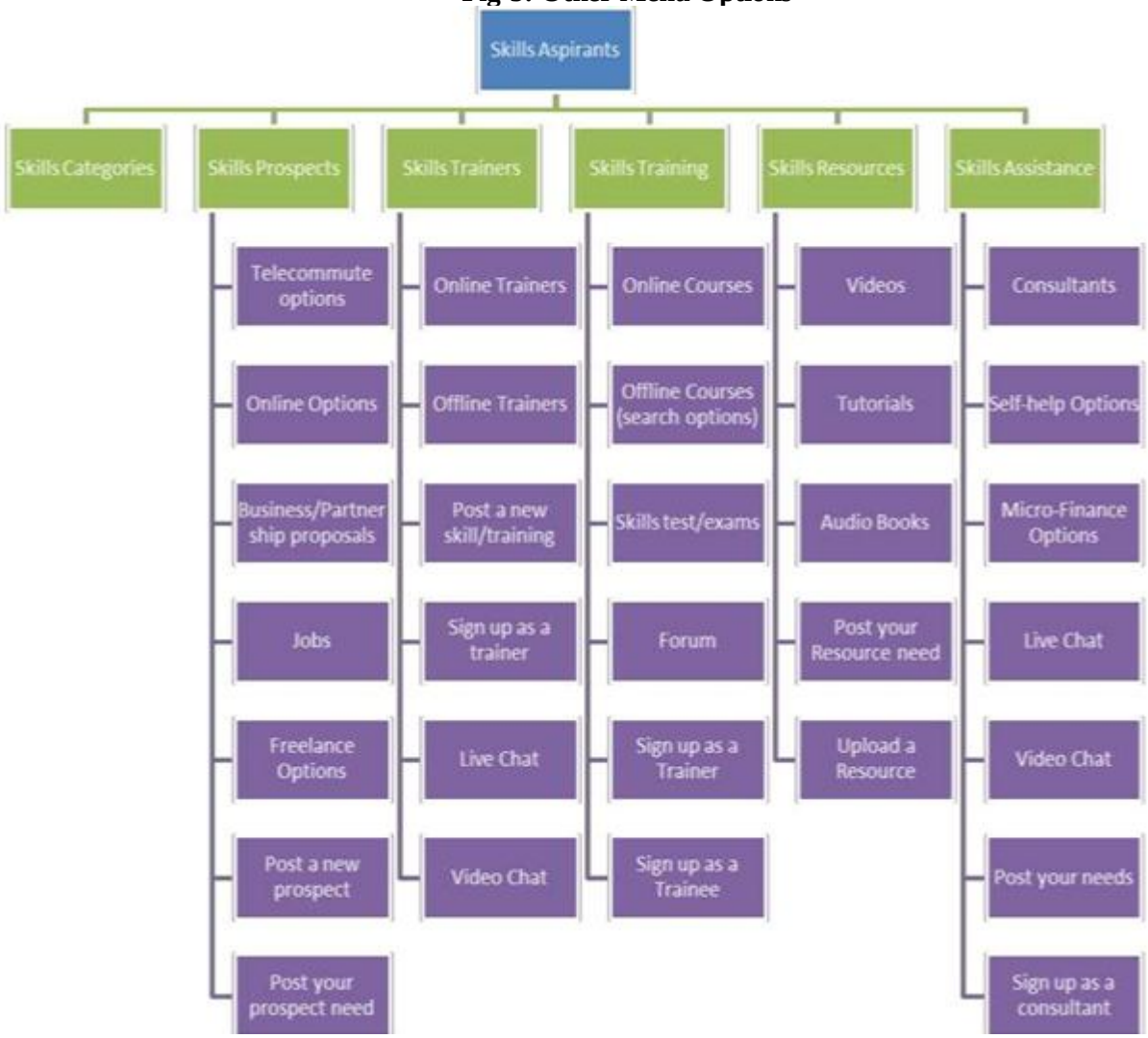
Fig-5: Other Menu Options

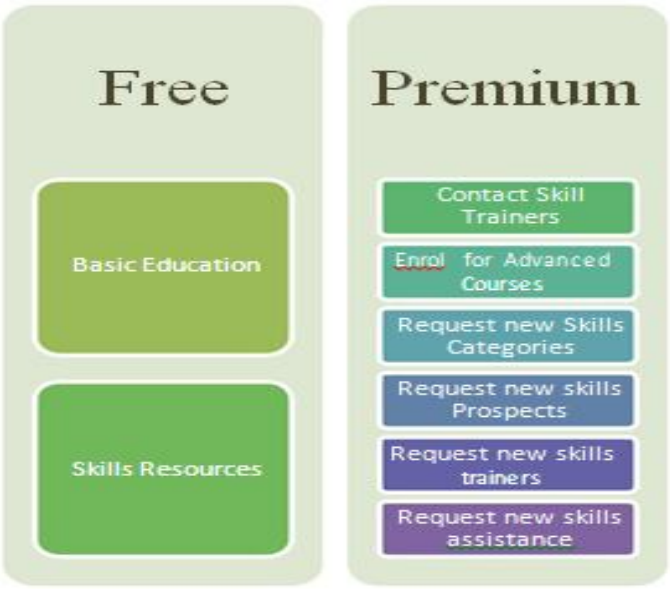


BUSINESS MODEL AND MARKETING

Skill Aspirants

The skill aspirants will need to obtain a subscription to use the website that could be a membership based free one that gives access to basic educational skills and resources. The premium paid membership gives the additional benefits like contacting the skill trainer or learn advanced courses and request new skill resources.

Fi-6: Skills Aspirants Membership



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BUSINESS ASSOCIATES

Trainers

- Trainers can sign up to upload new resources in the form of videos, tutorials, audio books, etc.
- Their resources can be uploaded free if they wish to keep it under the free access and chargeable if they want to charge it to the skill aspirants.
- If they choose the paid option then they will provide additional support to the aspirants and also pay part of their annual revenue to the website owners.
- Trainers can become affiliates and help for the promotion of the web site.
- Trainers can avail of affiliate program to promote their own services.
- Trainers can refer to new buddies.

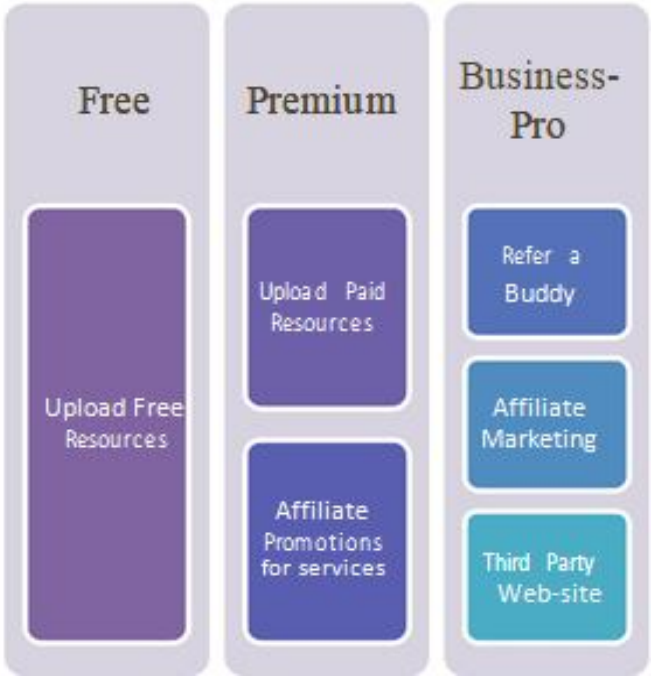
Third Party Web- sites

- Post for employment, online, freelance, offline and telecommute options under the skills prospects for a skills category
- Websites can avail of affiliate programs for data sharing and promotions for both sides.

Finance Assistants

- Micro finance groups can sign up for assisting the relevant groups.
- Banks can promote their services like loans options for pursuing the courses and setting up the different business options for the given skills.

Fig-7: Business Associates Options



Apart from this the app will be digitally marketed by different social networks integration like facebook, twitter etc, by search engine optimization (SEO) and social media marketing (SMM).

CONCLUSIONS

The main stake holders are the skills aspirants who are the people from the rural areas. They can request for new skills category, they can request for new skills training resources may be in their local language. They get access to resources; improve their awareness about the prospects for the skills. They also get assistance for getting jobs, or starting their own business, freelance options, online jobs or telecommuting jobs so that they do not have to leave the rural set up. This way they can get trained in skills and get better job opportunities.

The people who are trained can now become trainers and help the other people in the villages to develop the skills so that many more people can become employable and thus, it helps in the progress of the rural areas. The teleworking options will also benefit the companies; it will reduce the investment they require for infrastructure and amenities.

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The retail industry and e-commerce industry will benefit out of this effort as now the trend is to get the raw materials and deliver the goods to the customers in remote locations. The people who can form the link in the supply chain can be identified from the rural areas. This way the people from the urban areas need not travel and it contributes to the development of the rural areas. This will ensure that the people need not leave the villages, but this model of

B2C (Business to Customers) helps to take the business to the customers. This training will mainly focus on empowering them with skills needed for sustainability and a general progress in life in the rural set up itself. Progress of every individual, will lead to the progress of an entire village community.

LIMITATIONS AND DEPENDENCIES

The functioning of this app depends on the speed and quality of the internet connection. The success of the app also depends on building the eco-system that can get the trainers, consultants and business enterprises on board to the project. The software app is the first step in this direction. It aims to bind the skills trainers, business enterprises and NGOs to collaborate and provide a holistic and exclusive solution for the rural people.

The big picture still depends on populating the data, uploading of resources, training materials, building of the data of the entire Indian localities related to jobs, trainers and other skills assistance services like micro finance, banks and other organizations. Its success also depends on the skills aspirants' interest to provide timely feedback and post new requests for the skills to be augmented and develop.

Word Count: 2018

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IMPLEMENTAITON OF LDA ALGORITHM FOR TOPIC MODELLING

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ABSTRACT
Topic Modelling is a type of statistical model for discovering the abstract "topics" that occur in a collection of documents. This paper concentrates and implements LDA algorithm for topic modelling on text classification. The topic similarities between two texts are measured with the topic-word matrix and the information of their discriminative terms. The data present in multiple texts or short texts are segregated and corpus is created. The Document term matrix for text is applied and LDA algorithm is implemented to obtain efficient topic model. The topics related to the documents were generated and the efficiency of the algorithm is measured using gamma metrics and word cloud is generated based on word frequency.

Keywords: Latent Dirichlet Allocation (LDA), Text classification, efficiency, pre-processing, Document Term Matrix, Topic Models, Word cloud.

1. INTRODUCTION
Topic models are statistical framework that helps users understand large document collections; not just to find individual document but to understand the general themes present in collection. In simple terms, the process of looking into a large collection of documents, identifying clusters of words and grouping them together based on similarity and identifying patterns in the clusters appearing in multitude. The generative process of topic model includes: First topic modelling needs to simulate the generative process of documents. Each document is assumed to be generated as follows: for each word in the document, choose a topic assignment and choose the word from the corresponding topic. The output of a topic model actually reflects the ability of cluster for the corpus. This is because documents with a similar topic probability distribution can be grouped together. Applications of Topic Models describes the recent academic and industrial applications of topic models. In addition to topic model's effective application to traditional problems like information retrieval, visualization, statistical inference, multilingual modelling, and linguistic understanding. The paper is organized as section II with literature survey, III depicts the overview of the data set collected and integrated, IV with the methodology and section V with the results.

2. LITERATURE SURVEY
This work proposes a topic-based language modelling approach that uses a more informative prior based on the topical content of a document. This paper explored the possibility of using a document specific term prior based on inferred topics induced from the corpus [1]. In [2] the work has resulted in two datasets showing the effectiveness of this method — Latent Dirichlet Allocation(LDA) which is a classic topic model that can extract latent topic from large data corpus. This model assumes that if a document is relevant to a topic, then all tokens in the document are relevant to that topic and probability distributions are obtained by normalizing the word counts of the associated documents due to the dimension of the news texts is too high, this model uses topic model to make text dimension reduced and get features. At the same time, the author in [3] makes a research on SoftMax regression algorithm to solve multi-class of text problems in our life and make it as model's classifier. The similarity measure method with the topic-word matrix and the relationship of the discriminative terms between two short texts [4] and the Dirichlet Distribution methodology uses prior knowledge sources to influence a topic model in order to allow the labels from these external sources to be used for topics generated over a corpus of interest [5]. In this paper, Document Topic Modeling approach has been proposed to generate topics and word cloud from the large collection of textual information. The document consists of cluster of topics and the topics consist of clusters of most likely and frequently occurring words with probabilities [6] . To make it efficient, for each document the author has calculated the probability P(Topic T/Document D) and P(Word W/Topic T) and reassign the word to the new topic by calculating the probability P(Topic T/Document D)*P(Word W/Topic T). Various other mechanisms can be used to analyse the efficiency of the algorithm used. Precision measures the percentage of how much the topic words considered pertinent by the extractor application are actually relevant. Recall finds out the percentage of pertinent topic terms that were considered suitable for the extractor application [7]. Therefore, LDA allows to incorporate inferred semantics from the past data to guide the inference process of the upcoming streams. This is achieved by considering all the topic-word distributions learned within a sliding" history window" when constructing the current priors. In this work, they have proposed a novel approach based on LDA to understand software evolution at both two views, i.e., strength evolution and content evolution, simultaneously [8].A novel technique for transformation of

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gene expression levels to words is presented and shown to be effective. Comparative evaluation of this approach with state-of-the-art pattern classification methods confirms the effectiveness of the proposed methodology [9]. To improve they have introduced traditional Approximate Distributed LDA (AD-LDA) algorithm by weighted factor during iteration of Gibbs sampling, and propose a novel model called Weighted AD-LDA (WAD-LDA). Experiments are conducted over real-world dataset and the results show that their method can promote the computing efficiency significantly and can achieve meaningful topics as AD-LDA simultaneously and a parallel LDA model based on AD-LDA, combined with weighted sampling and distributed platform, named WAD-LDA, to speed-up the computing efficiency of AD-LDA [10] .The motivation of Latent Semantic Indexing (LSI) is to analyse text in semantic space, but not in Vector Space Model (VSM) which is based on traditional Term Frequency (TF) or Term Frequency–Inverse Document Frequency (TF-IDF). One of the most drawbacks of VSM is that it cannot analyse synonym and near synonym. Probabilistic Latent Semantic Indexing (PLSI) is based on the dual-mode and an outstretched classical statistical method of co-occurrence data analysis. Here, the so called dual-mode is that word and document are considered at the same time. The so-called co-occurrence is that word and document are in the same matrix. PLSI is a probability version of LSI [11] and the use of Latent Dirichlet Allocation (LDA) is examined to recommend appropriate tags for journal abstracts. Abstracts are analysed by using LDA with CVB0 and Gibbs sampling techniques to establish the number of topics. The results showed that the extracted topics capture meaningful structure in the data and effective topic models can be applied to tag the journal abstracts into appropriate category [12]. Finally, a document consists of cluster of topics and the topics consist of clusters of most likely and frequently occurring words with probabilities. In this paper, Collapsed Gibbs Sampling Method is used for generating top words. As a result, Topic Models connects Words with similar meanings and distinguishes words with different meanings. Topic Models are effectively used to interpret the information from the entire collection of documents [13].

3. OVERVIEW OF DATA

The text documents related to English novels is collected and stored in a folder. The data set is pre-processed using R tool. The pre-processing includes Removing stopwords, punctuations, numbers, whitespaces, tokenizing, and stemming. After pre-processing of documents Document Term Matrix is generated.

Removing of stopwords means removing of common terms in a dataset.

Tokenizing is the task of chopping the character sequence into pieces called tokens.

Stemming is the process of reducing the inflected words to their base form.

4. METHODOLOGY ADAPTED

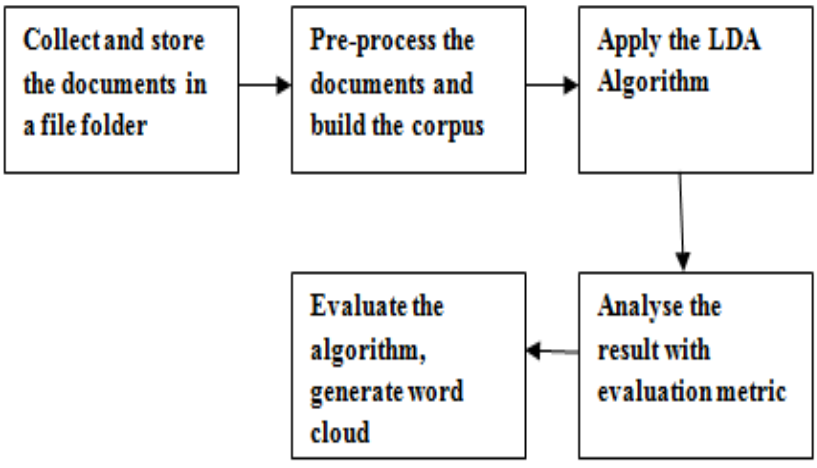

Fig-4.1: Block Diagram of Topic Modelling

The block diagram in figure 4.1 represents the process of topic modelling. Initially the data set is collected and pre-processed and then Document term matrix is generated using R tool.

Topic modelling is implemented using Latent Dirichlet Allocation (LDA) . This technique automatically discovers topics that a set of documents contain and used to analyse volumes of text efficiently.

There are 2 benefits from LDA defining topics on a word-level

1. Infer the content spread of each sentence by a word count.
2. Derive the proportion that each word constitutes in given topics.

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Topic Models connects Words with similar meanings and distinguishes words with different meanings and these are effectively used to interpret the information from the entire collection of documents. LDA is a graphical, probabilistic generative and statistical model for building a model of words distributed inside topics and topics distributed inside words and the topics consist of clusters of most likely and frequently occurring words with probabilities are formed into Word cloud.

In natural language processing, Latent Dirichlet Allocation (LDA) is a generative statistical model that allows sets of observations to be explained by unobserved groups that explain why some parts of the data are similar. For example, if observations are words collected into documents, it posits that each document is a mixture of a small number of topics and that each word's creation is attributable to one of the document's topics. LDA is an example of a topic model and was first presented as a graphical model for topic discovery. In LDA, each document may be viewed as a mixture of various topics where each document is considered to have a set of topics that are assigned to it via LDA. This is identical to probabilistic latent semantic analysis (PLSA).

To pre-processed documents LDA Algorithm is applied and evaluated using Gamma metrics. Based on the frequency of words the word cloud is generated. The generative process of topic model includes: First topic modelling needs to simulate the generative process of documents. Each document is assumed to be generated as follows: for each word in the document, choose a topic assignment and choose the word from the corresponding topic. The output of a topic model actually reflects the ability of cluster for the corpus. This is because documents with a similar topic probability distribution can be grouped together. The obtained results were then combined to obtain statistical overview of the total dataset, in graphical format.

5. RESULTS

This paper has introduced the basic idea of LDA, briefly described framework and algorithm process of text classification system based on LDA. However, when it deals with huge numbers of data, the computing speed would be slow. As a result, Topic Modeling serves as an efficient method for accessing the data and has been proposed to generate topics and word cloud from the large collection of textual information. The figure 5.1 shows the results that we have obtained after analysing the results obtained by applying LDA.

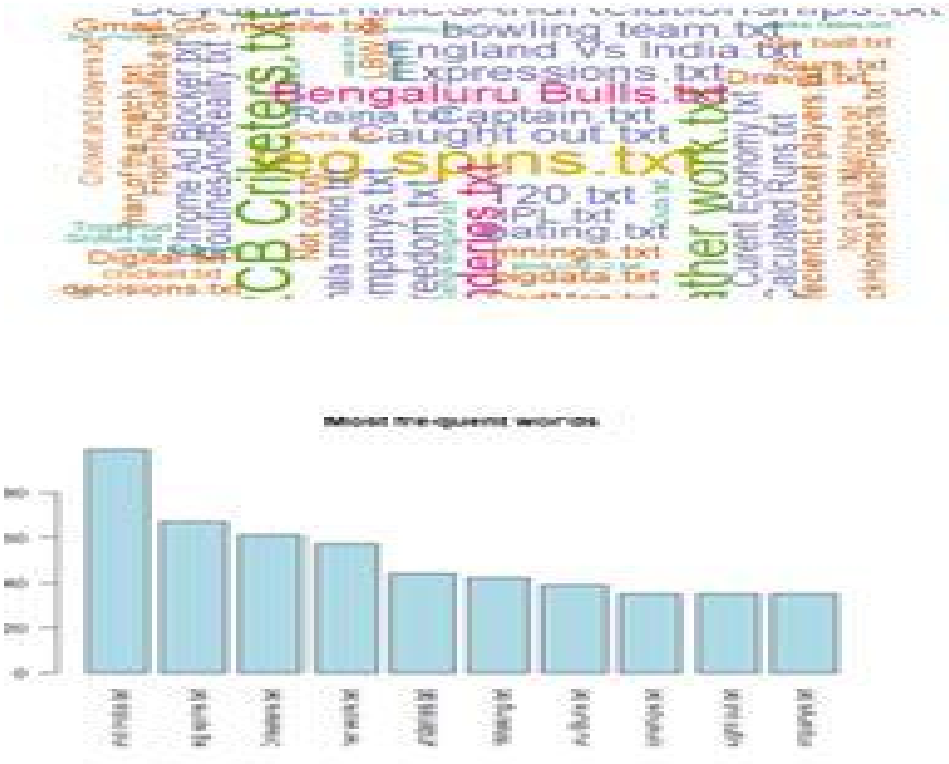

Fig-5.1: Word cloud and Statistical representation of word frequency

In figure5.1 the first diagram represents the word cloud of frequent words of all documents. The word cloud is the cluster of words that frequently occur in the dataset considered. The bar graph depicts the probability of most frequently occurring words with respect to word frequencies. Based on the word cloud generated the bar graph is plotted with the word frequency.

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6. CONCLUSION AND FUTURE SCOPE

The objectives such as segregating and pre-process the documents them to build the corpus and imply Document Term Matrix to the documents. The documents are evaluated by evaluations techniques such as gamma metric and LDA algorithm is applied to those documents to obtain the efficient topic model then finally the cluster of words and the statistical representation of the frequently occurred words are obtained. In future we would like to enhance the project with more features and applying and demonstrating with other topic modelling algorithms.

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A STUDY ON BRAND MANAGEMENT STRATEGIES IN THE ERA OF DIGITALIZATION – WITH SPECIAL REFERENCE TO INDIAN BRANDS

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ABSTRACT
Brand management is every time a challenge for the marketers Survival and sustenance of brand in this era is a major endeavour for marketers. Brand management plays a pivotal role in establishing brand equity of any product or service, it enables the marketers to design and structure various brands through Brand architecture which in turn helps them to establish a brand image. To create and establish brand image marketers try to tap niche markets by market segmentation and subsequently targeting and positioning different brands.

In the recent past there has been a paradigm shift in the ways and means of advertising of contemporary methodologies such as Traditional marketing to Digital market, Mass media to specialised media, Low accountability in market spending to high accountability in market spending, Limited marketing connectivity to pervasive marketing connectivity, Mass advertising to niche marketing and these shifts are resulted in Digital advertising, Cause based advertising, Guerrilla Marketing and advertising, Environment friendly advertising and many more.

This research aims at studying the Brand management Strategies of Johnson and Johnson and KFC in the era of Digitalization.

RESEARCH METHODOLOGY
The method of research used by the researcher is descriptive type of research .This study is based on secondary data. The analyses of the case study is based on various data collected from websites, books news publications .Based on the data available the researcher has focused on modern advertising and highlighted the changing perspective in advertising industry by analysing few brands.

The objectives of the study are
- To understand the Brand management strategies of marketers
- To understand the changing behaviour of marketers from traditional to digital marketing
- To study the marketing strategies of Johnson and Johnson and KFC in the era of digitalization with reference to different brands

Digitalization was initialized in the year 1990 but started gaining momentum only after year 2000 after the introduction of i- phones.

In 2010 when there was proliferation of devices and devices being capable of accessing digital media has led to sudden growth of Digital marketing To sustain in the market marketers need to shift from their traditional approach to digital era for promoting their products not only they need to aim at economic objectives by increasing profits but also need to meet societal needs.

With Digitalization marketers get a wide spectrum to reach the target audience and are able to decrease cost if utilized in an optimum manner.

The following methods are used in Digitalization

1. SEO: Search Engine optimization plays a predominant role in Digital marketing .It is process of making web pages easy to find. It is basically concerned with holistic driving customers to use the online platforms. The majority of visitors click in to the first web page. SEO management helps in creating larger amount of customers

2. Search Engine Marketing (**SEM**) is a form of Internet marketing involves the promotion of websites by increasing their visibility in Search engine digital pages primarily through paid advertising SEM may incorporate Search engine optimization (SEO), which adjusts or rewrites website content and site architecture to achieve a higher ranking in search engine results pages to enhance pay pay click (PPC) listings.

4. Content Marketing: Content marketing is a strategic marketing approach focused on creating and distributing valuable, relevant, and consistent content to attract and retain a clearly defined audience and, ultimately, to drive profitable customer action.

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5. **Social Media Marketing**: Social media plays a major role in digital marketing with Facebook. Twitter, Instagram on row marketers with use of content marketing reach the target audience.

6. **Influencer Marketing:** Influencer marketing is a form of marketing in which focus is placed on influential people rather than the target market as a whole on social media. It identifies the individuals who have influence over potential customers, and orients marketing activities around this influence.

7. Market Automation: Marketing automation refers to software platforms and technologies designed for marketing departments and organizations to more effectively market on multiple channels online and automate repetitive tasks. Marketers need to keep content consistent across all channels to avoid brand confusion.

There are other few marketing strategies such as e marketing use of videos, Re-visiting landing page to name a few to strengthen Digital Platform.

The companies who are able to use the right strategy, right channel media are able to survive in the Digital era. The paper highlights the success of two brands Johnson and Johnson and KFC.

Johnson & Johnson is an American multinational medical device ,Pharmaceutical and consumer packaged goods manufacturer founded in 1886. Johnson & Johnson spread its root into India 67 years ago. Since then, the Company has brought many innovative ideas, products, and services to improve the health and well-being of people in India. The Company today employs more than 3,000 people and is organized into three business segments: Consumer Healthcare, Medical Devices, and Pharmaceuticals.it are a leading brand in health care. The success their brand highly depend on marketing and promoting and reaching niche market. Their sustainability is due to adapt to the changing environment striking a balance between Traditional marketing and Digital marketing.

Johnson and Johnson and Digitalization: The company has created several digital tools that help guide people on their health care journeys by leveraging their clinical knowledge and technology. Such as RA-RA (Remote Assessment in Rheumatoid Arthritis) is a mobile app that can work with wearable trackers like Fitbit to collect behavioural and health information such as heart rate, sleep duration and daily levels of joint pains, and help indicate how well the medication is working and whether the patient's condition is improving or worsening. One-touch Reveal is another mobile app that helps diabetic patients easily monitor and manage their blood glucose levels. Connecting with company's One-touch glucometer, the app can track glucose levels of patients, help visualize trends in their numbers and share data with. Doctors. Another great example was a digital ecosystem that helps accelerate surgical consults for people with knee pain. The app starts with asking several questions about pain levels, and will then use the results and predictive analytics to provide personalized treatment advice. Surgical candidates will be able to download another app to help prepare them for surgery and recovery with targeted tips. Apart from digital tools the company also launched various campaigns to enchance digital growth .One such campaign in india is **Best for baby campaign in India.**

Interactive Avenues launched Johnson and Johnson's YouTube channel "Best for Baby" to reach out to first-time parenting. When a baby is born in India usually elders of the family such as aunties, Dadi's, grandparent and whole family come together to take care of a baby and come up with advice and tips for baby care. But now as urbanization developed somewhere our family circle is fragmented. Due to nuclear families, long distance family relations and demanding career we are not staying in the joint family where the whole family comes together to care for the baby, due to which couples with first time parenting face many issues related to parenting. To resolve their issues they go online. But due to the lack of content in the Indian context, they rely and depend on international context content.

In the space of baby care, the internet is a wash with searches (2 million+ every month). More than 20 million caregivers on YouTube look for videos on caring for babies but this content is the lack of Indian content and credibility, 41% of mothers are searching on YouTube for queries related to baby care.

To address this concern of first time parenting couples, Johnson & Johnson come up with Indian context content which reminded them of home and help them to take care of their new-born baby in the best way. They create a space which will help new parents to know and identify what is 'Best for (their) Baby'.

'Best for Baby' became Johnson's Baby's vehicle of delivering credible, quality, Indian content to new, urban parents. The platform is a primary source of content and provides millions of caregivers with videos on topics like bathing a baby, caring a baby, packing for a day trip, bedtime routines, diapering, play & learning, massage techniques, bets baby products and much more.

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They provide content in the form of videos on their YouTube channel "Best for Baby" and also in the form of text on their baby centre which is the corporate website of Johnson & Johnson.

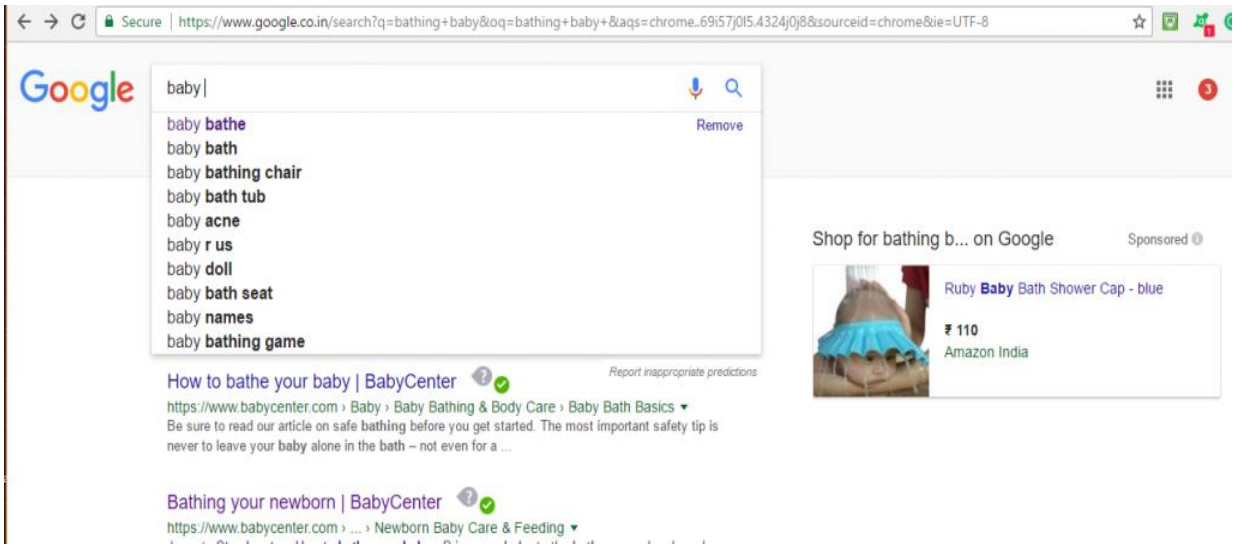
The other best part of the content and videos that they are not focused only on building mom and baby relationship but also how mom and dad both becomes a better parent.

OBJECTIVE OF THE CAMPAIGN – BEST FOR BABY

- Reach out the first time parenting couples.
- Renewed relationships with their clients.
- Help caregivers to get the answer to their queries, doubt, and myths related to baby care and parenting.
- Establish 'Best for Baby' as a unified repository of information to aid the happy healthy development of Baby.
- Create brand value and brand love through being there for caregivers throughout their parenting journey.

STRATEGY ADOPTED BY JOHNSON & JOHNSON

- First they analysis the type of queries which come up related to parenting.
- To provide the answer to the queries most effectively, they partnered with Google (search and YouTube- Top two search engines) along with other with industry mavens.
- Create a library of content in the form of videos on their YouTube channel and text on baby centre (official website).



- Relevant content in video format was created with a content production expert to win at the zero moments of truth; which included videos like product demos, testimonials, mommy blogger videos, health care professional's guides, tips & tricks etc. Google Search and YouTube in the search were used smartly.

CHALLENGES IN THE ERA OF DIGITALIZATION FACED BY JOHNSON AND JOHNSON

- **Implementation Challenges** :As such a large company with over 130 years of success; it has its own ways (process, culture) of doing business. Firstly Moving to digital transformation will face challenges of high investment in technology when ROI is not clear, limited internal technical expertise and talents, and the unwillingness of employees to adopt the new process.

Secondly, in order to drive the change, the company should modernize its IT foundation. Finally, to ensure the digital innovations have a lasting impact, they need to be woven into the organization's DNA, including its culture and processes. Business and technology team should work together to solve a specific problem, especially those can benefit and streamline core business, probably that's a logical sequence to reduce validation effort while maximizing value.

Facing all odds the company was able to successfully put its foot on Digital platform with understanding the needs of its customers and modernising techniques, Strong content SEO and SEM management and able to reach the target audience.

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Another leading brand is Kentucky Fried Chicken, popularly known as KFC, is a fast food restaurant chain that is known for its fried chicken. Headquartered in Louisville, Kentucky, the United States, KFC is the world's second largest restaurant chain after McDonald's.

Currently, KFC has more than 18,000 outlets in over 100 countries. And every day, more than 12 million customers are served at KFC outlets around the world. KFC is a subsidiary of Yum! Brands, which also owns Taco Bell and Pizza Hut.

KFC was the first foreign fast food restaurant chain to enter India in 1990s after the Indian government implemented the economic liberalisation policy. At that time, KFC received permission from the Indian government to open 30 outlets across the country.

The first KFC outlet in India was opened in Bangalore in June 1995 and from 30 outlets, the number has grown to 296 today. Fast food restaurants have gained popularity in India because of their customised menus that suit the taste buds of the citizens. After facing many social issues in India Once the Indian market cooled down, KFC returned to the country in 1999 and set up an outlet in Bangalore. Until 2004, KFC only operated one outlet in India. As the sole outlet started making money, KFC expanded its operations throughout India and today, KFC outlets can be found in a number of cities.

KFC has come a long way since its establishment in India in 1995. Despite facing a rejection from consumers, KFC did not lose hope in the Indian market. Instead of eliminating India from its venues of operation, it analysed the problems faced by KFC in India and worked hard to resolve them.

KFC and Digitalization: KFC followed the the right path in reaching Indian customers with their proper SEO management and Content marketing and right channel for social media they are able to reach the right audience.

KFC is increasing their online presence on social media platforms for their brand awareness. A video which is most popular is social media is Social samosa the objective - The primary objective of this social media marketing campaign was to increase the sale of their product in India and to appeal and to target young audience by involving apps like Radio KFC RK Hunt, Designing their own bucket campaign, Currycature, and Wow Menu option. They wanted to develop their brand management Ex**ecution -** 3000 people around 30 Indian cities have participated in this competition. "Radio KFC RJ Hunt" was a social media campaign to promote KFC brand's in-house radio channel. For the execution, the fans recorded their voices over the internet with the Facebook app and were provided with the analog radio experience.

Secondly Design your own bucket" campaign was their another execution where the participants came up with their colourful and creative KFC buckets. They received 5500 entries in total. They also introduced bucket entries with Sachin's picture on the KFC bucket on the day when he retired.

Currycature" was another creative marketing campaign of KFC which gave a unique experience to their fans where participants have to choose a character with an ethnic Indian touch and then to upload the pictures. Around 17 thousand currycatures were made by their fans.

Their next move was the "Wow Menu Option on an INR 500 note." This app allowed the users to scan their 500 currency notes which would suggest them their various food menus to be purchased within that particular budge. The app became No. 1 on iTunes app store on F&D category.

RESULTS

- As per the results of the social media campaign, KFC was featured by Social Baker as among the top 5 socially devoted brands.
- The overall positive sentiment of their Facebook page grew from 6.2% to 93.8%.
- Their engagement rate increased the sector average thrice.
- KFC was placed among the five fastest growing social media brands in India.

Implementatipon challenges As it was a challenge for KFC to transform their market in the era of Digitalization in India as they need to customize the products according to the taste of Indian customers by adding more species like that of Indian restaurants they were successful in the era of diigtalization because of their strong content marketing and use of videos, YouTube channels and proper management of SEO and SEM.

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CONCLUSION

Due to the paradigm shift from Traditional marketing to Digital marketing marketers need to cater the needs of the customers by using digital platform as well manage cost.Marketers need to strike a right balance between cost and benefit of Digitalization at the same time due to huge competition they need to have USP in digitalization such as strong content , proper management of Search engine optimization, Revisiting the landing pages, Use of right channel to increase the sales at the same time decrease the cost.

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USE OF BIG DATA ANALYTICS IN BANKING INDUSTRY

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ABSTRACT
Banks usually generate extremely large amount of data which we earlier used to dump in the books and most of banks were fail to use this data for achieving their objectives. Nowadays, banks have starts using this data to reach their main objectives of marketing. In the new era, the trend is to being 'Customer-Centric'. The data so generated can be used to customize services to the customer, to understand his needs, to design the most appealing marketing strategy to name a few. The increase in the ratio of big data generated in all sectors from last one decade, banking industry is one which is storing the importance data of customer. This data is very confidential as it has credentials of money movements that are happening in banks.

This paper aims to find out how we can use big data analytics in banking sector to find out spending patterns of customer, sentiment analysis and feedback analysis etc.

Objective: To study the role of Big Data Analytics in Banking Sector.

Keywords: Big data, resonance, Customer-Centric, Banking.

1. INTRODUCTION

We are living in the digital world and the data and the technology are integral part of the system. The technology has enabled us to use the transaction online while at the same time it has generated enormous amount of data.

The banks have a huge amount of customer data due to the huge number of transactions through the multiple devices, but every bank uses a very small portion of that data to generate knowledge from that data and enhance the experience of the customer. Earlier, banks used to collect large amounts of data but they were unable to derive meaningful knowledge in a timely manner, which prohibited them to predict and respond to the changing needs of the customer. Today the Banking sector believes that big data analytics offer a best tools for handling analyzing this huge data.

1.1 What is big data?

Big data is a term that describe large volume of data both structure, semi structure and unstructured data.

The bank data is been converting to big data due to its huge Volume, Velocity, Variety which shows capacity of IT system to grab, store and analyze the data in timely. Big data does not always of same type of data, it cn include every types of data such asa structure, unstructured, semi structure that is used to analyze and grab a knowledge for a business purpose. This different type of data include data collected from atm machine, data from mails, accounts data, etc. In 2012 Gartner updated the definition of 3V model i.e. Volume, veriety and velocity due to tedious data in a big sector such as Bank industry.

1.2 Data Analytics in Banking

Banking is getting branch-less and digital at very fast pace. As banks are struggling to manage the big amount of data, the need for managing big data and analytics become more relevant. Through by using big data tools, banks can gain greater visibility into customer’s behavior, use that data for analytics and can work for more security.

1.3 Technologies used in Banks for Big data Analytics

1) Hadoop :

Most of the banks use Hadoop technologies to handle an analyse large amounts of data. Most of the organizations have data in the RDBMS but they wants to use the Hadoop for storing, managing and analysing of huge amounts of data. Hadoop is the mainstream execution of **MapReduce**; it is a completely open source platform for working with Big Data.

MAP REDUCE - ALGORITHM

The MapReduce algorithm contains two important tasks, namely Map and Reduce.

- The map task is done by Mapper Class
- The reduce task is done by Reducer Class.

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Mapper class takes the input, tokenizes it, maps and sorts it. The output of Mapper class is used as input by Reducer class, which in turn searches matching pairs and reduces them.

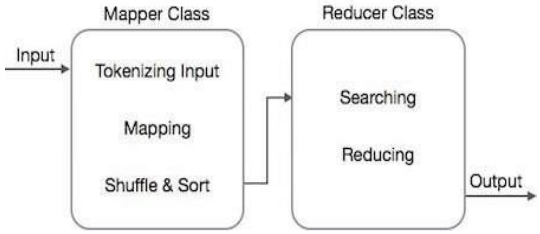

Fig-1: partitioning MapReduce Technique [15]

MapReduce implements various mathematical algorithms to divide a task into small parts and assign them to multiple systems.

2) Clustering :

The banks have direct access to a wealth of historical data regarding the customer spending patterns. This provides a reach basis for further analysis. Applying filters like festive seasons and macroeconomic conditions the banking employees can understand if the customer's salary is growing steadily and if the spending remains adequate. This is one of the cornerstone factors for risk assessment, loan screening, mortgage evaluation and cross-selling of multiple financial products like insurance. This is the behavior analysis which uses clustering technique. Clustering is the task of dividing the data points into a number of groups such that data points in the same groups are more similar to other data points in the same group than those in other groups.

Clustering can be classified into the following categories:

A. Partitioning clustering

The partitioning based method divides data objects into a number of partitions. In this method, data objects are divided into non-overlapping subsets such that all data objects into same clusters are closer to center mean values. In this method, all clusters are determined promptly. Partitioning methods relocate instances by moving them from one cluster to another, starting from an initial partitioning.

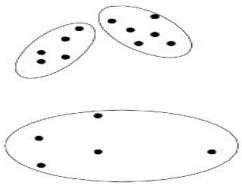

Fig-2: partitioning clustering[6]

B. Hierarchical clustering

As the name suggests, this method builds clusters in a hierarchical order i.e. it forms nested clusters organized in a hierarchical tree. There are three measures of cluster proximity-

1. Single-link - In this, the distance between two clusters should be the minimum distance from any member of one cluster to any member of the other cluster.

2. Complete-link - In this, the distance between two clusters should be the longest distance from any member of one cluster to any member of the other cluster.

3. Average-link - Here, the distance between two clusters is equal to the average distance from any member of one cluster to any member of the other cluster.

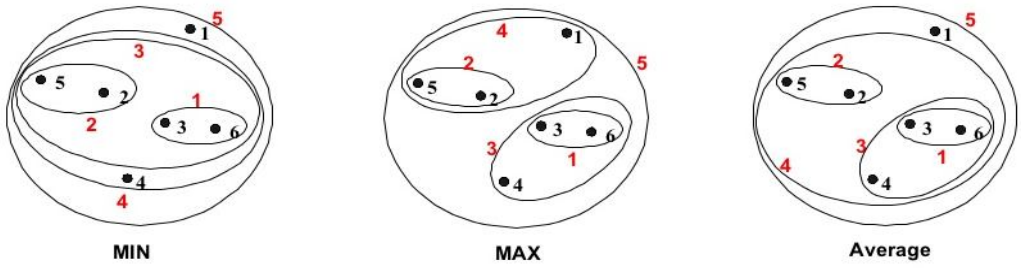

Fig-3: hierarchical clustering using single (min), complete (max) & average link [6]

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C. Density based clustering

Density-based clustering method is based on the concepts of density, connectivity and boundary. This method forms clusters based on the density of data points in a region and continue growing a given cluster as long as the density in the neighborhood is exceeding some threshold. Therefore, each data instance in the cluster the neighborhood of a given radius has to contain at least a minimum number of objects. DBSCAN is the example of density based algorithms.

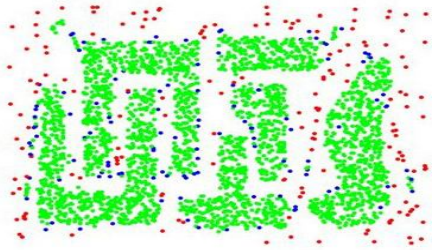

Fig-4: DBSCAN: core points (in green), border points (in blue) and noise points (in red) Eps=10, MinPts=4 [6]

D. Model based clustering

Model based clustering method optimizes the fit between the given data and some mathematical model. It assumes that the data were generated by a model or by a mixture of underlying probability distributions and tries to recover the original model from the data. The model that we recover from the data then defines clusters and assigns objects to clusters. It leads to a way of automatically determining the number of clusters based on standard statistics taking noise into account and thus yielding a robust clustering method.

E. Grid based clustering

The grid based clustering uses a multi resolution grid data structure. It is used for building clusters in a large multidimensional space wherein clusters are regarded as denser regions than their surroundings. This method partition the space into a finite number of cells that form a grid structure on which all of the operations for clustering are performed. The accumulated grid-data make grid-based clustering techniques independent of the number of data objects that employ a uniform grid to collect regional statistical data, and then perform the clustering on the grid, instead of the database directly. Grid based methods help in expressing the data at varied level of detail based on all the attributes that have been selected as dimensional attributes.

3) One-class classification Technique

Banking and financial industries are facing severe challenges in the form of cyber frauds, Credit card fraud.

One-class classification, tries to identify objects of a specific class amongst all objects, by primarily learning from a training set containing only the objects of that class, although there exist variants of one-class classifiers where counter-examples are used to further refine the classification boundary.

2. BENEFITS OF BIG DATA IN BANKING

2.1 Sentiment Analysis

Banks have to observe continuously what customers say for marketing purpose. Banks need to identify the frequent customers and by taking feedback from them they have to improve the loopholes to increase productivity. Here big data comes for rescue.

2.2 Changes in Service Delivery

In Banks, whenever a reputation or account range is entered into system, it sifts through all the {information} and provides solely the desired information. Huge knowledge will enable organizations to spot and rectify issues, before they have an effect on their customers.

2.3 Fraud Detection and Prevention

This is the main problem faced by banking sector. Banks and financial services firms use big data analytics to differentiate fraudulent interactions from legitimate business transactions. By applying analytics and machine learning, they are able to define normal activity based on a customer's history and distinguish it from unusual behavior indicating fraud.

2.4 Enhanced Reporting

After getting access to huge amount of data, containing needs of different customers, banks can offer those needs in a meaningful way. Big Data will expand the banking industry in such a way that they will allow them to earn more revenue through cost reduction, and by cutting down on unnecessary costs, the banking industry can provide customers with exactly what they're looking for, instead of irrelevant information.

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2.5 Customer segmentation
New objective of banks is to become customer-centric. But banks have been under pressure to change from product-centric to customer-centric businesses. One way to achieve that is to understand their customers by using segmentation. Big data allows to group customers into the segments, which are defined by data sets that may include with different use cases such as customer demographics, interactions with online, daily transactions, and telephone customer service systems, and external data, such as the value of their homes. Promotions and marketing campaigns are then targeted to customers according to their segments.

2.6 Examine customer feedback
Customers sentiment can be collected in the text form from various social media websites. Once the banks collects these sentiments, they can be classified into positive and negative and by analyzing and applying various filters they can be used to provide services to customers.

2.7 Detect when a customer is about to leave
As we know the cost of acquiring new customers is greater than retaining its old customers. When the bank takes care of customers need by understanding the problem, attention must be given to find a solution.

3. CHALLENGES OF BIG DATA FOR BANKS

3.1 Legal and Regulatory Challenges
Big Data can come with big legal and regulatory concerns that have complexities and limitations due to sheer size. Given the growing impacts of regulation and oversight, Banks are steering clear of Big Data or at least proceeding judiciously simply because of the risks.

3.2 Privacy and Security
Big Data offers great potential to provide major steps forward for Banks, but it also comes with a large red flag concerning privacy and intrusion. The potential for abuse of this data is significant, but Banks need to get it right and 'Big Data' techniques and analytical tools can help Customers get better service and assist Banks to target resources more effectively. It's a fine line between being helpful and intrusive.

3.3 Talent Challenge
In today's era, talent is everywhere, but finding good talent is really in demand. To search for talent of data science and business intelligence is very difficult. The data science expert need to have understanding of business knowledge. One need to be equipped with SAS/R/SQL/Python programming and good analysis and visualization skill. As the skill increases, the pay package also increases as compared to traditional ETL or Business Intelligence hire.

4. IMPACTS OF BIG DATA ON BANKING

4.1 Big data in Centrals banks of world : 2018 Survey results
This new survey conducted by Central Banking in association with BearingPoint[1] – reports on the approach central banks take towards big data, and data management more broadly. Survey questions were sent to 130 central banks in the month of May 2018. By June 2018, responses had been received from 52 banks.[13]

Region	% of respondents
Europe	46
Americas	21
Africa	17
Asia	6
Middle East	6
Oceania	4
Total respondents	52

Fig-5: region wise % of respondents

Some of the questions are mentioned below:

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1) Is your central bank working on a project involving big data?[13]

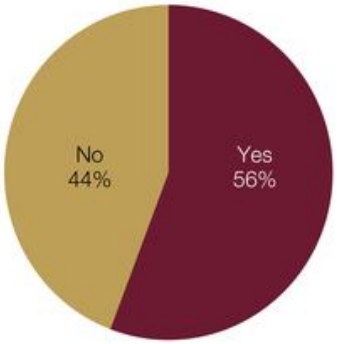

Fig-6: bank projects involving big data

2) Has this project been initiated in the past 12 months? [13]

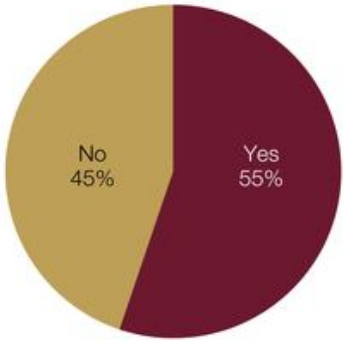

Fig-7: initiation of project in last 12 months

3) Which best represents your central bank's view of big data? [13]

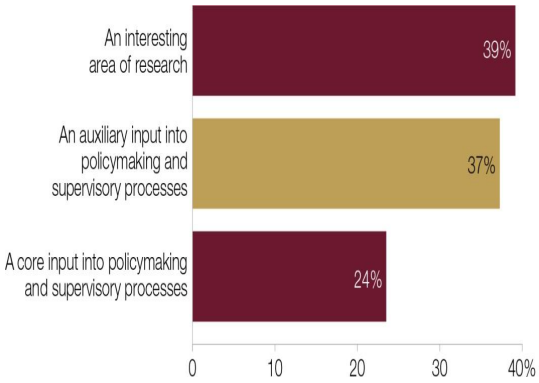

Fig-8: view of big data

4) Does your central bank have a clear data governance structure for the management and collection of data? [13]

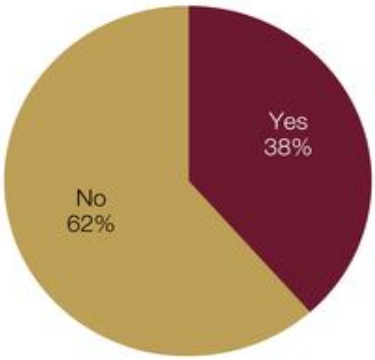

Fig-9: data governance

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5) In what sector does your central bank focus big data investment? [13]

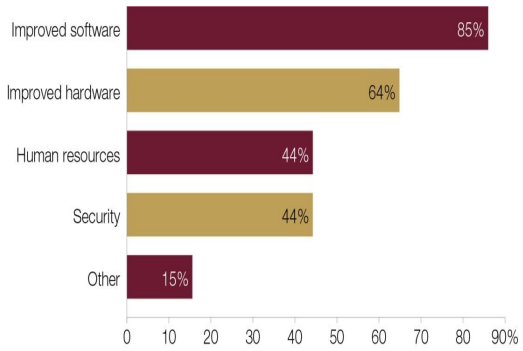

Fig-10: Big data investment sector wise

6) Does your central bank collect and manage granular and/or raw data? [13]

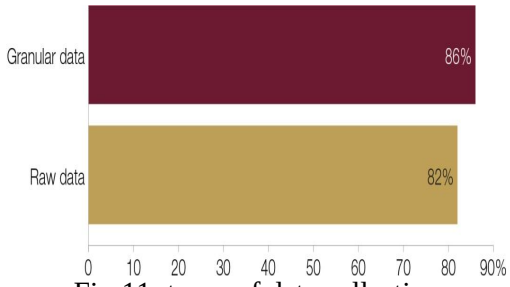

Fig-11: types of data collection

7) Which of the following methodological approaches does your central bank use to analyse big data?[13]

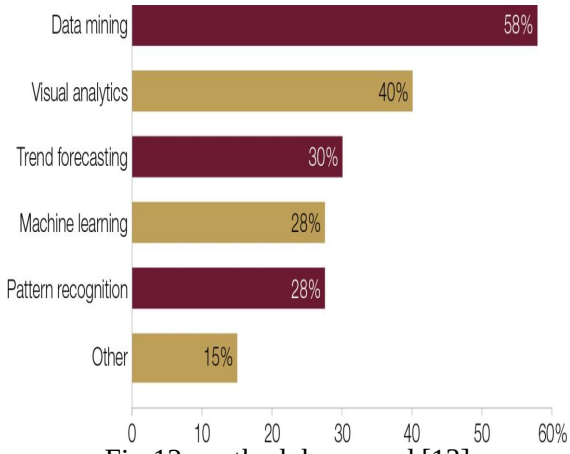

Fig-12: methodology used [13]

8) What does your central bank use big data for? [13]

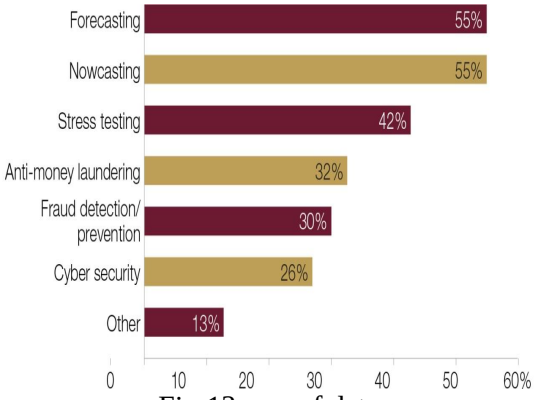

Fig-13: use of data

4.2 Banking Sector in India

The Banking industry is a growing fast in India. According to an IBEF report, Indian banking sector has potential to become the fifth largest banking industry in the world by 2020 and third largest by 2025 .

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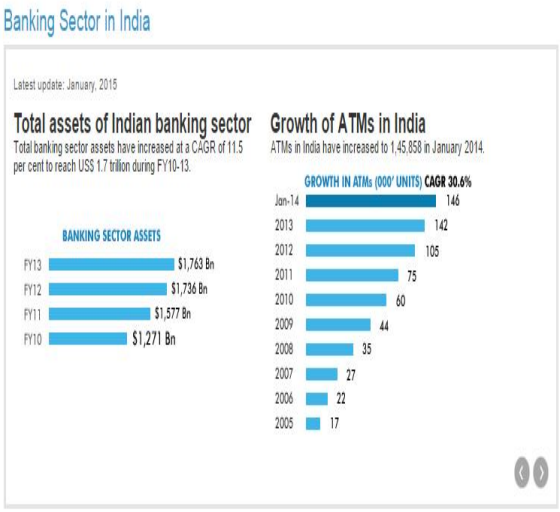

Fig-13: banking sector in India [10]

Different banks are using big data with different technologies according to their use cases. Some of the examples are mentioned below:

HDFC Bank- Using Analytics to Get a Complete Picture of the Customer
HDFC bank started investing in big data technology in 2000 year. They track every aspect of a customer's financial habits. For example, they check which kind of account customer has i.e. for salary account or customer has daily transactions from that account. The analytics tools also helps he banks by giving the insights from personal habits of the customer in order to promote some offers.

ICICI Bank- Using BI and Analytics to Reduce Credit Losses
In 2007, ICICI bank identified Debt Collection as key process where a friendly approach could improve customer satisfaction. One of the important steps in the debt collection process was choosing the appropriate customer-approach channel for each case. The bank management, with the aim to transform debt collection as a customer retention tool, decided to use technology to achieve the objective.

Axis Bank – Analytics for Customer Intelligence & Risk Management
Axis Bank has seen the productivity of the sales staffs increase by five times in the couple of financial year. Axis Bank also analytics to increase customer loyalty and reduce loan prepayments due to refinancing with other institutions. Axis Bank uses SAS technoogy to provide customer intelligence across the organization.

State Bank of India-Using data analytics
SBI using data analytical tools to build their data models to education loans, automotive loans, housing loans, SME loans to try and reduce the percentage of them going bad. They also use analytics to determine the different things such as where to position ATM machines.

ING Vysya Bank – need for business intelligence (BI) implementation
ING Vysya felt the need for business intelligence (BI) implementation when the bank started noticing how different end users attended meetings with inaccurate reports. They required a solution to help users generate proper and timely reports. With the help of SAP BO, they created a common data repository which helped users get accurate reports and in turn improve efficiency.

5 CONCLUSION

Big data is the reality and is going to stay there for a long time Big Data analytics is now being implemented across various spheres of banking sector, and is helping them deliver better services to their customers, both internal and external, along with which is also helping them to improve on their security. It has some challenges in banking sector but it also provides benefits to the banks. This study analyzed transactional analysis for banking sector. We saw one among the ways that however client sentiments are captured and wont to assess functioning of the bank. There are more ways that banks and different monetary establishments have began to capture client connected knowledge for sentiment analysis, ranging from social media websites to varied marketing research channels. The banks needs to adopt new technologies and system to remain ahead of the competition and big data is going to be a best option for that..

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CLOUD COMPUTING SIMULATOR: TO ENHANCE EFFICIENCY OF CLOUD TECHNOLOGY

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ABSTRACT
Cloud Computing – A technology which provides many facilities to individuals & to the small as well as big organisations. The organisations have to pay only for their usage. It means they are getting more and more benefits without installing and maintaining of any hardware systems. According to survey many large as well as small organisations are already migrated to cloud. So the requirement of cloud is growing drastically day by day. To manage the cloud is not easy task. Still many companies are providing cloud facilities, but to enhance the efficiency of cloud, constant monitoring and experiments are needed. Experimentation at cloud environment is not feasible as it is very costly and creating set up is not feasible. The different simulators provide the platform for experimenting on cloud-like environment. In this paper few cloud simulators are reviewed and discussed on the basis of different criteria which help the researchers to select the suitable cloud simulator.

Keywords: Cloud computing, Simulators, Cloud environment, CloudSim, GreenCloud, Network CloudSim, DCSim, iCanCloud.

INTRODUCTION

Cloud computing- A advanced technology which fulfils the requirements of users. Cloud computing provides storage, database, infrastructure, & applications to the users on demand basis. They can access these computing services from anywhere in the world at any time on pay-per use basis. All the variety of services which are provided by cloud are classified into three major categories as

1. **Infrastructure as a Service (IaaS):-** In IaaS the infrastructure in the form of virtual hardware, storage and networking are provided on demand. Virtualisation concept is used where virtual machine instances are created on demand and users are given tools and interfaces to configure the software stack installed in virtual machine. The raw disc space or object store is used to provide the virtual storage. Virtual networking manages the networking between virtual instances and their connectivity.
2. **Platform as a Service (PaaS):-** In PaaS the scalable and elastic runtime environment are provided on demand for the execution of application. Abstract environment is created where applications are deployed and executed. The users have to focus on logic of the applications and scalability and fault tolerance are managed by the service provider.
3. **Software as a Service (SaaS):-** Desktop applications and services are provided on demand. The applications such as office automation, customer relationship management, photo editing etc. are present remotely and users can access it through a browser. All the applications are shared across multiple users but the interaction is isolated from other users.

To manage and provide all the services in minimal costs, also to increase the energy efficiency of Data Centers is the challenging job of cloud service providers. Significant amount of research is required to handle the challenging issues. But conducting research in the physical cloud environment is not possible and feasible. The solution to this is use of the simulators which are feasible and which provides the real cloud environment. Many cloud simulators are available with different features, like availability of GUI, Programming Language, and Extensibility. So in this paper the review of some popular simulators are taken and presented so that proper physical simulators users can select for research.

CLOUD COMPUTING SIMULATORS

Different Cloud Computing Simulators are

- **CloudSim**

Most recently used and very popular cloud computing simulators is CloudSim. It is developed at the computer science and engineering department of the University of Melbourne, Austrillia, CloudSim is the complex simulation toolkit which provides basic classes for describing data centers, hosts, virtual machines, applicatons, computational resources, management policies and users. Researchers can build the cloud scenarios by simply selecting and extending the classes and coding the desired scenario.

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The other features of CloudSim are

- Availability - Open Source
- Platform – Any
- Language – JAVA
- GUI Support – Limited
- Support of TCP/IP – None
- Software or Hardware – Software
- Computing Environment – Large Scale
- Simulation Time – Seconds
- Memory Space – Small
- Energy Model – Yes
- Architecture – Layered Architecture

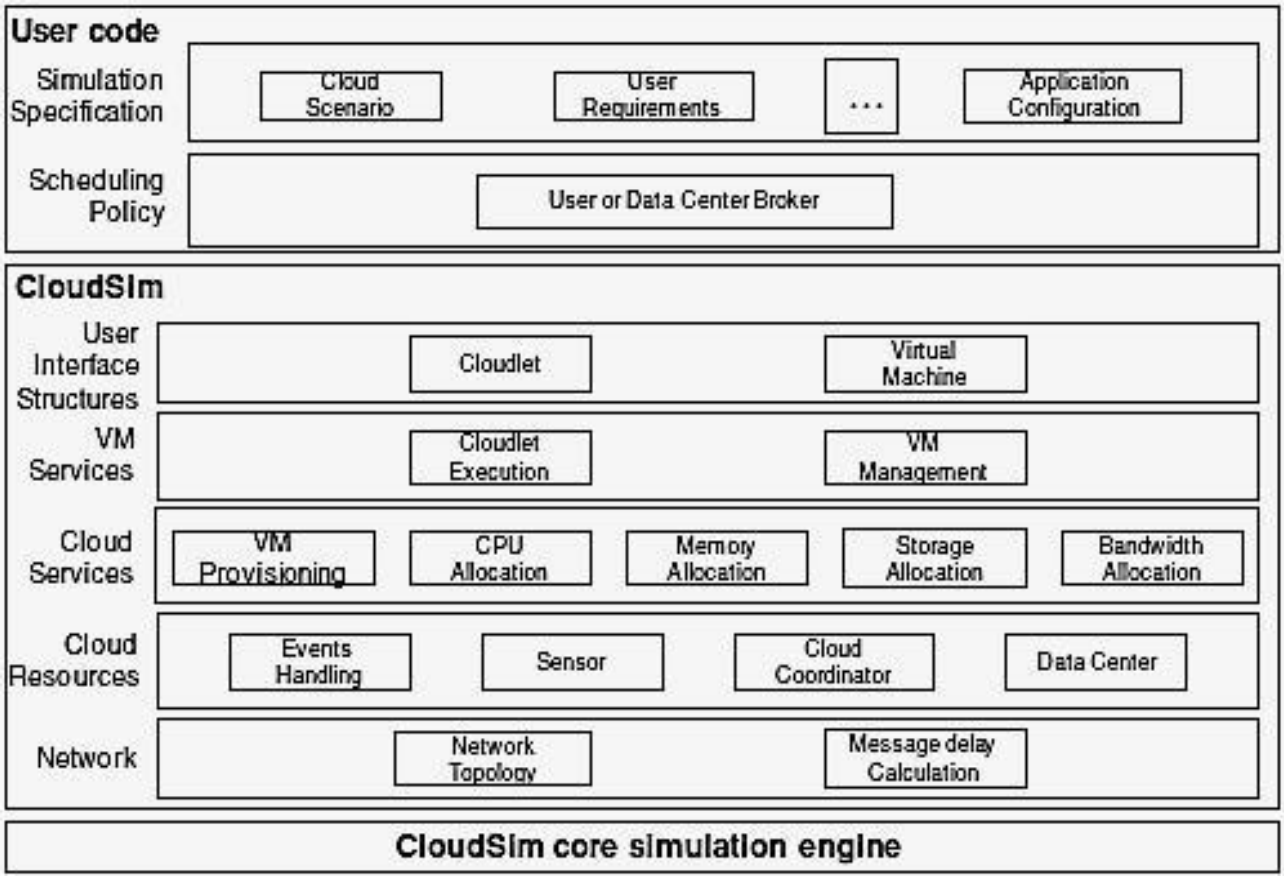

Figure-1: Layered Architecture of CloudSim

- **GreenCloud**

Green Cloud provides energy aware cloud computing environment means data centers, It is proposed by Kliazovich. Green Cloud is a sophisticated packet lever simulator. It is used to develop & optimizing the resource allocation, work load scheduling, monitoring network infrastructure & protocols in cloud environment. The other features are

- Availability - Open Source
- Platform – NS2
- Language – C++, OTcl
- GUI Support – Limited GUI Support (Via. Nam)

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- Support of TCP/IP – Full TCP/IP Protocol
- Software or Hardware – Software
- Computing Environment – Energy Aware
- Simulation Time – Tens of Minutes
- Memory Space – Large
- Energy Model – Yes
- Architecture – Three-Tier Data Center Architecture

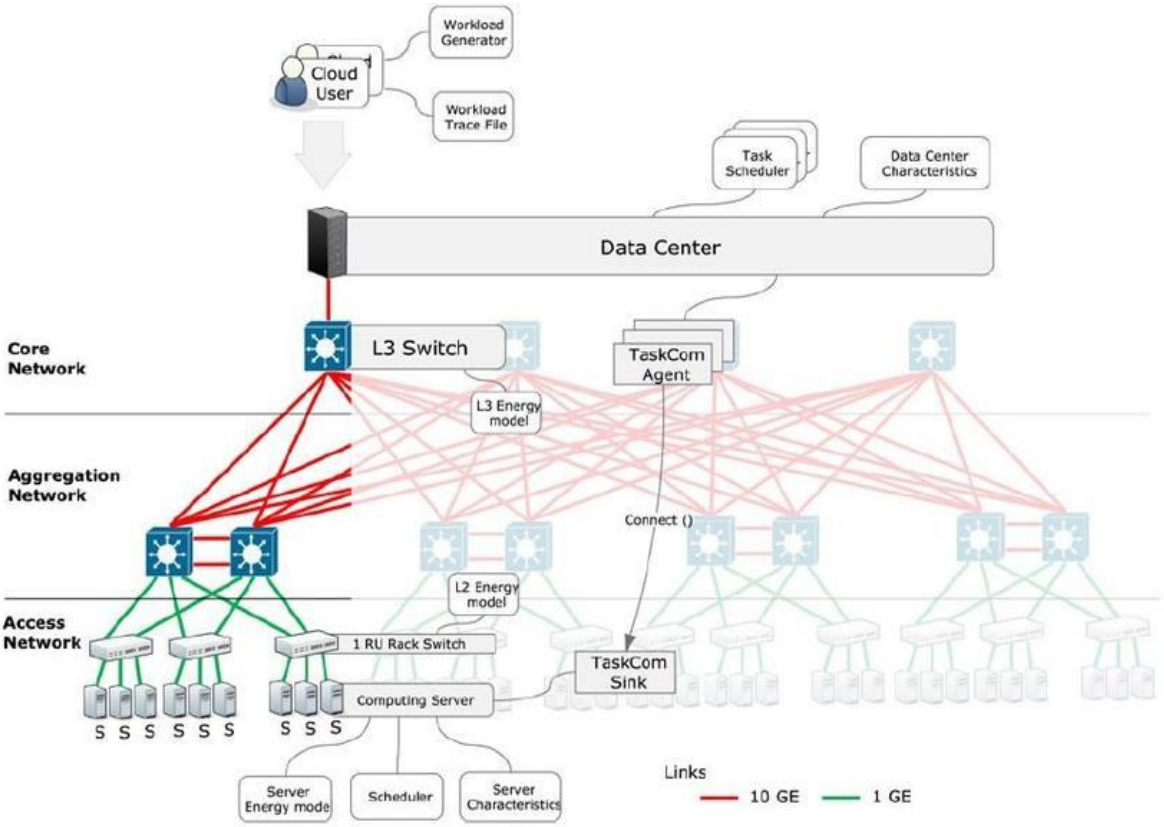

Figure-2: Three-Tier Data Center Architecture of GreenCloud

- **Network CloudSim**

It's an extension of CloudSim with scalable network and generalised application model Network CloudSim is proposed by S. K. Gurg and Rajkumar Buyya. To optimise the performance of cloud infrastructure it provides more accurate evaluation of scheduling and resource provisioning policies.

- Availability - Open Source
- Platform – CloudSim
- Language – JAVA
- GUI Support – None
- Support of TCP/IP – None
- Software or Hardware – Software
- Computing Environment – Limited
- Simulation Time – Seconds
- Memory Space – Small
- Energy Model – Yes
- Architecture – Single Server Architecture

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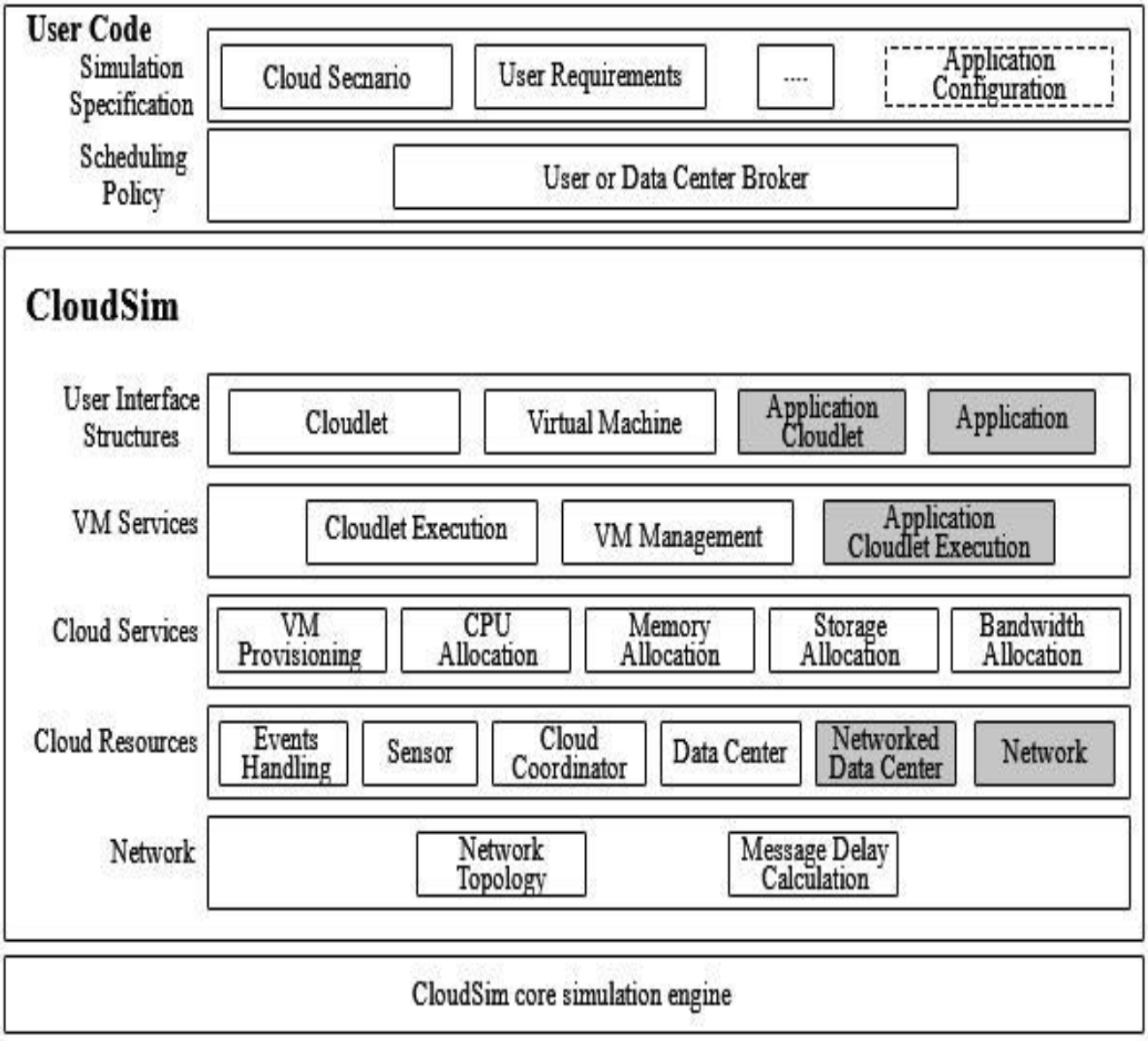

Figur-3: Single Server Architecture of Network CloudSim

- **iCan Cloud**

iCan Cloud is used to simulate large networks which is based on SimCan. It allows parallel execution of an experiment. The core hypervisor class can be customised using iCan cloud which is the key features of iCan Cloud. There is no need to change or modify the simulator code to test the different architecture; only new configuration file has to create.

- Availability - Open Source
- Platform – SIMCAN
- Language – OMNet, MPI,C++
- GUI Support – Full
- Support of TCP/IP – None
- Software or Hardware – Software
- Simulation Time – Seconds
- Memory Space – Medium
- Energy Model – No
- Architecture – Layered Architecture

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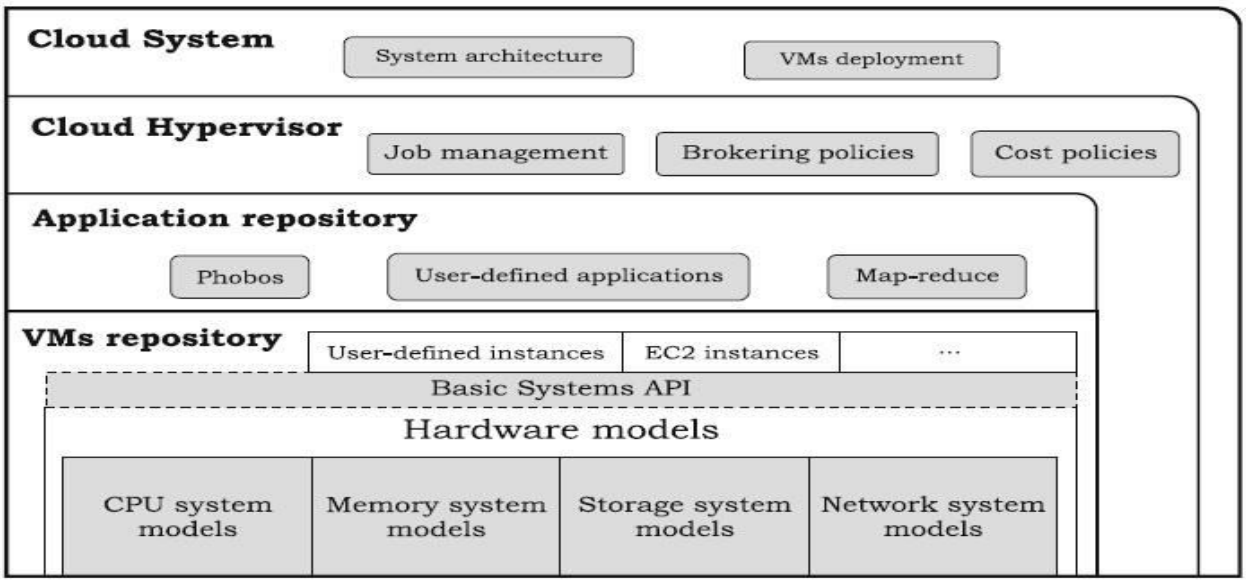

Figure-4: Layered Architecture of iCan Cloud

CONCLUSION

In this paper four most popular open source cloud computing simulators that is CloudSim, GreenCloud, Netowrk CloudSim and iCan cloud are reviewed The features of all these simulators in terms of platform, availability, language, speed , GUI support are given so that depending upon researcher as well as user needs anyone can select proper simulators. Based on features and popularity, as a general purpose simulator CloudSim is recommended always.

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APPLICATION OF VIRTUAL REALITY FOR INTERIOR DESIGN MODELLING

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ABSTRACT
Virtual Reality technology refers to a computer simulation system, which provides users with fully immersive in-depth feeling of the environment in which the user is simulated to. In Interior Designing domain it is challenging to convince the customer about the design without the look and feel of the design. This paper proposes virtual reality-based designing framework that helps the interior design engineers to design according to their customer requirements, were they can experience it by being part of it [walk through experience] before finalizing the design. The objective of this work is to save design time and provide the real feel and walk through experience for different design using virtual reality. The work flow includes gathering requirements, generating the virtual reality 3d model, rendering virtual reality generated model to android platform.

Keywords: Virtual Reality [VR], Android SDK, Unity 3D for VR, Google VR SDK for Unity, Scene, Plane, Character

INTRODUCTION
Interior design is a refined and extended architectural design, which is a cross-disciplinary that is an aspect of the collection space, style, color, lighting, material. In present automated world technology is now an integral part of our day to day activity, they have not only improved our life style but also has opened many new ways of analyzing a situation or the possibility of solving a given problem. Virtual reality has been around from 20 years not until the late 2010. VR was only used as a means in gaming and entertainment, but now with the advancement and increased usage of internet and sensor technology, it has been implied into all the sectors of our day to day life.

Virtual Reality refers to a type of synthetic [virtual] integration technique, which combines computer graphics, computer human interaction, sensor technology and so on. With the application of VR technology in architectural design and interior design, interior designers are able to develop / replicate their works in 3D world, which is visible and interactive, that can be easily manipulated and changed as per the user needs. VR not only provides the designers a way to portray their artistic expression for interior design but also allows the user to make them as realistic as possible by the inclusion of effects such as sunlight, shadow, gravity, collision etc.,

LITERATURE SURVEY
Interior designing is carried out manually by most of the design engineers. Once design blueprint is approved the same is sent for 2D designing. Later the conversion of hardcopy design to softcopy is carried out by again drawing it manually in CAD or CATIA software for which it is time consuming [1].These 2D designs are converted into 3D designs [2].This tradition interior designing process is very extensive and non-practical method where the user has to decide upon the designs and models or pre-defined 3D models, though this method produces the good quality models but it is not user specific and does not allow the user to have an immersed experience that's where interior designing with virtual reality comes handy [3].

In traditional interior designing users/customers had to select from 2D diagrams, logs and 3D models of pallets of textures and designs, they could not determine if they were satisfied with the selection until the completion of the design, thus if any changes had to be done it meant that the entire process had to be re-done, which meant a loss of great human time and money [4].

VR technology in the 21st century which is most important and capable of changing the world can be found in fields as diverse as 1. Entertainment, which includes sectors such as Video games, Cinema, Virtual Tour etc. ,2. Education, 3. Business. VR enabled games helps in gathering more of users interests and thus increasing the number of players by increasing the curiosity and effects provided by the gaming experience, the addition of the joysticks and other VR enabled sensors helps in providing a more immersed experience for the players. VR enabled cinemas helps the viewers to get a 360-degree view of the cinema and thus the viewers can experience a more involved experience of the cinema. Virtual Tour helps the users to virtually have a look and experience a virtual model of a place that the user is not in and it can be made more realistic by using depth sensing camera's and stitching the 360-degree pictures for the user to experience a flawless tour of the real place or location [7,8].

VR for education has helped the learners to view and experience complex theories and experiments using simulation and this has led the users to think from a different angle of problem solving. example for such areas

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are Neural surgery where the training surgeons are given a VR simulated brain to replicate the complex challenges that the surgeons face at the time of surgeries and helps them to practice on critical complexity issues that may occur in the real surgery. Another example is particle collision simulation of atoms that are very rare and expensive to replicate in real world, thus the scientists can use a simulated behaving atom for observation about a certain condition and reactions of atoms or particles. VR for business helps in giving an immersive simulated experience to the users about the new business plan or product launching etc. Example Interior designing of a place, Emergency alert system working in a real time scenario and reaction of a specific fabric or culture in outer space or environment [6,9].

Using VR, the users can select the desired textures, colors and other variables on the simulation after experiencing the model the users can easily decide upon the variables better compared to that of the procedure followed in the traditional system, thus VR is more effective, consumes lesser time and economical [10].

METHODOLOGY

The methodology adopted using VR is divided into different phases.

Phase I: Interior Design Modelling

The interior design modelling is broken down into 3 different stages as shown in the figure1

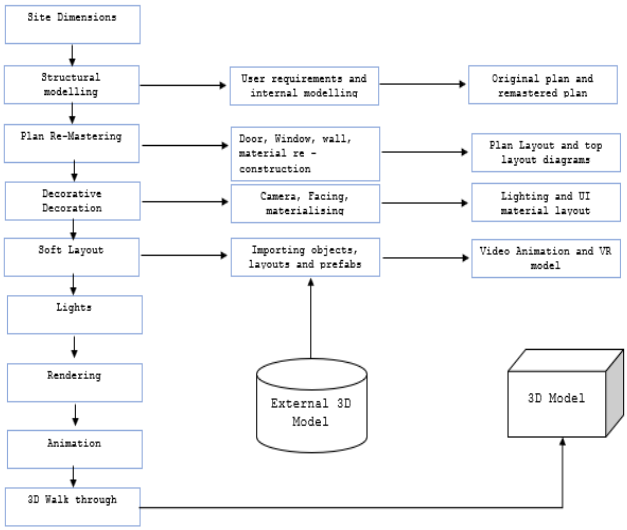

Figure-1: Interior Design modelling process

Hard Decoration Design

- This stage of the model requires precise size of the site or the plane on with the interior designing has to carry out, shape of the parts of the design such as the dimensions of the room etc. And spatial position of the accessories such as the sockets, installed instruments such TV, fridge etc. And it can generate the plane and complete the designing phase. Equations

Soft Decoration Design

- This stage of the model relies on the visual attention of the model such as material, shadow and it does not require accurate physical model of information completely.

Visual Design

- This stage different from the previous 2 stages aims to pursue the true sense of the rendering results and to make into account the key factors that affect the rendering speed, materials, textures, lightings and then enhance the object surface details of the real sense.

Phase-II: Deploying the model on mobile device

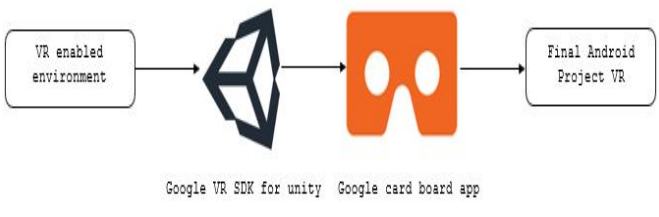

Figure-2: Deploying the 3D environment as VR application

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The next phase is downloading the Google SDK for unity to enable the VR experience and Android SDK to convert and export the generated VR scene to an Android platform-based application as shown above in the figure 2.

This process involves taking the VR generated 3d environment and importing the Google SDK for unity package and enabling the XR settings for a VR compatible project, and replacing the VR main with the default camera, setting the target version and minimum information for digital signature for android application such as company name, application version. By this process the basic setting up of the project is done, now using the SDK of android the project can be exported into an apk file.

The exported APK file should be installed and opened through the google card board application for auto calibration of the settings for a flaw less VR experience.

EXPERIMENTAL RESULTS

The interior design of the virtual interior scene includes plane, walls, TV set, sofas, chairs, kitchen, kitchen utensils, lamps and other items. In this paper the whole system of the virtual scene is divided into 2 blocks, when combined with data and standard structure image to generate the final output application.

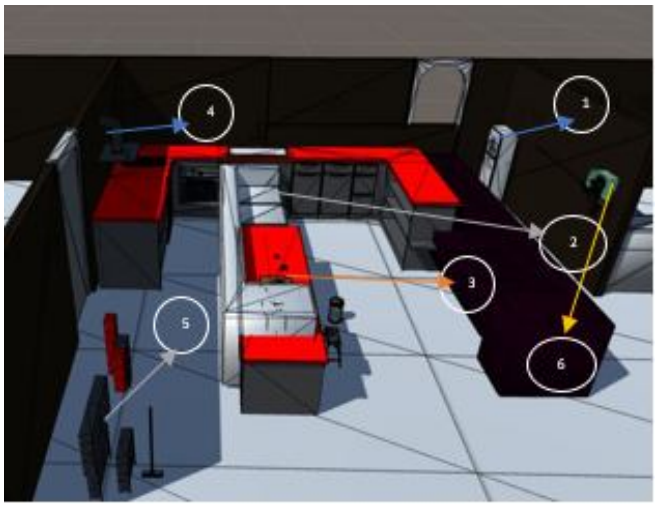

Figure-3: An interior design model of the kitchen design rendered in VR mode below are the components of kitchen.

1. Refrigerator 3. Gas Burner 5.Storgae racks
2. Gas burner 4. Exhaust 6.Coffee maker

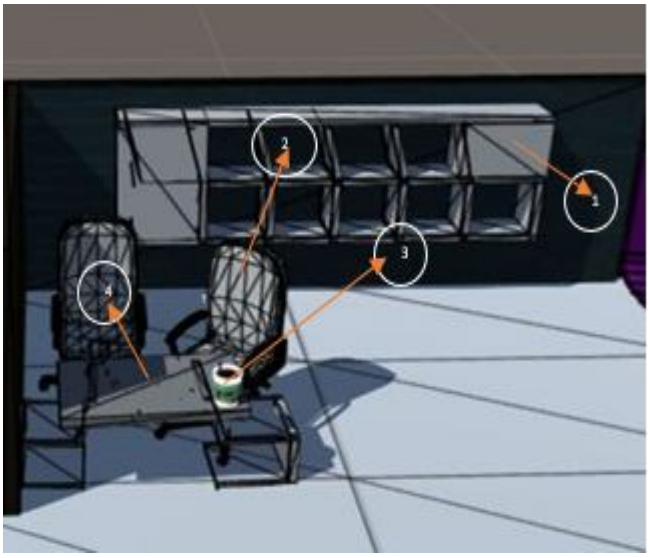

Figure-4: An interior design model of the study room design rendered in VR mode, below are the component of study room

1. Book Shelf 3. Coffee Mug
2. Chair 4. Study Table

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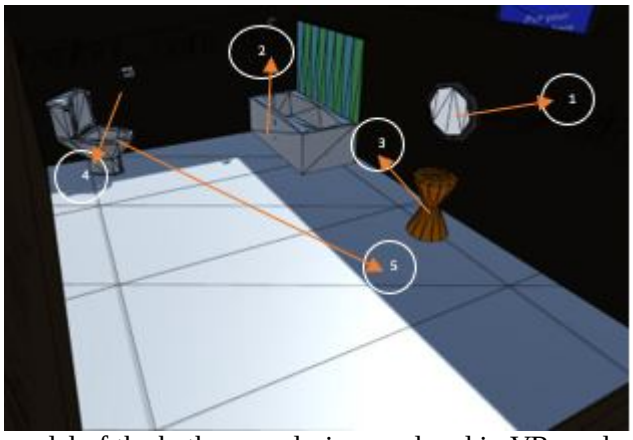

Figure-5: An interior design model of the bath room design rendered in VR mode, below are the components of bath room.

1. Mirror
2. Bath Tub
3. Bath Stool
4. Toilet Cumbered

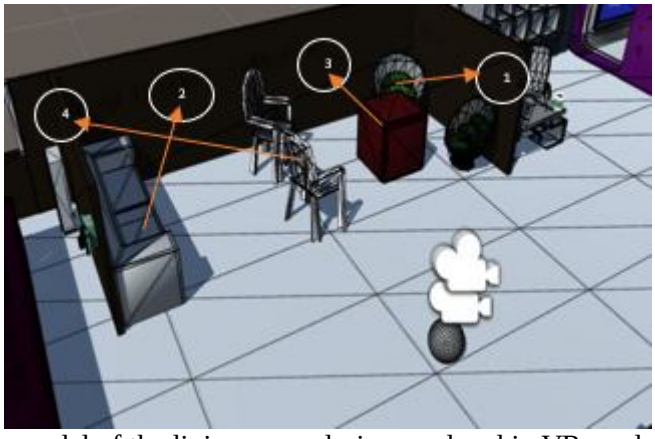

Figure-6: An interior design model of the living room design rendered in VR mode, below are the components of living room.

1. Easy Chair
2. Sofa
3. Tea Table
4. Chair

CONCLUSION

This paper provided a new interior design framework based on Virtual Reality technology. The proposed interior design framework introduced the android based interior design developed with virtual reality, which is easy, light and easy portable. This model provides the customers with immersed experience with walk experience and interactive models.

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TO MEASURE AND ANALYZE THE DEPRESSION LEVEL ON BASIS OF AGE, GENDER, OCCUPATION AND MARITAL STATUS

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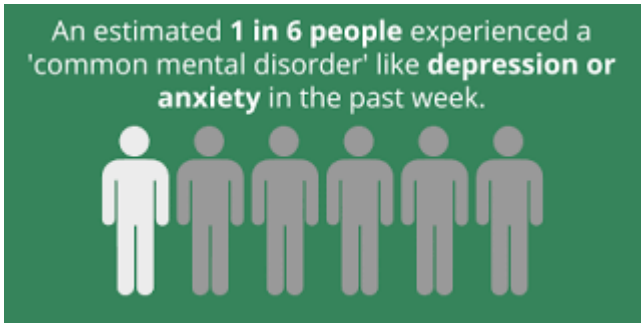
ABSTRACT
Irrespective of age, gender, occupation mood disorders find very frequently in the society. May be less talk on depression is one of the reason for staying away from treatment. Mood disorder and its impact on physical body then become act as barrier in day to day activity. In this paper tried to focus on different aspects to collect data and analyze severity of depression base on different categories.

Keywords: Depression, Becks's Depression Inventory (BDI)

INTRODUCTION
Depression is psychological disorder that can give sad feeling, not interested to interact with people. Some time it can stretch to the level where patient may feel no use of life anymore and suicidal cases occurred. This is going to disturb day to day activity also. If these feelings persist more than 2 weeks then need to handle this case by psychologist.



Source:-https://www.google.com/search?q=DEPRESSION+STATISTICS&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjn0rGAteTgAhUbfisKHWLWBggQ_AUIDigB&biw=1366&bih=608#imgrc=DrnuHpTGx7Gy0M:

India is one of the most depressed countries in the world[1]. Nowadays depression occurs in all age, gender. Day by day cases of mental illness increase. Over 5 crore people of India suffering from depression (Source-WHO). Despite of depression is curable, most of the time person not aware that he/she is under depression. This can ultimately impact on nation's strength.

OBJECTIVE
Objective of this paper is to diagnosis and analyze the depression level computed on the basis of age, gender, occupation and marital status.

METHODOLOGY
For this paper questionnaire has been used as data collection procedure. Questionnaire consists of mental attributes like sadness, negative thinking, less mingle with others, loneliness and Physical factors like weight loose, fatigue. This will be helpful to measure correct depression level.

HYPOTHESIS
1) H0: person whose age between 30 and 50 are more depressed.

H1: person whose age between 30 and 50 are less depressed.

2) H0: women are more depressed than men.

H1: women are not more depressed than men.

BDI-II test is widely used validated screening tool to detect depression level [2].76 individuals approach to participate in the study. Sample focus on age between 16 and 60.BDI-II is well-known and widely used screening tool. Following attributes are considered for analysis:

1) Sadness
2) Pessimism
3) Past Failure

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4) Loss of Pleasure
5) Guilty Feelings
6) Punishment Feelings
7) Self – Dislike
8) Self – Criticalness
9) Suicidal Thoughts
10) Crying
11) Agitation
12) Loss of Interest
13) Indecisiveness
14) Worthlessness
15) Loss of Energy
16) Changes in Sleeping Pattern
17) Irritability
18) Changes in Appetite
19) Concentration Difficulty
20) Tiredness or Fatigue
21) Loss of Interest in sex

Each factor having weightage from 0 to 3.Base on input given by user, total score is calculated and compare with standard range to decide depression level.

TABLE-1: RANGE OF SEVERITY OF DEPRESSION[4]

0-10	These ups and downs are considered normal
11-16	Mild mood disturbance
17-20	Borderline clinical depression
21-30	Moderate depression
31-40	Severe depression
Over 40	Extreme depression

Study of depression analysis is need of today's world. Study base on this survey really going to contribute to spread awareness about the depression. Intrapersonal communication will occurred and definitely able to treat the depression at initial stage, which helps to build mentally healthy individual.

PAPER FINDINGS

TABLE-2: BASE ON AGE FOLLOWING PERCENTAGE OF DEPRESSION OCCURRED IN SAMPLES.

Age Category	No	Yes	Grand Total	% of Respondent
>40 Years	4	3	7	43%
16-20 Years	12	14	26	54%
20-30 Years	12	5	17	29%
30-40 Years	14	12	26	46%
Grand Total	**42**	**34**	**76**	**45%**

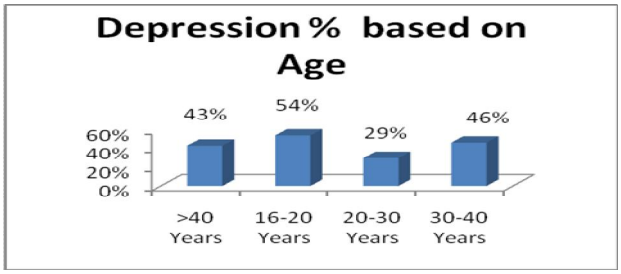

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TABLE-3: ON THE BASIS OF GENDER FOLLOWING PERCENTAGE OF DEPRESSION OCCURRED IN SAMPLES.

Gender	No	Yes	Grand Total	% of Respondent
Female	17	19	36	53%
Male	25	15	40	38%
Grand Total	**42**	**34**	**76**	**45%**

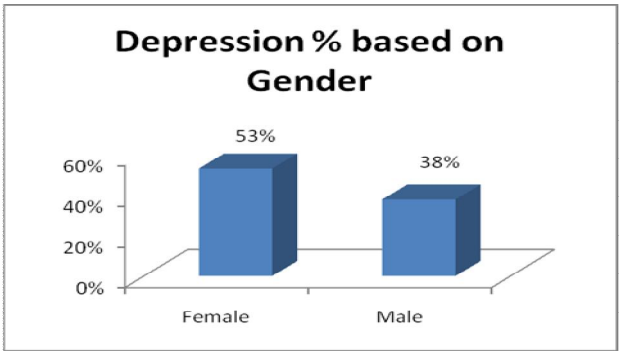

TABLE-4: ON THE BASIS OF OCCUPATION FOLLOWING PERCENTAGE OF DEPRESSION OCCURRED IN SAMPLES.

Occupation	No	Yes	Grand Total	% of Respondent
Business	4	1	5	20%
Housewife	1	0	1	0%
Service	14	9	23	39%
Student	18	18	36	50%
teacher	5	6	11	55%
Grand Total	42	34	76	45%

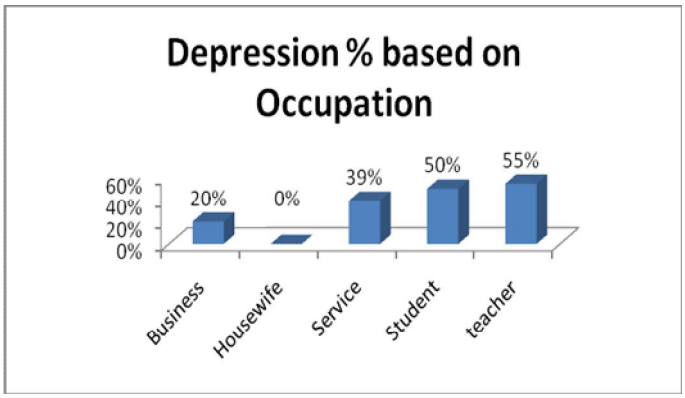

TABLE-5: ON THE BASIS OF MARITAL STATUS FOLLOWING PERCENTAGE OF DEPRESSION OCCURRED IN SAMPLES.

Marital status	No	Yes	Grand Total	% of Respondent
Married	22	16	38	42%
Unmarried	20	18	38	47%
Grand Total	42	34	76	45%

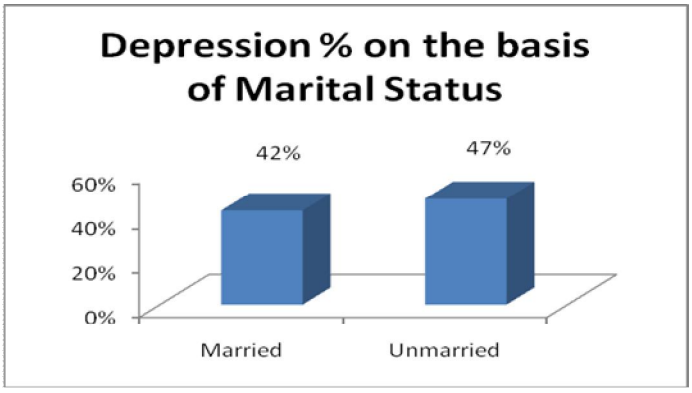

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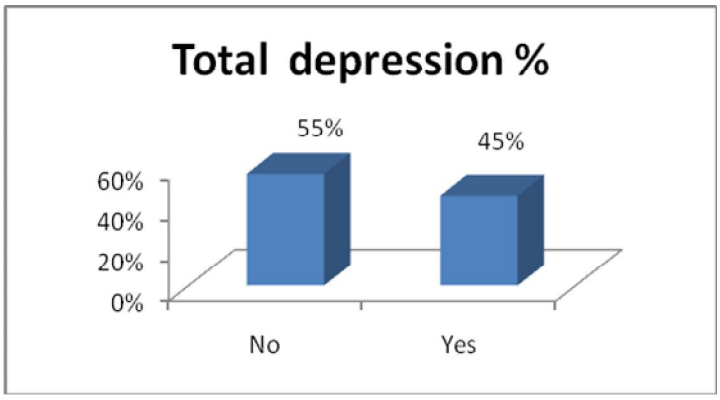
TABLE-6: TOTAL PERCENTAGE OF DEPRESSION AMONG 76 SAMPLE

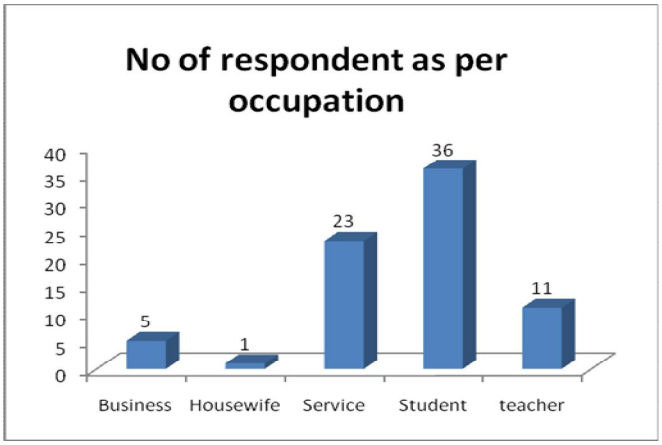
Depression Y/N	Count of Depression Y/N	% of Respondent
No	42	55%
Yes	34	45%
Grand Total	76	100%



From total 76 samples data is divided base on occupation as follow. Which will be further used to find depression percentage on the basis of occupation.

TABLE-7: NUMBER OF RESPONDENT ON THE BASIS OF OCCUPATION

Occupation	No of Individuals
Business	5
Housewife	1
Service	23
Student	36
teacher	11
Grand Total	**76**



From total sample depression severity is calculated for male and female category. Details mentions in the following table.

TABLE-8: DEPRESSION SEVERITY COUNT ON THE BASIS OF GENDER

Depression Severity	Female	Male	Grand Total
Borderline	2	1	3
Extreme	0	1	1
Mild	10	8	18
Moderate	6	5	11
Severe	1	0	1
Normal	17	25	42
Grand Total	**36**	**40**	**76**

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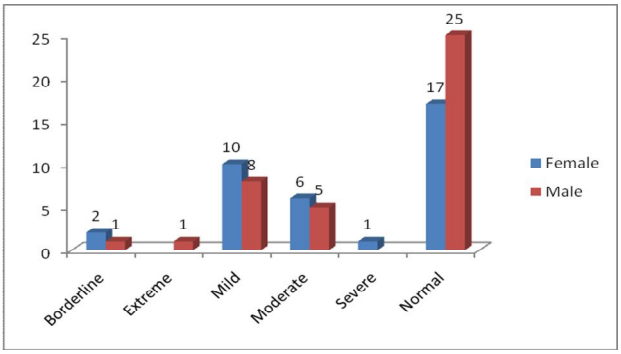
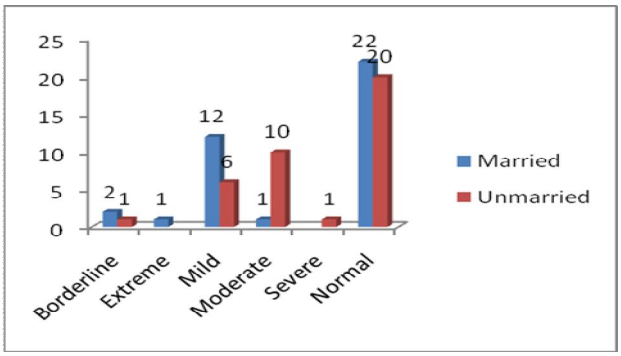


Further data is analyzed to detect different depression level base on marital status. A detail of analysis is as follows.

TABLE-9: DEPRESSION SEVERITY COUNT ON THE BASIS OF MARITAL STATUS

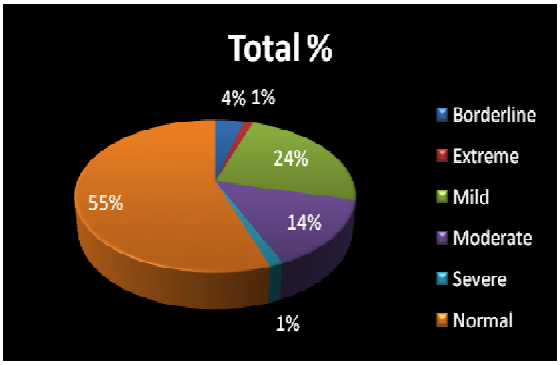
Depression Severity	Married	Unmarried	Grand Total
Borderline	2	1	3
Extreme	1	0	1
Mild	12	6	18
Moderate	1	10	11
Severe	0	1	1
Normal	22	20	42
Grand Total	**38**	**38**	**76**



When data is analyzed following findings occurred which indicate depression severity in the respondent.

TABLE-10: TOTAL DEPRESSION SEVERITY

Depression Severity	Total Count	Total %
Borderline	3	4%
Extreme	1	1%
Mild	18	24%
Moderate	11	14%
Severe	1	1%
Normal	42	55%
Grand Total	**76**	**100%**



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RESULT

This paper calculates and analyze depression severity base on different categories. Hypothesis tested on the bases of samples which give result as

- Second hypothesis that is H0: women are more depressed than men is **true.**
- Second hypothesis that's H0: person whose age between 30 and 50 are more depressed is **false**.
- According to finding age group between 16 and 20 are most depressed respondent.
- Base on occupation Teacher is more depressed than any other occupation.
- On the basis of marital status more depression find in unmarried people.

CONCLUSION

An analysis of 76 people who participated in survey showed that depression occurred in age group 16 to 20 is much more than any other category. All respondents in this group are students. This study paper concludes that Concentration Difficulty, Crying and Self-Criticalness are the most influential factors.

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GAMBLING PREDICTION ANALYSIS

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ABSTRACT
Gambling is to risk some valuable thing in the expectation of winning some greater valuable thing. Gambling is a major commercial market with international activity. Research has been carried out to predict the outcomes of various gambling activities using different techniques. Over the years, technology has been advanced tremendously and new techniques are developed. Machine Learning technique is one such feature which adds to the advancement in the fields of gambling prediction. Machine Learning allows a system to learn and give an accurate output. This paper discusses some machine learning techniques to predict the outcome of any gambling activities. Gambling activities such as blackjack, sports, poker lotteries and other casino games. The paper aims to provide aid to all betters by giving them an accurate outcome using data mining and machine learning algorithm. Through data mining, we try to find out the history of the game and apply machine learning to get the expected outcomes. This paper helps the gamblers to avoid playing on a risk. The paper concludes by giving an accurate result of gambling activities with the implementation of the machine learning algorithm.

Keywords: Gambling, Machine Learning, Poker, Sports.

I. INTRODUCTION
Gambling in other form is betting for money or some valuable material good. Gambling is carried out through ancient times and has acquired significant roots in international markets. According to Wikipedia, Gambling has gained an estimation of about $335 billion business with legal commercial activity. Apart from gamblers, there are few people who also bet for money or fun in understanding the games. The outcomes of gambling games are uncertain.

Different gambling games such as blackjack, poker, horse racing, match-fixing, lotteries, craps, roulette and baccarat draw a huge business in the international market. Therefore, the prediction of such games is important in order to win them. Gamblers usually play these games on a risk with an uncertain result. To avoid such risk this paper tries to make a system where the outcome can gain accuracy.

This paper focuses on work was done recently for predicting the outcomes and best result for gambling activities. This paper discusses machine learning algorithms, which can prove to give a better and accurate result for gambling activities. [1] Worked on Ensemble Learning to predict the behavior of gamblers. There were few gamblers in past who left gambling due to the high risk of gambling [2] behavioral markers analyzed those data. This paper with the help of Ensemble Learning and Kelly's Criterion for risk management will predict the result of the game. It will help other gamblers to win the game without any risk.

II. LITERATURE REVIEW
Research by [3] has conducted a study on the development of poker agent to find optimal game strategy using reinforcement learning (RL) in combination with the artificial neural network (ANN) for value function approximation. For this study, five pieces of information were considered: Hand potential and strength evaluation, Bankroll Management, Opponent modeling, Unpredictability and Bluffing. Different AI technologies were processed to make use of different types of information. Data were analyzed and the author developed three types of computer poker players that allow to compare and evaluate AI poker agent results. The result showed that poker game strategy optimization problem was solved. The study concluded that reinforcement learning in combination with neural network techniques helped in problem-solving and thus online poker agent was developed.

Another research by [4] has conducted a study to find an estimating probability for Texas Hold'em Poker Agents. For this study, two informations were considered: hand rank and hands odd evaluation. The different algorithm was used to predict the probability of each outcome. Data were analyzed and results were generated using AI techniques. The result showed that how an agent can measure the quality of its hand in order to aid its decisions during the game. The study concluded that TwoPlusTwo evaluator was the fastest evaluator in achieving the smallest elapsed time.

Omer Ekmekci *et al.*, (2013) [5] conducted a study on 19 players to determine strategies for opponent modeling. For this study, four phases of the game were considered: pre-flop, flop, turn and river. Different styles and models were used to predict different phases. Data were analyzed and results were generated using ML

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techniques. The results showed that opponent modeling can predict the opponent's behavior. The study concluded that ensemble learning found successful for inferring the strategy of opponents.

A study by [6] carried out work on seven different game types for identifying player's strategies in No Limit Texas Hold'em Poker. For this study, different moves of players were considered. The frequency of different players was calculated. Data were analyzed and results were generated using the clustering algorithm. The result showed that through opponent modeling, player strategies were predicted. The study concluded, that the clustering algorithm identified player types based on their moves.

Another study by [7] completed work on anticipation of Winning Probability in Poker Using Data Mining. For this study, poker hand ranking was considered. Different modifications were used in order to predict the final hand ranking. Data were analyzed and results were generated using Bayesian Algorithm. The result showed the probability of 92% using data mining techniques. The study concluded, that the Naïve Bayes Algorithm proved the probability of winning the poker game.

Samadhan B. Patil *et al.,* (2015) [8] conducted a study on poker gambling to determine the probability for an unbalanced data set. For this study, poker hand ranking was considered. Different data set were trained and tested. Data were analyzed and results were generated using Decision Trees. The result showed the probability of winning the game through statistical analysis. The study concluded that Native Bayes Algorithm proved probabilistic of winning a poker game.

III. RESEARCH METHODOLOGY

A. Clustering Algorithm

Clustering is an unsupervised machine learning technique in which references are drawn from datasets consisting of input data with unlabelled responses. Clustering is generally used for dividing the data point or population into a number of groups such that the data points in the same group share similar properties as compared to the data points in another group. In simple words, clustering is a collection of objects on the basis of similarity and dissimilarity between them. It is used to find the intrinsic grouping in a set of unlabelled response. Clustering algorithms are of different types. Hence, we can say that the Clustering algorithm is useful in finding out the best gambling strategy.

B. Kelly Criterion

In 1956, the Kelly Criterion was formulated by a researcher name John Larry Kelly Jr. This formula was invented to decide what proportion of wealth to risk in order to gain positive expected value bets to maximize the rate of return. Kelly Criterion is a popular among gamblers; it helps gamblers to bet when odds is in your favor. Kelly Criterion is used in many fields of betting such as poker tournament, horse racing and other sports activities. The probability that the h-th horse wins the race is P_h, the total amount of bets placed on h-th horse

is B_h using Kelly Criterion.

Formula:

$\beta_h = \frac{B_h}{\sum_i B_i} = \frac{1}{1+Q_h}$, where Q_h are the pay off odds.

Therefore, we can say that Kelly Criterion is useful for Gambling on a risk.

C. Ensemble Learning

Ensemble Learning is a type of supervised algorithm, where we can train and use it for prediction. Ensemble Learning is a collection of multiple algorithms used for obtaining a better predictive response. Ensemble Learning yields a better response as compared to other machine learning models. Most common used Ensemble Learning techniques are bagging, boosting and stacking. Ensemble Learning can predict the expected outcome of each gambling game such as poker, sports, horse racing and lotteries. Thus, we can say that Ensemble Learning is a robust is a best way to finding out the gambling outcomes.

Fig-1: Process Flow of Predictive Analytic Process.

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The overall process of developing a system depends on the above steps shown in figure 1. A random dataset is collected from Kaggle or Queensland online portal. Pre-processing of dataset is done. Data is trained and tested through Weka. Next Step is to group the data through Clustering of Algorithm. 'Kelly Criterion is applied to find out the probability of winning the game. Through Ensemble Learning final result of prediction is generated.

IV. RESULTS

A predictive response is obtained through Ensemble Learning with Kelly Criterion and Clustering Algorithm.

		Was only Call					Was Call and Raise			
	No prev.	Call count					Call count			
Hand	Call	1 C	2 C	3 C	4 C	5+ C	1 C	2 C	3 C	4 C
AA	R	R	R	R	R	R	RR	RR	RR	RR
KK	R	R	R	R	R	R	RR	RR	RR	RR
QQ	R	R	R	R	R	R	RR	RR	RR	RR
JJ	R	R	R	R	R	R	C	C	C	C
TT	R	R	R	R	R	R	C	C	C	C
99	R	R	C	C	C	C	F	F	F	F
88	R	R	C	C	C	C	F	F	F	F
77	R	C	C	C	C	C	F	F	F	F
66	R	R	C	C	C	C	F	F	F	F
55	R	F	C	C	C	C	F	F	F	F
44	F	F	C	C	C	C	F	F	F	F
33	F	F	C	C	C	C	F	F	F	F
22	F	F	C	C	C	C	F	F	F	F
AKs	R	R	R	R	R	R	RR	RR	RR	RR
AQs	R	R	R	R	R	R	C	C	C	C
AJs	R	R	R	R	R	R	C	C	C	C
ATs	R	R	C	C	C	C	F	F	F	F
A9s	R	R	C	C	C	C	F	F	F	F
A8s	R	C	C	C	C	C	F	F	F	F
A7s	R	C	C	C	C	C	F	F	F	F
A6s	R	C	C	C	C	C	F	F	F	F
A5s	R	C	C	C	C	C	F	F	F	F

Fig-2: Game strategy for middle position (Annija, 2014)

The above figure 2 shows the gaming strategy of winning the game. The results of three algorithms are generated using Weka or any predictive tools. Thus, Clustering Algorithm shows grouping of playing strategies; Kelly Criterion predicts the winning game and Ensemble Learning shows an accurate result and expected outcome is generated.

A research by [9] used clustering algorithm to predict the hand strength and thus we could predict the hand strength of poker game. Clustering Algorithm helped in finding out the hand strength as well as the playing style.

Another research by [10] used ensemble learning for online mobile play using log data. Accuracy of winning the game was high. Thus, results were generated using ensemble learning.

V. CONCLUSION

In this paper, combination of three algorithms is used to get the expected outcome and help the gamblers win the game. Thus, we can say that Clustering algorithm helps in grouping the play styles; Kelly Criterion gives an expected outcome to avoid gamblers play on a high risk and Ensemble Learning shows the predicted outcome. Hence, our study concluded that Ensemble Learning in combination with Clustering Algorithm and Kelly Criterion gives a predicted outcome and allows the gambler to win the game. These algorithms can be used in all types of gambling activities. It gives the best result. In future, other researches can work on these machine learning techniques to find out result of other predictive activities.

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USERS PRIVACY AND SECURITY IN E-LEARNING PLATFORMS: HOW MUCH IT IS DWINDLING

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ABSTRACT
In the modern era of digitization, information and knowledge become indispensable. E-learning technologies and the application of developing digital technologies have received extensive reception all over the world. There are many e-learning systems used in various educational establishments like Moodle, Sakai, and Blackboard etc. Few are commercial and few are open source. ELearning is becoming a progressively prevalent form of education but what about privacy and security? That is a significant issue in the real educational context where eLearning rises in acceptance and more and more learners are opting online courses. The present-day web applications and developing intelligent solutions for eLearning collect and store a huge array of learners' private data. What kind of private data given to the organization for learning and are they protected against unauthorized use are vital questions concerning learners' privacy? As a result, the security and privacy turn out to be a very critical issue to provide the services to the authentic users and preserving confidentiality, integrity, and availability for the authorized eLearning learners. The key purpose of this paper is to provide an understanding of the security concerned challenges faced by eLearning systems in E-Learning area along with privacy and possible attacks and its classification.

Keywords: Elearning, threat, privacy, CIA, Moodle.

I. INTRODUCTION
Have you ever questioned yourself how many can access your online tutoring accounts and can be misused? Do you have faith in the tutoring websites you are visiting often? Can we figure it out effortlessly as an end consumer if our login authorizations are transmitted over a secure network between our client device and the hosting servers?

ICT evolution has immensely changed the education and training scene. Technology which is accessible 24x7 today has certified courses to be delivered beyond the tutoring room wall. E-learning enables and enriches the teaching-learning process through the use of devices based on computer and ICT. The idea of any time and anywhere is that eLearning endorses life-long learning and eradicates the problems related with distance. The flexibilities which e-learning proposes to students are the main inspiring factor in selecting online courses [1]. The concept of e-learning provides several advantages to educational institutes, no boundaries with the use of this technology, 24/7 learning, flexibility, and modularization [2]. Meeting the security necessities in an eLearning structure is an extremely manifold issue because it is essential to safeguard the content, services and individual information not only from external users but also from external users, including system admin. [2]

Elearning requires the gathering of a huge amount of personal information is liable to threats. The private data can be name, address, mobile number, sex, ages, and email address which is required for the registration process. Recording data allows access to a given data via a web application and not just this displaying mark sheet and certificates to users is also part of tutoring. Materials and personal identity must be protected from any modification or piracy. Security and data protection should be implemented using some security methods. Threats to security cannot be ignored, mainly as learning is constructed on heterogeneous dispersed open architectures, and can be vulnerable to threats and unauthorized access. Security measures are confidentiality, integrity, and availability, which is the most common basic principle of security.

II. LITERATURE AND THE NEED FOR SECURITY AND PRIVACY
Evolving e-learning systems has led to a novel means of education which is affordable and offers all learners equal opportunity irrespective of their age or place ELearning is defined as "Usage of the web applications and technologies for refining the learning and teaching experience " given by Alwi and Fan.[3].Security facets should be perceived for any kind of e-learning platforms: confidentiality, integrity, authenticity (CIA), access control, availability, non-repudiation. Many e-learning establishments do not recognize the status of security alarms. A number of security concerns were upraised in previous studies concerning security in e-learning systems. May and George (2011) focused on privacy and security concerns in e-learning and derived a few concerns such as Protection of private data, unidentified use, address, and authentication etc.[26].

Since online tutoring takes place through the Internet, each element in the learning system can be a potential target of hacking or threats. It leads to unapproved alteration or damage to educational resources [4]. Online

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learning must consider the inherent security risks on the Internet, such as identity theft, Security Risks, and Protection in Online Learning impersonation, and insufficient verification [5]. Among security concerns in e-learning are security against manipulations, user verification, and privacy. However, as eLearning functionality is rising, data must be vigorously protected to evade the loss of confidentiality, availability, and integrity. Security of data is very critical, therefore sensitive data should be constrained only to limit well-defined groups, for example, learning resources for certain groups, e-result for definite persons and copyright defense of intellectual properties. Moreover, it is hard to authenticate whether or not an assignment was finished and submitted by a valid learner or whether some form of cheating or copying has taken place.

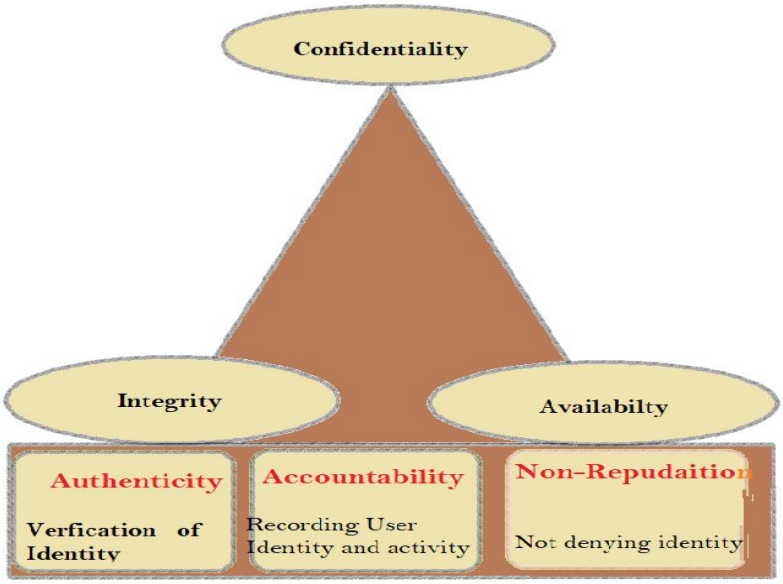

Fig-1:Elementary Requirements for Security

Previous studies have revealed that there are obstacles to an added wide-spread acceptance of online education. The cause behind such obstacles is not the high expenses or the greater level of responsibilities or jobs which need to be supported out, but rather the security facet [7].

III. METHODOLOGY

The methodology used comprises of various steps: (1) Literature review done by using several publications, books, and few top online security sites etc. Also in this paper, we scrutinized various aspects of threats using materials like documentation and forums to explore work and resources about security threat and attacks types in the eLearning system. (2) Surveying students opinions and analyzing privacy apprehensions of students about the personal information being collected by the system. .

IV. RESEARCH QUESTIONS

In order to achieve the research objectives, the following questions have been posed-

1. Which type of threats/attack are there in e-learning systems and how it can be categorized?
2. How their data should be protected and how the data should be shared in a way that does not penetrate their privacy and how it should be protected?

As mentioned in the methodology section of this paper, a questionnaire was delivered to students Undergraduate students doing B.Sc.-Information Technology from the SIES (N) College of Arts, Science and Commerce at Navi Mumbai to measure their sensitivity and awareness on how their information should be protected and how the data should be pooled and shared in a way that does not breach their privacy.

- A questionnaire provided to first-year semester-2 studying Introduction to web designing students is to measure their awareness of how their data should be protected and how the data should be shared and the method that does not pierce their privacy. The outcomes of this questionnaire can help in suggesting and forming principled standards on dealing with students' information and how it should be protected? Establishing these standards can help in students' awareness of the e-learning systems. This reinforces the assumption that students are willing to deal with novel technologies and to accept the technology if it adds value to their accomplishments. Student's trends towards accepting and dealing with new technologies for enhancing their performances give proposed recommendations more credits to be accepted.

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V. CRUCIAL SECURITY FOR USER AND CHALLENGES

The online courses which are disseminated on the internet can be viewed by discrete groups of users. An e-learning system should not negotiate any threat and must be adequate to protect the private data of the learner [23]. In any association, information is measured as its most vital asset and the way of using information and communication technology has raised the count of computer misconduct events [24]. In the case of e-learning environment, up to date develop structure, distribution of content and the privacy and security which has not been taken as an integral part of e-learning system are a major concern [25].

The primary concerns in eLearning security are its challenges to security threats that include

a. Interoperability of eLearning systems: In spite of current technological improvements in e-learning, developing trends are demanding a greater level of interoperability for components, systems, applications, and environments which are often established for a specific organization and deliver very alike functionalities [21].

b. Normalization and compatibility: Standardization and making it well-matched are vital for both e-learning service suppliers and end users to be able to exchange components in the market.

c. Guidelines, policies and implementation mechanism: The security policy is defined as the set of laws, guidelines and does and doesn't that control how an institute manages, protects and dispenses sensitive data. Once the security policy is defined, it must be netted and monitored at application runtime via implementation mechanism which signifies the set of centralized and

d. allocates software to safeguard that the security policy is preserved and certainly not desecrated.

e. E-learning Infrastructure: This refers to Hardware, Software, and connectivity required for e-learning development and implementation [22].

VI. TYPES OF ATTACKS ON E-LEARNING SYSTEMS

The key security threats, which uncover the personal info to vulnerabilities, are interception, interruption, modification, and fabrication [9]. Understanding the security issues in learning circumstances supports users to side-step security threats as well as to improve the defense of both users and learning settings [10, 11]. ELearning system core component of assets which were typically targeted are eLearning System content, individual data of learners, Messages sent/received by users and Network. ELearning assets can be attacked and attack can be of two ways active attacks and passive attacks. Passive attacks breach confidentiality by means of some interception means but do not cause any destruction to the contents. While the active attacks are very damaging and unsafe it can alter the contents and the network too. The consequence of active attacks can be data interruption, data modification and disintegration of data [12, 13, 14, 15].

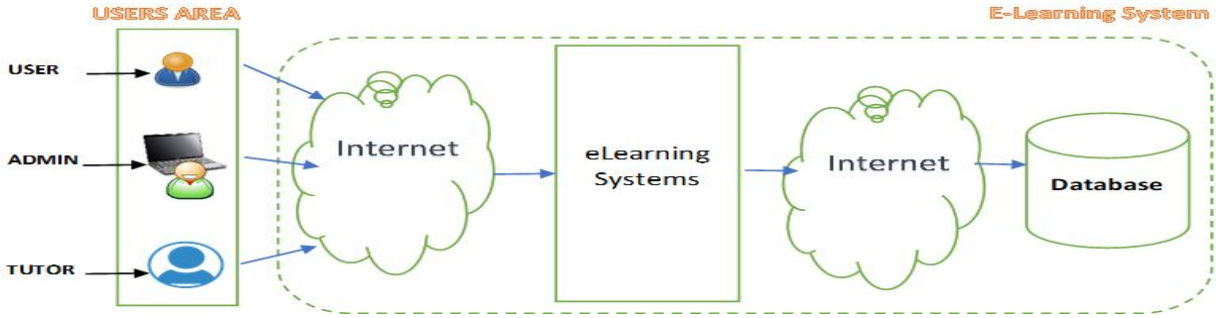

Fig-2:Types of Security attacks and it is a zone of arising

A. Availability and Attack against Availability

Availability is the assurances that the information is being available to the user any time anywhere whenever needed to be seen. Unavailability of eLearning services, denial of service or unobtainability of data for the period is a consequence of availability attacks. Like denial-of-service, Node attacks, and network infrastructure attacks [12, 18, 21]

B. Integrity and Attack against Integrity

Access control is the primary factor in integrity. Only sanctioned users are allowed to access and update the data contents and no illegitimate effort is allowed to modify the contents. ELearning security aim is confirming the integrity and availability of data [16, 17, 18, 19].

Integrity attacks are an active attacks type, which aims to alter the contents, or it can go beyond that to destroy the entire content of the system. The consequence of such attacks can be genuine users may not be able to get

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the appropriate content they are looking for. Such attacks like malicious code attack, message injection attack, traffic modification, traffic deletion, traffic rerouting, forgery attacks, and stack overflow attacks [12, 17]

C. **Confidentiality and Attack against Confidentiality**

E-learning system always has plenty of public who use and review the system in which they could be a visitor, learner, instructor or administrators who have all access right to access the database. High level of confidentiality is very important along with user strong logins in the system [20]. Confidentiality attacks, unlike integrity attacks they are the type of passive attacks that effort to expose the confidential content to illegitimate users by violate the security level of the system and never cause any alteration to the data. Confidentiality attacks like session eavesdropping, traffic analysis, and identity disclosure [12, 17]

D. **Authentication and Attack against Authentication**

Authentication is the method of confirming the individuality of a user by getting some sort of certificates or user id password and certificates or any such other information to verify the user's identity. Authentication attacks occur when attacker login into the eLearning system as legal end-user with a stolen password, key or identifications or an attack system pretending as a genuine device to gain free access to the system and start contributing in e-classroom. This type of attacks is active attacks and it can result in unauthorized modification of contents and secretive information of the original user. Such kind of attacks also infringes the confidentiality. An example of Authentication attacks is Replay attack, Brute force attacks, Dictionary attack.

VII. PRIVACY IN LEARNING

Modern Internet and computer technologies disclose many benefits in educational sector permitting synchronous or asynchronous communication, partnership and different setups for learning which can be in person or in a collaborative environment. Also, they can pose the educational actors in an unfavorable situation, collecting all or part of their private information and violating their private space where data privacy is well-known and discussed the threat. In a UNESCO survey report, privacy is considered as a "fundamental right, even though it is difficult to define exactly what that right entails" [8]. There are dual aspects of privacy; the first facet is associated with what info an individual can retain private. The second one comprises third parties and their purposes and activities according to the practice of possessed private date of another individual. If we put this UNESCO understanding of privacy in the case of eLearning, we can see that both aspects are applicable in educational settings.Privacy and security are necessary within learning environments owing to the fact that, these days, information has become a significant means of production, as an artifact and as a key for individual achievement [6]. India's all-inclusive legal necessities about the privacy on the internet can be found in the Information Technology Act 2000. There has been a growing recognition by both the government and the public that India wants privacy regulation, precisely one that addresses the collection, dispensation, and use of private data.

VIII. SURVEY AND RESULTS

The survey is designed with two goals: to understand the students' opinion on whether their privacy is violated in a learning process and also the key aspects that define privacy and effective learning to be extracted. Participants in the survey are 64 bachelor degree students in first-year Information Technology. The questions are grouped into five sections.

Section 1 and 2 is mainly for basic personal details of students filling questionnaires. Section 3 and 4 is about the importance of eLearning or similar kind of tools for teaching especially for web designing subject. Section 5 is about sharing of private data, a prerequisite for the successful learning process, the role of intelligent technologies in learning and possibilities for students to decide what kind of private data to share.

In section 3 and 4 questions like which is about know-how of various websites, they use for studying like Coursera, W3 Schools etc. and LMS like Moodle where 55% said yes they use and questions about eLearning enable them to accomplish the task better and fast in practical /theory shown in fig 3.

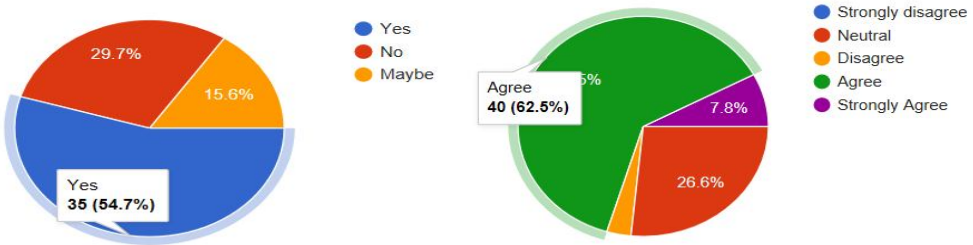

Fig-3: Students'view of E-resources in education

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Section 5 is mainly to understand the pupils view about secrecy violates learning progression and also the main issues that describe privacy and opportunities for pupils to choose what type of private data to share. According to the first question about important of personal information on eLearning portals or software. The participants answer that they often use educational software and share the wished data. Sometimes they upload additional info like photographs and videos. A large part of the students agrees that full name and email address are essential private information for their credentials in a learning process. Additional data like gender, age, and phone number do not have to be enforced and from importance for their learning. The address is a needless attribute for learning.

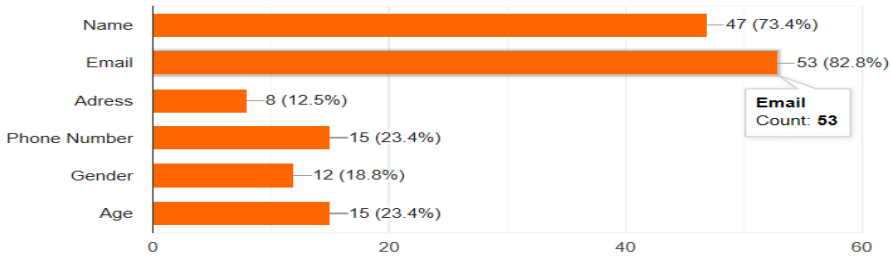

Fig-5: Students' predilection to share private data in educational software

In the second and third question, it was what the role of qualification intelligent technologies in the learning process and their relationship with privacy.

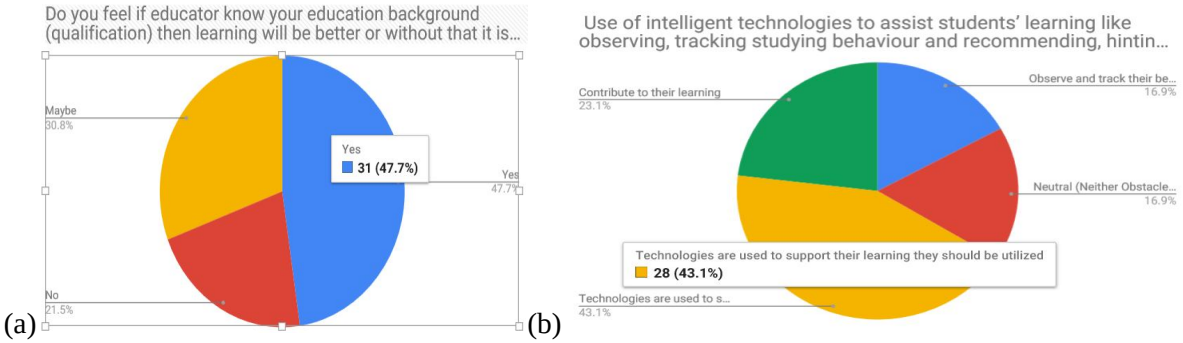

Fig-6: Students' predilection to (a)share qualification (b) intelligent tracking system

The intention of the second question is to analyze the predisposition of the students to share specific data with educators with the goal to obtain their proficient support in learning. 48% of the students think that their educators have to be introduced to their educational background, 22% of the participants do not agree with that and 38% students consider that maybe learning will be successful. The third questions concern the use of intelligent technologies to assist pupils' learning, observing, tracking, studying behavior and recommending, recommending content and activities, etc. 43% of the students are categorical that intelligent technologies should be used for arrangement and management of successful learning if they help. 17% of the students do not think that technologies could contribute to their learning and it violates privacy. 17% of the students were neutral.

The above-presented literature outline about privacy safeguarding in eLearning suggests that suitable actions should be taken. Also, this is not just one sole act, but it is a long and continuous process demanding participation of stakeholders at different levels, software producers, security engineers, researchers, end users.

IX. CONCLUSION

In this paper e-learning system security is exposed to a range of violation that is very unsafe to user privacy and data security. From the above literature, it can be seen that the security issues in e-learning can be categorized into two categories 'active and passive and main challenges faced by the system to secure the system against threats by standardization. One of the important components of the e-learning systems is the learner. Students have various privacy apprehensions what will happen to their personal information being collected by the system. Failing to establish trust between students and all parties involved in the e-learning environment will minimize the value perception of these systems. Data privacy is a present-day problem emerging from the continuous development of technologies, algorithms, online transactional fields. Researchers are looking for suitable techniques and approaches to protect users' private data. eLearning in its common cases are placed online, giving excellent experience to students. Educational software should offer several tools in support of data sharing, tools for using just the necessary private data, tools for privileges protection.

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GREEN IOT AND SMART CITIES

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ABSTRACT
Smart cities are conceptualised to improve the quality of information and government services. It integrates the concept of Information and Communication Technology(ICT) and Internet Of Things(IOT) to enable the city officials to interact directly with the citizen and its infrastructure, to monitor smooth operation. This involves large consumption of resources, wastage and overall costs. Motivated by achieving a sustainable smart city, this paper focuses on the concept of green IOT and its various technologies and issues to reduce pollution, energy consumption, and operational cost and exploit environmental conservation.

Keywords: Internet of Things, Green IOT, Smart City.

INTRODUCTION
With the rapid development of science and technology, the world is becoming "smart" and so are our cities. We are surrounded by smart devices, smart vehicles and smart environment which use the concept of IOT that helps integration between physical world and machine. These smart devices have sensors and actuators along with software and connectivity which enables them to connect, interact and exchange data directly with each other. This will result in increased consumption of energy and resources. It is estimated that by 2020 the number of connected devices will be up to 50 billion and 100 billion by 2030, which will cause tremendous data rate and content size resulting an exceptional carbon emission into the environment. The present day requirement is to use IOT with minimum carbon emission led to the concept of Green IOT. The main purpose of this paper is to provide overview of Green IOT and its technologies along with its challenges.

INTERNET OF THINGS
The Internet of Things consists of interconnected devices which contains software, sensors, actuators that can connect with each other through internet and exchange data. IoT has extended internet connectivity to everyday objects and physical devices. These devices interact with each other over internet and can be monitored and controlled remotely. IoT devices has additional sensory devices and communication add-ons and in turn consume extra energy and cause more carbon emission into the environment.

IoT technology has four basic elements
1. Internet: It provide anytime, anywhere communication between everything. It uses clouds to store data and perform various task by invoking various web services.
2. Hardware: It has various embedded hardware such as sensors, tags, actuators and transceivers.
3. Middleware: It facilitate data storage and computing.
4. Presentation: A user interface tools to visualize and interpret for different platforms and application

IoT devices connect through Big Data and Cloud Computing which helps them to recognize the behaviours and even explain actions by analyzing the information captured by smart devices which are available around the emerging smart cities without human interaction.

GREEN IOT
Green Technology is also known as sustainable technology focuses on energy efficiency, safety and recycle, health concerns,renewable resources, and more. It is an improvement in application of equipment and products to save the natural environment and decrease the adverse effect of human activities.

As IoT is expected enormous growth in coming years, we need to think of ways to reduce the need of resources for implementing all network elements and the energy consumed for their operation. With so much of advances in Green technologies and IoT technologies soon we will be surrounded by a massive amount of sensors and devices which will communicate using internet, act intelligently and provide green support for users in managing their tasks. Green communication between people and things will emerge. Power consumption will reduce and bandwidth will be utilized to its maximum.These new devices will call for a new form of green communication between people and things and between things themselves where power consumption is optimized and bandwidth utilization is maximized. The carbon dioxide(CO2) emissions of sensors, devices, applications and services will be reduced.

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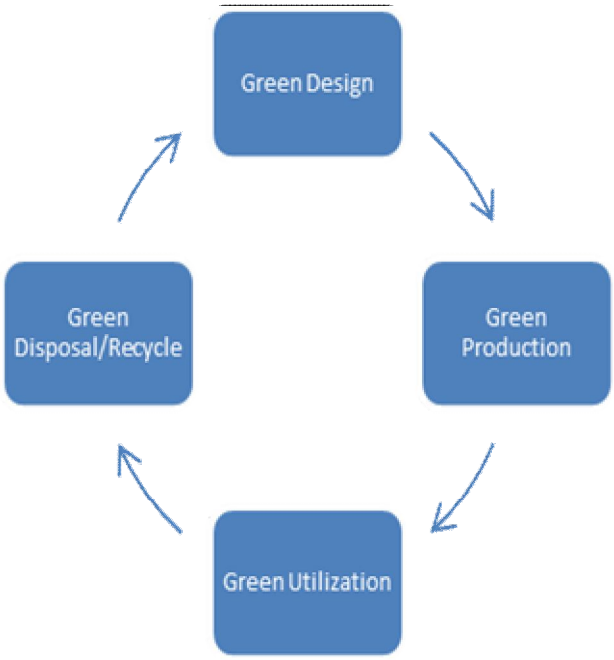
Green IoT Life Cycle

The life cycle of green IoT takes into consideration the green design, green production, green utilization and finally green disposal and recycling to have minimal or no impact on the environment



TECHNOLOGIES OF GREEN IOT

Green Tags

Green Tags include RFID(Radio Frequency Identification). RFID is a small microchip attached to a radio with a unique identifier and a small tag reader. These tag reader are attached to the objects whose information they designed to store. As these RFID are made from non degradable material their disposal adds to e-waste. To build Green RFID we need to reduce the size of RFID which will reduce the amount of non degradable material. These RFID should also use algorithms and protocols that use energy efficiently for tag estimation and avoid collision.

Green Sensing Networks

Green Wireless Sensor Network (WSN) is another key technology of Green IoT. WSN is a collection of numerous sensor nodes with storage capacity and little power consumption. These sensors co-operate with each other in taking readings from the environment and delivering it to the base station. In order to build Green WSN we need to consider the following points.

- Sensors should be made active only when necessary to save energy consumption.
- To charge sensors we need to implement renewable energy.
- Techniques like transmission power control, modulation optimization, and cooperative communication for Radio Optimization should be implemented.
- Implementation of aggregation, adaptive sampling and network coding for data reduction
- Energy efficient routing techniques.

Green Internet Technologies

For green internet technology, hardware and software should be taken into consideration. Hardware with high performance and less energy consumption should be manufactured where as software should offer efficient design. Virtual machine techniques should also be implemented to save power.

SMART CITIES

The concept of smart city varies from city to city and country to country depending on the development level and willingness of the city residents to change and reform. It is an urban area that uses different types of data collecting devices and sensors that supply information to manage the assets and resources of the city efficiently. Officials can oversee the city and communicate directly to the city community and infrastructure. The main aim of smart cities is to improve the quality of living of its citizen through smart technology, trimming resource misuse, generating less garbage and overall costs.

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GREEN IOT FOR SMART CITIES

The smart city market is estimated to be hundreds of billion dollars and there will be extensive use of Green IoT to improve the living of the citizen with minimum resource wastage.

1. Smart Infrastructure

Using Green IoT we can implement intelligent and weather adaptive street lights switch on based on background light. Weather and air quality can be monitored and exact figures can be delivered to the citizen in real time using various sensors spread in the neighbourhood. Manhole monitoring prevent accidents. Sensors detecting leakage can prevent water wastage. Digital monitoring of roads and highways will help display proper warnings and diversions according to the climate conditions or traffic situation and help in avoiding traffic jam and accidents. Garbage collection can be optimized by tagging garbage bins with sensors monitoring the amount and type of garbage in the bins. Sensors can help to water right amount as per the humidity level and can save lot of water. Real time monitoring of parking spaces will help city residents to find parking spot easily. Sensors can be used to identify blockage in drain by sensing its water level. This will also help in early detection of flood for disaster management.

2. Smart buildings

Monitoring of vibrations and material conditions in buildings, bridges and historical monuments helps in identifying any weakness in them thus avoiding accidents. Apart from Implementing biometrics and surveillance cameras we can make use of wireless alarms and remote monitoring to reduce unauthorized access to buildings.

3. Smart Healthcare

Monitoring of patients condition and tracking them in hospitals and in old people's home, by embedding sensors and actuators in patients helps to gather and analyzing patients' body data which can be delivered to a processing center, the clinical care could monitor physiological statuses of patients real-time and make suitable actions when necessary.

4. Smart Energy management

Power suppliers are assisted to control and manage resources so that power can be offered proportionally to the population size. Moreover, the energy consumption of houses and buildings could be enhanced.

CHALLENGES IN IMPLEMENTATION

Despite of tremendous research in the field of Green IoT, it is still in its early stage and faces many challenges

- To build a smart a city requires a huge money. Arranging such huge finance is a challenge for any government.
- Upgrading the existing set up in an effective way requires a substantial amount of time.
- Need of green application to reduce effect on environment.
- Data security requires efficient implementation of security measures such as encryption.
- Devices should be energy efficient.
- protocols used for communication must consume less power.
- Implementation of cloud management efficiently.
- Use of renewable energy

CONCLUSION

This paper sincerely attempts to understand the concept of Green IoT, and technologies that is used to implement this concept. It also tried to understand challenges it faces in implementing it in smart cities. Constant research and invention in the field of Green IoT will help us in implementing it in an effective way, which will definitely bring down the amount of carbon emission and pollution. We will be able to exploit various measures of environmental conversion. Operational cost can be minimised to great extent and consumption of power can be reduced. It will definitely bring significant change in our life.

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MOBILE DATA COLLECTION USING ANDROID OPEN DATA KIT TOOLS

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AB**STRACT**
The use of Information and Communication technology has altered the way we collect, distribute, use and process information for the benefit of the society. Even though this revolution took place larger part of the society has not benefited from this technological progress. Existing data collection tools are very generic in nature.

This paper attempts to demonstrate how to collect 2-D i.e. conventional data and 3-D i.e. locational using ODK (Open Data Kit) an open-source suite of tools. An ODK tries to use the capability of mobile applications to create a framework for efficient data collection and analysis. The data collected from it is uploaded on the aggregate server using ODK Briefcase, analyzed and displayed on Google Earth or Quantum GIS.

Keywords: Android, Open Data Kit (ODK), Data collection

I. INTRODUCTION

The means of data collection and analysis have undergone several changes in the last few years. Paper based modes of information gathering are slowly being replaced with the use of emerging technologies for better, faster and more error-free processes.

It is also growing towards the use of cloud computing due to the lower financial risks involved and the flexibility which it offers. Using traditional means such as paper forms or personal digital assistants for information gathering is not only time consuming but also adds an additional cost to the organization collecting the data. The widespread nature of these tasks makes them economically taxing as well. The distribution, maintenance, ease of use etc. are other factors which need to be handled.

Data collection work is automated using ODK and it is reliable in resource-constrained settings. As it is implemented using open source tools, it lowers the project costs also. It is simple to use and no trained manpower is required. Also, real time geo-coded evidence based data in the form of images, GPS point and text can help in faster decisions, transparency and monitoring of various development projects in cheap and fast manner. The planners and administrators need to be made aware about the advantages of this technology.

APPLICATIONS OF ODK

- Sanitation: The Spanish Red Cross deployed Open Data Kit (ODK) to collect data on sanitation response in Nepal after the earthquake
- FOOD SECURITY WORK: Norman Kwikiriza, a staff member who trains new farmers in Africa, who want to adopt orange-fleshed sweet potato, uses ODK to collect monitoring and survey data using phones and tablets.
- POLIO: A campaign to vaccinate 726,000 children against polio was conducted in Somalia. It is used to provide timely updates on movement progress to make sure that coverage is complete. ODK is being used in many countries as part of their polio scrutiny systems to help fast report on paralysis cases which could be caused by polio, to track vaccination campaigns and more.
- ELECTION MONITORING: Around 2,000 citizen election observers were deployed to observe elections and report their findings using ODK tools.
- RURAL DEVELOPMENT: The ODK interface is also translated to Hindi using online Transiflex platform.
- ROOF TOP RAIN WATER HARVESTING: Use of ODK to find Bore-hole & dug-well locations, how many are being used for RWH, Potential for ground water augmentation.

II. LITERATURE REVIEW

With the rapid growth in the mobile industry, the capability of phones has also tremendously increased. Mobile phones now have built in features to capture media, GPS, share information seamlessly and have enhanced display. Technologies such as Bluetooth, SMS, Wi-Fi and web are well integrated together. There has also been significant increase in the data holding capacity in these devices and their processing powers. Another significant advantage is that competition and the huge market for smart mobiles has rendered these devices more affordable than laptops, computers and tablets.

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Android, being an open source project has inspired various developers to use the API for designing need-based applications. In the field of data surveillance and analysis, various applications such as Pendragon forms [3], Open data kit (ODK) [4], Epicollect [5], eCAALYX [6] have been talked about and explored. Open data kit in particular has exposed a few open source generic tools which can be used either individually or together [7]. This is mentioned more in detail in the framework section. The advantage of open data kit is that the tools are open source and are based on open standard interfaces, which allows us to leverage them for our needs.

Since recent years, the growth of the telecommunications industry has increased considerably. Mobile services are becoming cheaper, as are mobile phones / tablets. A simple mobile phone with Android contains all functions such as a camera, GPS, Internet access, Wi-Fi, writing options, sufficient memory and processing capacity. These mobile sets are cheap and easy to acquire. No specialized training should be provided to the user to operate them. The current practice for projects such as the collection of information on an outbreak of diseases in a region, socioeconomic or census surveys, data collection during a disaster, the creation of inventories of natural resources or the development of government is based on paper and requires a lot of resources such as camera, GPS and stationary.

Also trained manpower is required to collect and process the data. There are several software tools which are being used for data collection, management and processing using a mobile device. Some examples are FrontlineSMS, RapidSMS, GeoChat, EpiSurveyor, SMS Tool Kit, Mobile Researcher, Populi.net, Nokia Data Gathering. This paper demonstrates the Open Data Kit (ODK) for mobile data collection.

Open Data Kit (ODK) [1], a modular, extensible, and open-source suite of tools designed to empower users to build information services for developing regions has been developed. This research Platform (Open Data Kit) is developed by Department of Computer Science & Engineering at the University of Washington. With the help of ODK (Open Data Kit) an open-source suite of tools, data can be collected and sent to a centralized server using internet connected android devices in real time. The information about the ODK toolkit is provided in [2], [3] & [4], also its advantages and features for developing nations are explained with case studies.

The deployment of Interactive Voice Response application (IVR) for collecting feedback (using ODK) from teachers of rural Uganda are discussed in [5].

[6], Describes the implementation, development and evaluation of a mobile device-based system to support health services. ODK has been used in this project.

III. OPEN Data Toolkit

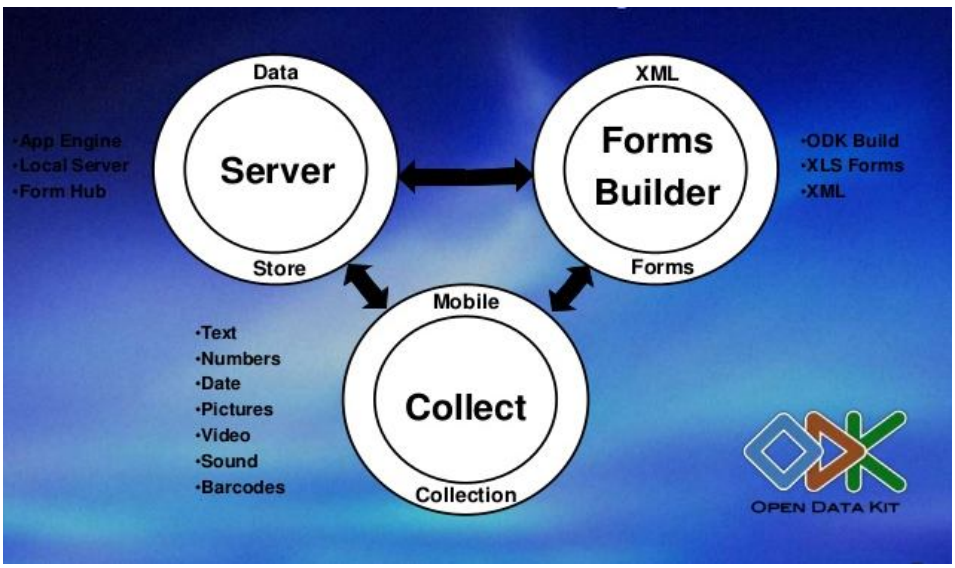

Figure-1: Components of ODK

The various modules of ODK are

ODK Build: A form is being designed with this interface (drag and drop).

ODK Collect: This application is installed on the Android mobile. The forms created in ODK Build are loaded in this module. It has choices to accept 1) Text 2) Numeric 3) Date/Time 4) Time 5) Location 6) Media 7) Barcode 8) Choose One 9) Multiple 10) Metadata 11) Group. It is connected to the centralized server to store the collected data.

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ODK Aggregate: It is a ready-to-deploy server and it is one type of data repository to offer blank forms to ODK collect, accept finalized forms and store the data in the database, visualize the data on maps and charts and export data into several formats. ODK Aggregate can be deployed on Google's App Engine or on the local user's server.

ODK Briefcase: It is a framework to transfer data from ODK Collect and ODK Aggregate.

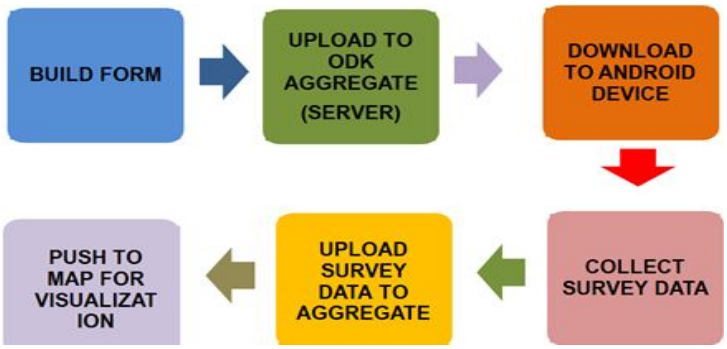

Figure-2: Communication Flow

IV. MODELLING RESEARCH

Steps to Collect, Upload and Represent data

1. Form Design:

Once the fields of the data to be collected is decided, then create a form by logging in at http://build.opendatakit.org (Figure 1). Create an account if already not there.

The survey form has 3 mandatory columns

1. Type
2. Name
3. Label

- The type attribute specifies the type of data entry which you are adding.
- The name attribute specifies the unique variable name for that entry. No two entries can have the same name.
- The label attribute contains the actual text you see in the form.
- To demonstrate this study a form named Friends is designed having following attributes in it.

Data Type	Variable Name	Label
Text	Fname	Responder's First Name
Text	Lname	Responder's Last Name
Choose One	Gender	Responder's Gender
Numeric	Age	Responder's Age
Multiple	Qual	Responder's Qualification
Location	Coordinates	Responder's Location

Table-1: Form Attributes

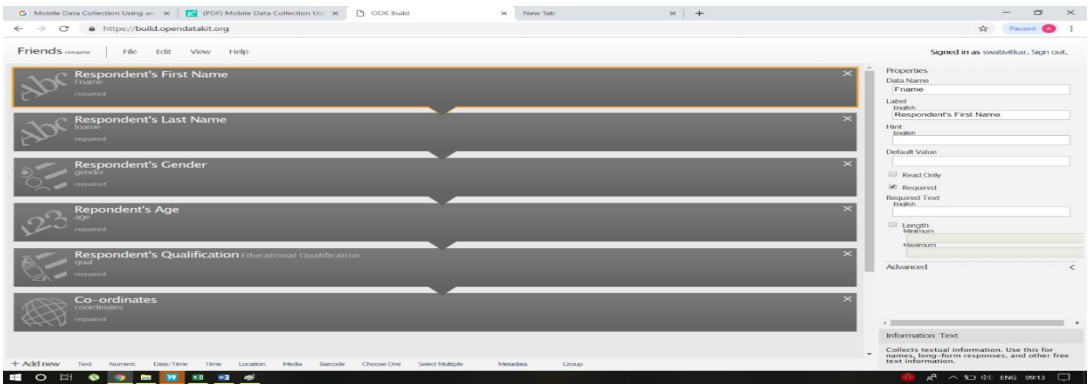

Figure-3: ODK Build User Interface

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2. **Save and Export:** Save the final form and export it in the XML file format.
3. **Copy Form:** Copy the saved xml file in the (/odk/forms folder) mobile device or upload it on the Aggregate server.
4. **Installation of Client Side ODK Collect application**

Download the ODK collect Application (figurers 4) in an Android mobile device having Camera, GPS and GPRS connection. In the settings option, server address is set to the aggregate application. Also, the form can be downloaded from the server if is not been downloaded.

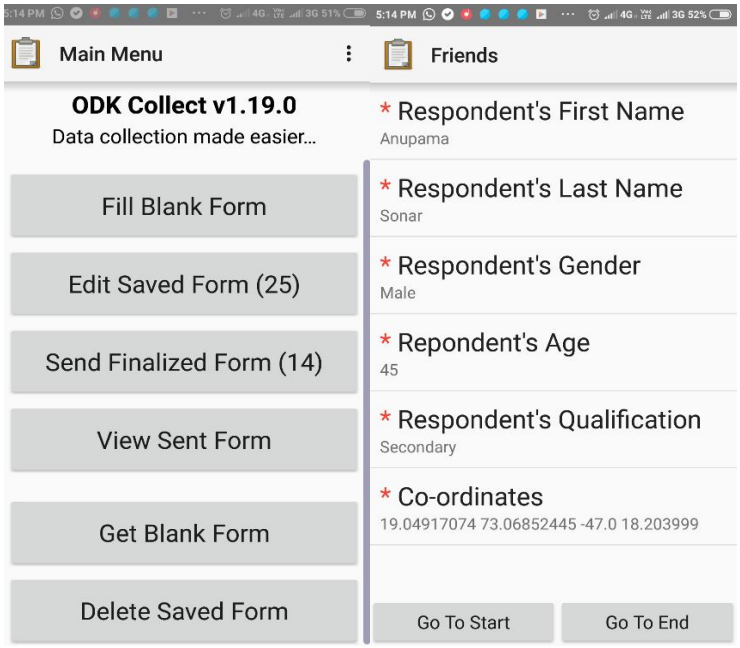

Figure-4: ODK Collect Application

ODK Collect Application have the following options

- Fill blank form and Edit saved forms allow the user to fill the details in the downloaded forms and edit forms respectively. Send finalized can send the final form to the server and save it on the mobile device itself. There are choices to delete and edit the forms. User can save the form at completion or in the middle. This will be stored on the device till the user decides to send it to the server.
- Send finalized form button allows the user to do that. There is a slight difference between saved forms and finalized forms. Finalized forms are indicated by the user while filling the form. They tell the application that the forms are ready to be sent. Saving forms while filling lets the user get back to them when they want but these forms cannot be sent to the server unless the user specifically marks them finalized. Finalized forms can be edited as well. This distinction is necessary to avoid confusion while dealing with multiple forms and avoid flooding the servers with incomplete forms by error.
- Get blank form will allow the user to download forms from the server once they are authorized to access it (i.e. once they are able to login to the server). The forms are stored as xml documents and their corresponding media need to be stored in a folder with the same name with a '-media' appended to the end. This enables the application to download the corresponding media along with the form.
- The last button, delete saved forms, helps clear the devices memory of the unnecessary forms and media.

5. **Save the Form:** Save all the forms collected through ODK Collect.
6. **Copy the instances:** folder from Android Device /ODK/Forms folder to the location where ODK Briefcase is stored.
7. **Pull the data through ODK Briefcase:** Once the form is designed, Data Collected through Android Application ODK Collect, the mobile user will send the filled finalized form through the mobile device without GPRS connectivity. The forms can be filled and stored on the mobile can be sent when there is connectivity or ODK Briefcase application is used to transfer data from Collect to Aggregate. This is Java based application to upload the data on the server hence before downloading ODK Briefcase, JDK Toolkit is required to be downloaded first.

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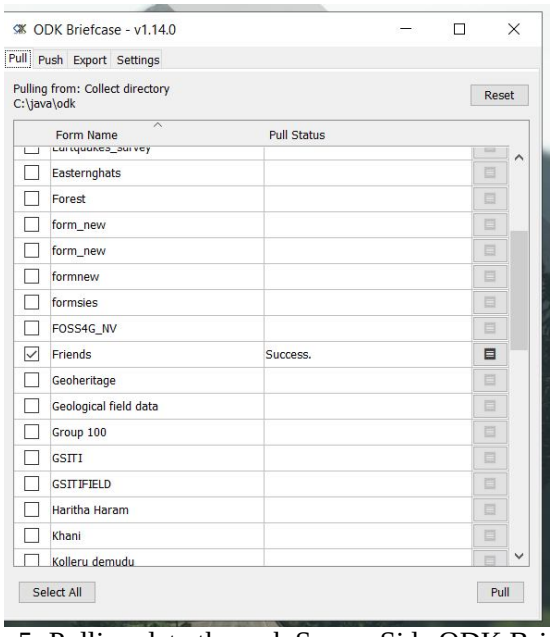


Figure-5: Pulling data through Server Side ODK Briefcase

8. **Data Export:** Export the data pulled through ODK Briefcase in the target directory in .CSV format.

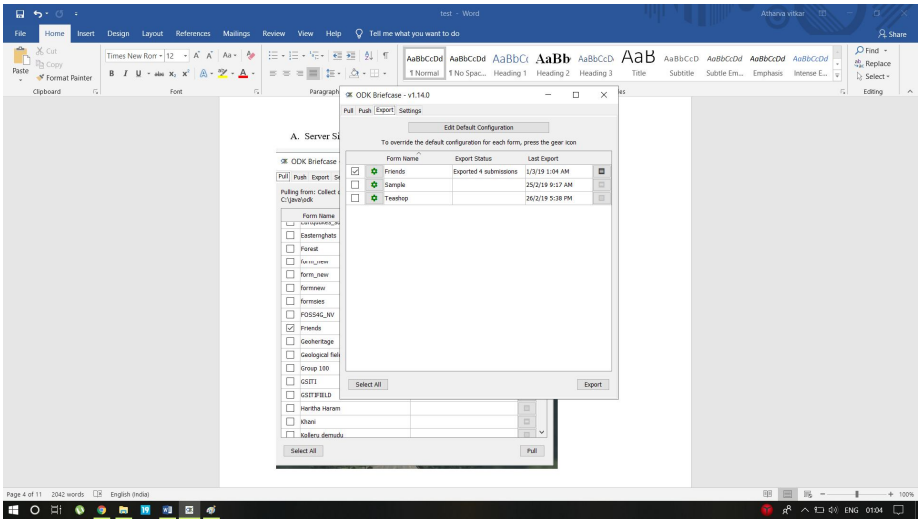
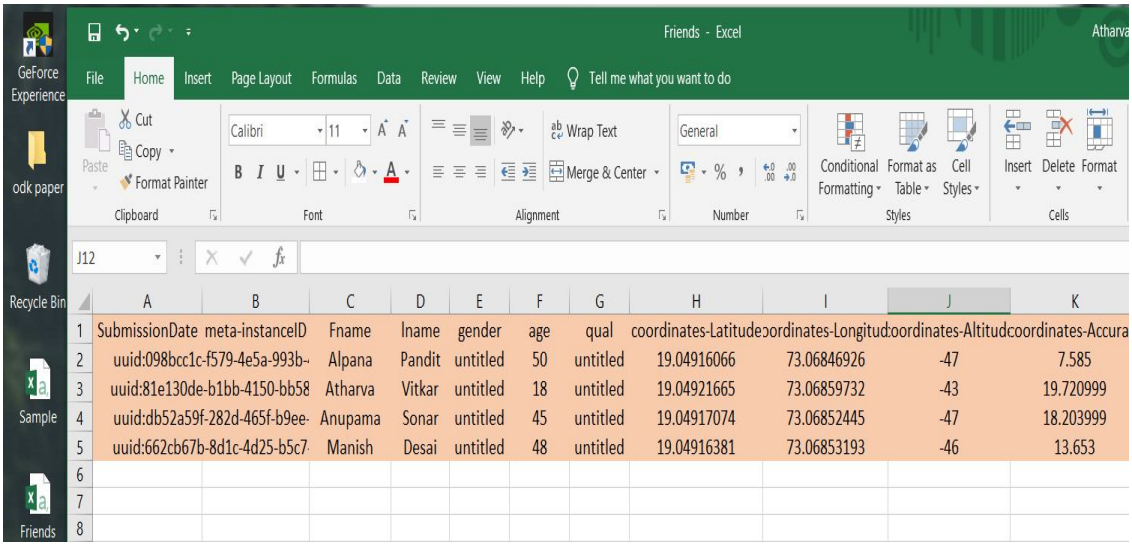


Figure-6: Exporting Data to the Target Directory



	A	B	C	D	E	F	G	H	I	J	K
1	SubmissionDate	meta-instanceID	Fname	lname	gender	age	qual	coordinates-Latitude	coordinates-Longitud	coordinates-Altitud	coordinates-Accura
2		uuid:098bcc1c-f579-4e5a-993b-	Alpana	Pandit	untitled	50	untitled	19.04916066	73.06846926	-47	7.585
3		uuid:81e130de-b1bb-4150-bb58	Atharva	Vitkar	untitled	18	untitled	19.04921665	73.06859732	-43	19.720999
4		uuid:db52a59f-282d-465f-b9ee-	Anupama	Sonar	untitled	45	untitled	19.04917074	73.06852445	-47	18.203999
5		uuid:662cb67b-8d1c-4d25-b5c7	Manish	Desai	untitled	48	untitled	19.04916381	73.06853193	-46	13.653
6											
7											
8											

Figure-8: Contents of .CSV file created after exporting the forms

9. **Data Visualization through QGIS:** Importing .CSV file in QGIS: Open QGIS interface and add layer as Delimited Text Layer – Browse .CSV filename and add it.

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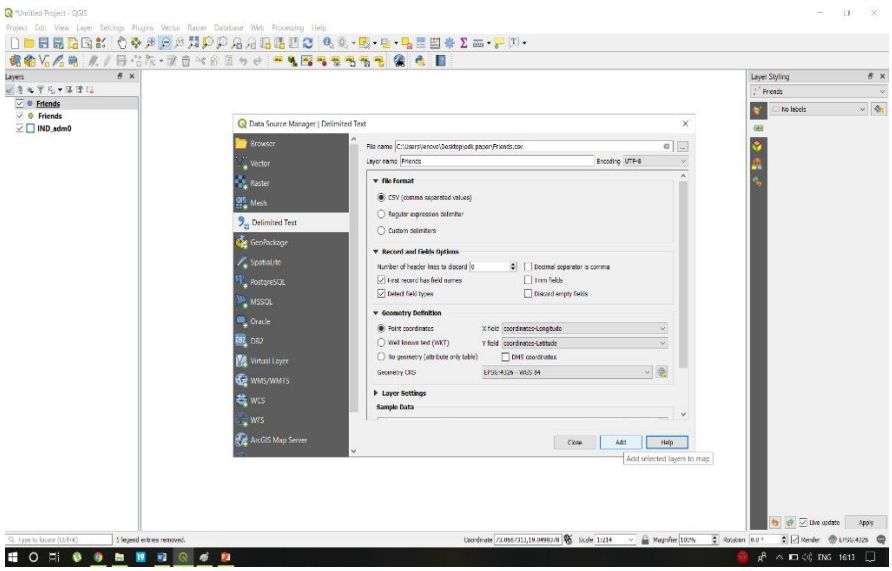

Figure-7: CSV importer interface

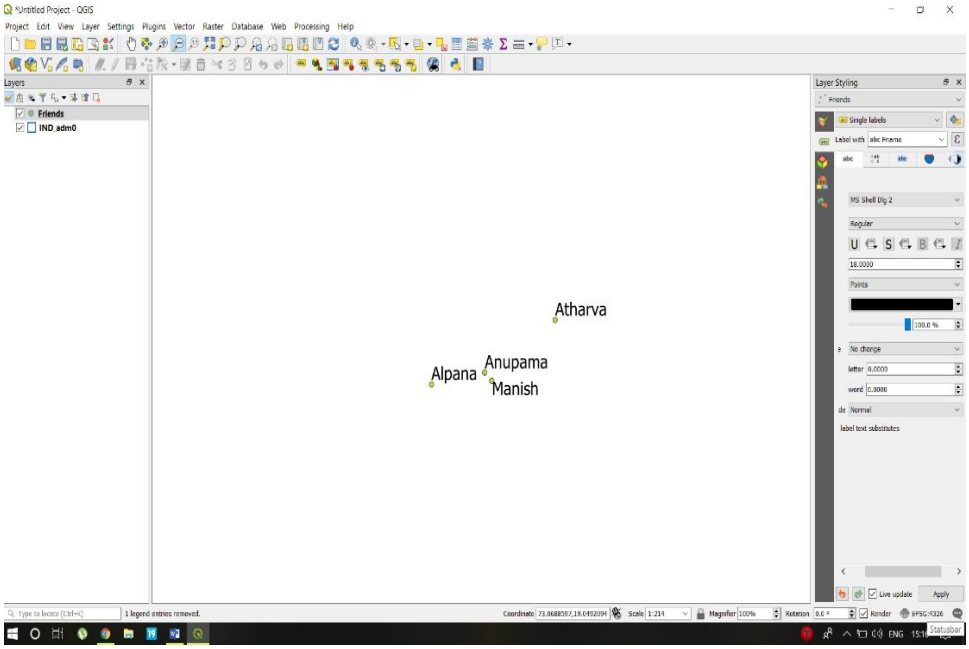

Figure-9: Representation of the actual locations collected through android device on map using QGIS

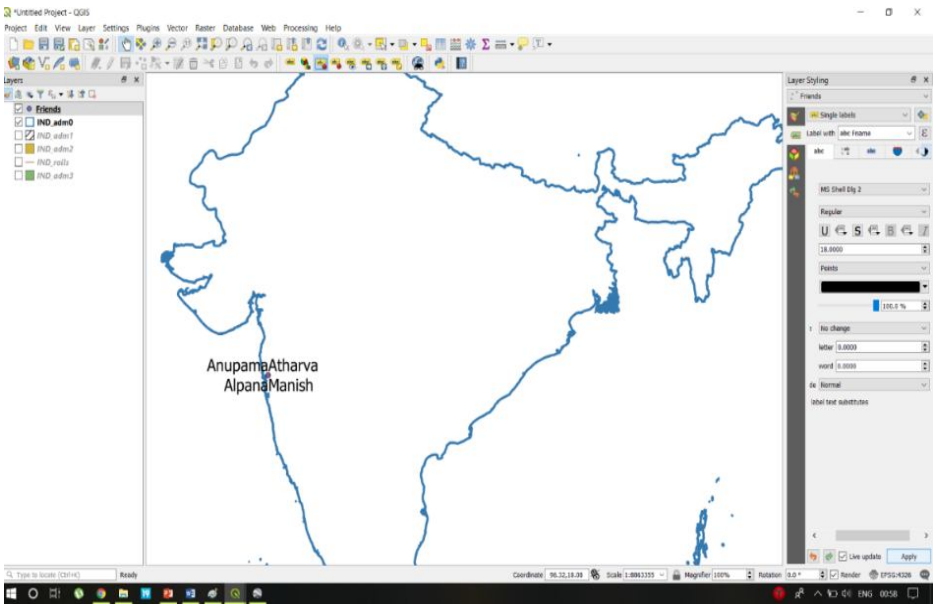

Figure-10: Labelled location points collected on android device with reference to India Map

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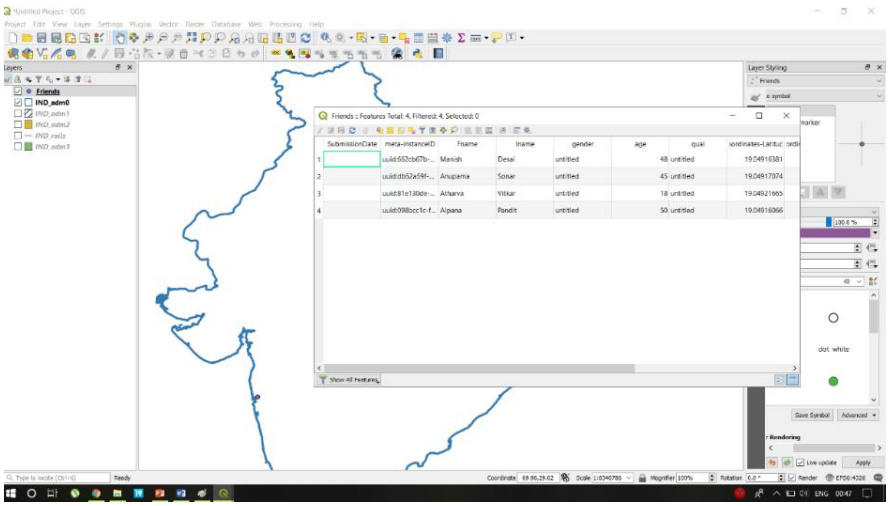

Figure-11: Visualize data in QGIS and Attribute table of the actual data collected

10. Import Data on Google Earth

There is an option available to convert that data to CSV or KML format so that it can be viewed in Google earth if location is available. There are various options to set several permissions and visualize that data in graph form also.

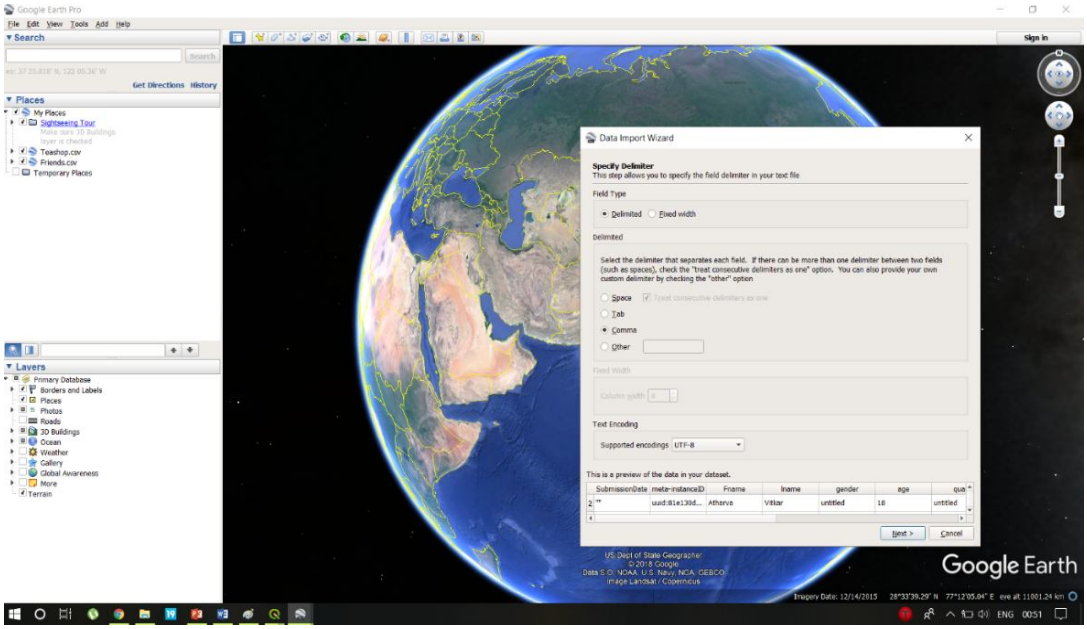

Figure-12: Importing data on Google Earth

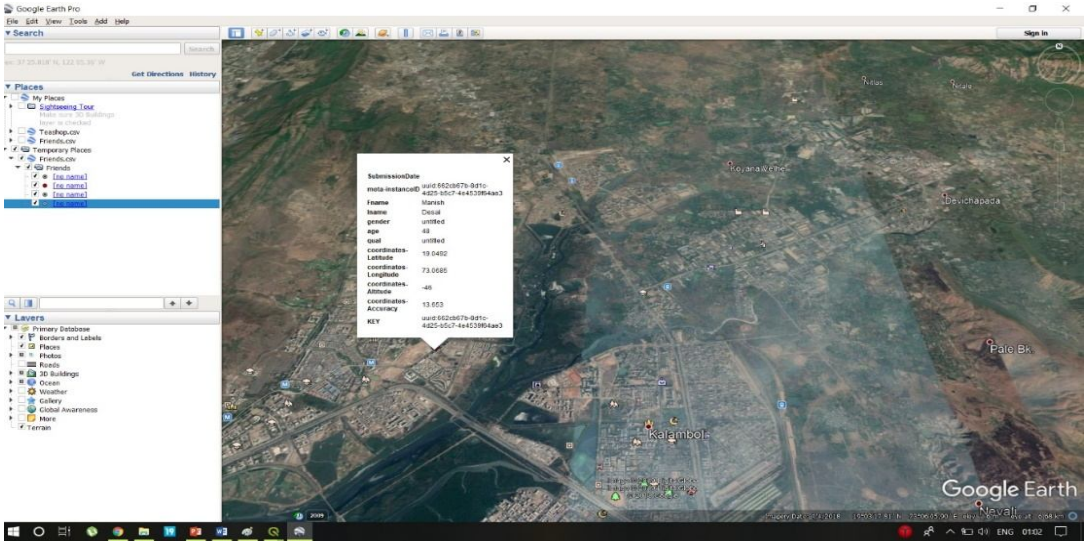

Figure-13: Visualization of the points on Google Earth with its description

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V. CONCLUSION

This is how forms can be built using https://build.opendatakit.org and then it can be shared on an Android mobile device. Then data collection is done using ODK Android App. The best part of using ODK is, it can collect location information of an object. Then these collected instances can be pulled using Java based ODK Briefcase and then exported to .CSV format. That file can be accessible in QGIS and the locational information is visible on the map.

An ODK on the whole tries to use the capability of mobile applications to create a framework for efficient data collection and analysis.

Existing data collection tools are very generic in nature. The data collected from it can be uploaded on the aggregate server, analysed and can be displayed on Google Earth or Quantum GIS, or it can be presented using web-based technologies like open layers, Cascading Style Sheets, etc. using application Server Tomcat Apache and GeoServer.

This case study application can be applied on any type of data collection like nearby places, hospitals, hotels and our own map can be created. Further it can be connected to Open Street Map and can be used for navigation.

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EFFECTIVENESS OF VIRTUAL LEARNING IN HIGHER EDUCATION

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Assistant Professor[2], Department of Banking and Insurance, S. I. A College of Higher Education, Thane

ABSTRACT
Personal computers and the Internet have revolutionized entire world. Facebook, Twitter, YouTube, Skype and other online communications media have allowed billions of people around the world to share ideas in a matter of seconds, mostly at a very low cost. This type of advancement in computer technology are remarkable and very much familiar in word of education. Computer and information technology is transforming the way of students learning. This emerging trend is referred as "Virtual Learning". It has potential to improve Students' knowledge and exposure that too in moderate cost.

This study defines, examines, and measures the effectiveness of a virtual learning program as a part of Higher education to enhance the overall learning experience as well as develop the employability skills among the students.

Keywords: Interaction, Virtual learning, Computer based learning.

OBJECTIVES OF THE STUDY
1. To understand preference of Virtual learning among students.

2. To know up to what extent the Virtual learning is useful for the students.

3. To recognise the various platform available for Virtual learning.

4. To explain Practical implication of Virtual learning.

RESEARCH METHODOLOGY
The researcher has adopted analytical and descriptive methodology. For this report; reliance has been placed on books, journals, newspaper and online database and on the views of the writers in the discipline of Virtual learning and online learning. This paper is based on secondary data for which reference are collected from various sources.

SCOPE OF THE STUDY
1. This will help the higher education institutes understand importance of virtual learning and incorporate the same in the institute.
2. Bridging gap between academic and corporate.
3. Enhance employability skill of the students.
4. Getting insight about the research ideas.

LITERATURE REVIEW
- **Internet-Based Virtual Learning Environs: A Research Context and a Preliminary Assessment of Use in Basic IT Expertise Teaching**
  Internet tools are having an important influence on the academics industry. For-profit administrations and traditional establishments of higher education have developed and are using E-Learning courses, but slight is known about their usefulness equalled to traditional classroom system. Our work emphases on the effectiveness of an internet-based virtual learning environment (VLE) in the context of basic information technology skills training. This article provides three main contributions. First, it introduces and defines the concept of VLE, discussing how a VLE differs from the traditional classroom and differentiating it from the related, but narrower, concept of computer aided instruction (CAI). Second, it presents an outline of VLE helpfulness, grounded in the technology-facilitated learning literature, which frames the VLE research domain, and addresses the association between the main concepts.

- **Virtual learning success: An examination of the process**
  This study describes, scrutinizes, and deals the effectiveness of a commercial virtual learning program. Initially, dissimilarities between traditional and virtual learning and higher education and corporate programs are defined. Then, based on the literature, an integrative model of the apparent efficiency of a virtual learning environment is established and examined. The demographics, insights, and achievement of

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participants in a specialist certification training program funded by a Fortune 50 firm are found to be related to resolve and success in the program, as well as to the value of knowledge transmission. Conclusions and references for future study are offered.

INTRODUCTION

Virtual learning is combination of software and internet to deliver knowledge to students. This minimizes the need of teachers and students to be present or share classroom physically. Virtual learning include the advancement of e-mail, online forums to help teachers and students betterment. Sometimes it aware parents also how students are doing in there academics. With all the advancement; virtual learning can't replace teacher but can be aid for them.

DIFFERENT TYPES OF VIRTUAL LEARNING

- **Device Based**
  In virtual learning instructions are not provided directly by teachers; instead medium is different software which is installed on different devices such as P.C., Laptop, Tablet, Mobile, Kindle etc. These softwares can be customize as and when updating is required.
- **Internet Based**
  This medium is similar to Device based but difference is that, in internet based virtual learning instructions and material is uploaded on server and through internet it is delivered to user or student.
- **Remote Accessibility**
  In this mode teacher is present with the students but virtually. It means teachers interact with students via internet such as online live sessions, online forums, e-mails and instant chatting.
- **Blended Learning**
  This combines traditional method directed by teacher and computer and internet based remote learning. So this is combination of traditional and any one of above mentioned online method. Now a days it is more common method in higher education.
- **Assisted Virtual Learning:**
  In this the felicitator assist the students learning process by providing remote tutorial or communication. Here the felicitator may physically present in the form of electronic medium.

Similar types of virtual learning can be grouped into broader categories such as

- **Face-to-face Online Learning:**
  In this type of learning form of instruction takes place over the internet but remote physical interaction is there. In this types virtual class rooms are there but it will run on fix time.
- **Recorded and occasional interaction:**
  This type of learning online learning is there but regular face-to-face interaction or felicitation is not present. It is basically internet based and remote online learning platform.

INTERGRATING VIRTUAL LEARNING IN HIGHER EDUCATION

All academicians can visualize learning environment outside the class which can be ideal for their growth and development. For example: as a marketing professor one can spend time in a large packaged goods company for evaluation for a new product but it is not possible for 70+ students to travel too far on company's location or to expect company to accommodate them for demonstration. The certainty of these ideal learning backgrounds is most often extracted unrealistic due to charge, time structure or hazard. For this solution is to generate virtual learning environment for the above case.

"POSSIBILITIES IN VIRTUAL LEARNING" AN IMAGINATION

1. **Virtual Environment Science**
   Virtual learning environment may allow a student to do experiments which is not possible due to physical limitation. For example, a Geology student could monitor equipment on an erupting volcano, a Biology student could study a population of animals in their natural habitat, and a Psychology student can understand a clinical dilemma or an Information Technology student can work on electronic related fields.
2. **Virtual Environment Arts**
   Virtual environment is not limited to science only but it may be implement in arts fields also. For example, a History student could negotiate the Treaty of Versailles, an English student could work as an editor for a Victorian magazine, a Social Science student can study poverty issues which may lead to design government economy programs.

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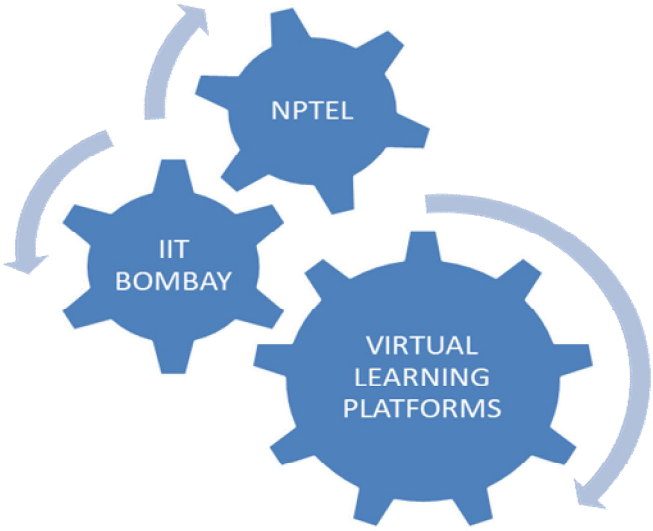
INTEGRATING VIRTUAL LEARNING IN 'THE S.I.A COLLEGE OF HIGHER EDUCATION, DOMBIVLI'

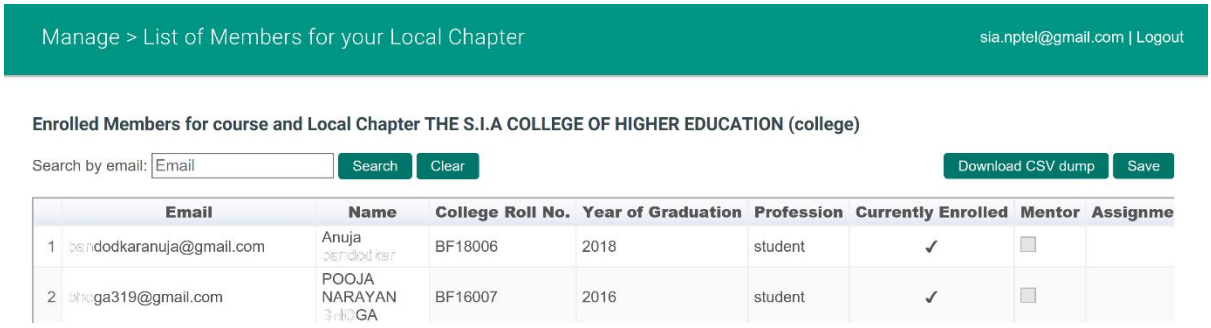
The S.I.A college of higher education has taken initiative to introduce virtual learning for the students of higher education. Two virtual learning platforms were introduced. The main objective behind introducing this platform was to blend virtual learning in higher education with integration to curriculum and also giving extra knowledge to the students.

Under this platform various interdisciplinary courses were introduced for the students of all the courses. This courses has helped the student to aquire in-depth knowledge about the curriculum related subjects as well as Impart practical knowledge which can be useful for them in order to fit in corporate world.

Apart from this it will also help the students to explore various interdisciplinary areas and get the expertise.



Outcome can be seen in the form of registrations in NPTEL programs and completed certificate course of IIT Bombay



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SUGGESTIONS

- Motivate the use of virtual worlds to support experiential learning, where real world experiential learning is difficult to achieve due to barriers of time, cost and place.
- Identification of difficulties and challenges in the educational use of virtual worlds. These may be overcome through future work or help identify where the use of virtual worlds is not appropriate.
- Identification of where the current development or research focus is: pedagogy, collaboration, enquiry□based learning and identity, etc.

CONCLUSION

Through this study it is found that students are getting acquainted with new virtual learning platforms. It had also helped to create the concept of self-learning among the students in the absence of facilitator physically. The study has also found that students are ready to adopt higher level learning. As Virtual learning is based on Audio-Visual concept so it makes the learning effective.

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INCREASING USAGE OF MOBILE CLOUD STORAGE WITH THE GROWING POPULATION OF SMART PHONE USERS

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ABSTRACT
With the launch of android Operating system for mobile phones, the era of smartphone originated. With the tremendous growth in smartphone technology and easily available internet services, the number of smartphone user increased rapidly. With this, various software developers have started developing application for smartphone. Due to this data has started growing exponentially and therefore storage space has fall shorten. This gave rise to the invention of mobile cloud storage. Mobile cloud is ad-hoc infrastructure based on smartphone devices laptops, tablets and all the devices connected to internet. Mobile cloud storage can term as infrastructure where Data is processed outside a mobile device. This paper is a study of how the concept of mobile cloud got importance and how it is growing with the increasing number of smart phone users. This paper also covers the concept, architecture and services of cloud computing and focuses its advantages over business organizations.

Keywords: Cloud Computing, Mobile computing, PaaS, SaaS, IaaS.

II. INTRODUCTION
With the increase in Information Technology the lives of people has changed gradually. It gave rise to many types of mobile devises such as laptops, tablets smartphones etc. With easily and cheaply available internet services form network provides, Smartphones have become a un-separable part of today's life. According to *statistia.com,* today 2.8 billion of world's population is using smartphone technology and it's also increasing daily [3] and therefore the use of Mobile cloud also increased. In Mobile cloud computing (MCC) environment, cloud based services are offer to smartphone users and the data of the users are stored on mobile cloud. Not only data, mobile cloud computing is also used to process the applications in centralized working environment. Mobile cloud storage concept is a powerful resource and has proved capable to serve a large number of smartphones or other mobile devises anywhere, anything with the support of Internet. MCC is also enhanced security of data by storing the data on cloud which reduces the risk of device crashing and data stealing. With the use of Mobile cloud computing, the load of the running applications is taken by cloud storage instead of local machine (computer).Some organizations prefer cloud storage service of third party instead of they being setup their own infrastructure for cloud storage. Mobile applications are widely used for shopping, payment, banking etc. These apps sometimes undergoes with few issues like limited storage space security of data, low bandwidth, and processing power hence is not widely used for business perspective. Mobile Cloud computing technology provides much larger storage capacity, more security, speed, fast computation, and on demand access to all this services [4].

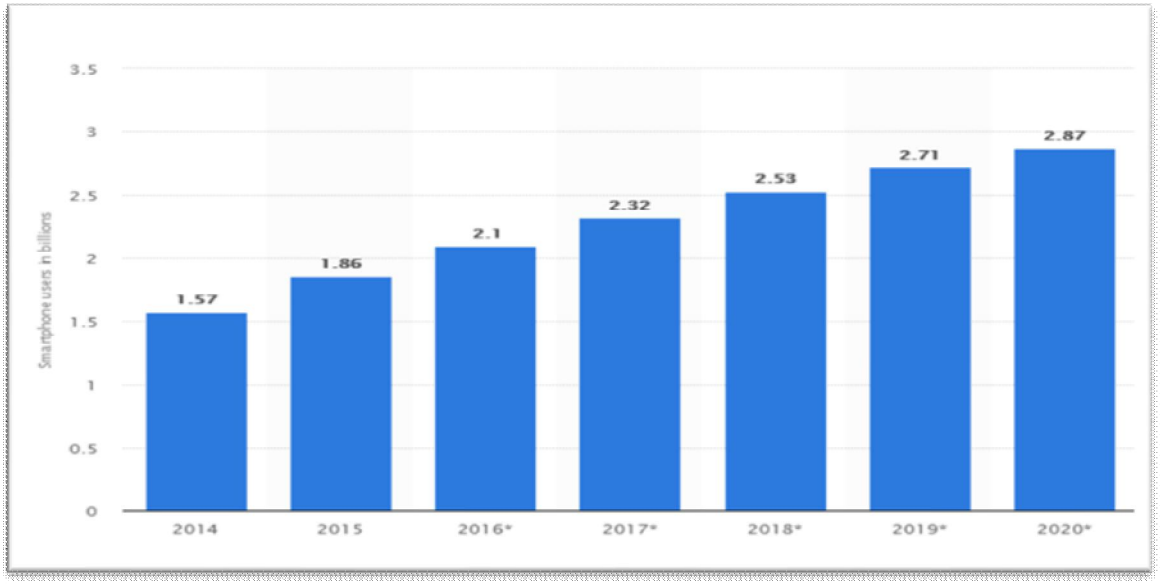

Fig-A Statistic of Smartphone users over years, www.statistia.com

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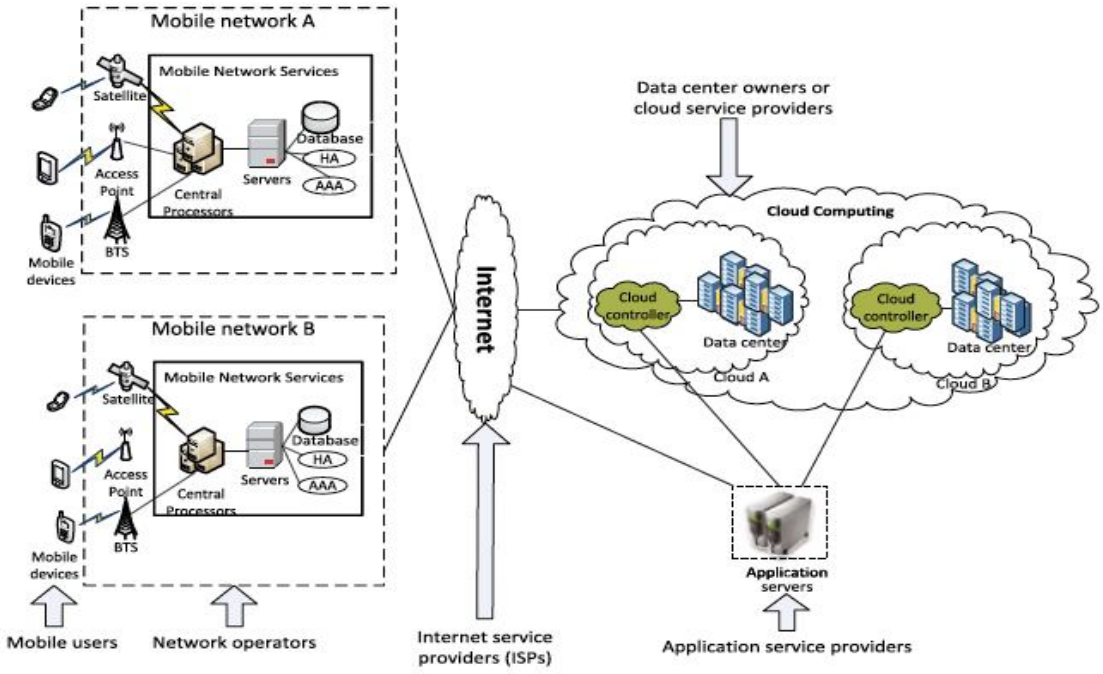
Fig-B: Growth of mobile cloud applications, www.appypie.com

Figure A & B shows graphical representation of number of smartphone users and growth in the used of mobile cloud application. Comparison between both the graphical analyses, illustrated that the growth in smartphone devices has incredibly increased over the number of year due to various applications that makes the todays life convenient, and therefore, to store data and applications there is an increasing need of Mobile cloud storage.

III. MOBILE CLOUD ARCHITECTURE



Mobile cloud computing is a grouping of three main parts that are , mobile devices (smartphone, laptops, etc) , internet & cloud computing technologies. The services which are provided by mobile cloud computing are data storage, processing, configurations of speed, memory etc[4].The base station established a connection between Mobile devices and network(internet).The base station controls the connection and operation which takes place in-between mobile devices and Mobile networks. When a mobile device users request for a service then information is transmitted to processors which are connected to server which provides network services. In Mobile cloud environment, the mobile cloud controller serves the request of Mobile device users by using cloud services.

IV. MOBILE CLOUD COMPUTING MODELS

A. Service Model Offered by MCC

i. Software as a Service (SaaS)

SaaS is an environment in which the cloud consumers upload their applications ,called as host architecture. Various clients access these application from the host architecture through network(Internet**).**In SaaS architecture applications are organized in a single logical environment to achieve optimization of speed, to increase security, availability of software, backup and fast recovery etc.

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ii. Platform as a Service (PaaS)
PaaS is termed as a development platform which allows the cloud users to develop their own

Services or applications without building the infrastructure associated with it. It serves a

platform that hosts developed as well as in-progress applications.

iii. Infrastructure as a Service (IaaS)
It is a platform where Cloud consumers directly use IT infrastructures provided in the IaaS cloud with includes storage, networks and other computing resources. Virtualization is widely used in IaaS, it aims to provide virtualized resources to its users in order to integrate physical resources into a logical unit, so that the never-ending demand of cloud consumers can be fulfilled.

B. Deployment model Offered by MCC
i. Public cloud storage
Public clouds are hosted by third party known as cloud service providers. Once can take the subscription of the cloud storage from the cloud service provider and can store his own data or application. The cloud service provider are responsible for managing and maintaining the infrastructure need by the cloud computing. Microsoft Azure is one of the example of a public cloud.

ii. Private cloud storage
A private cloud is owned by a single organization and is exclusively used for their business purpose. Private cloud is managed and maintained by its owner. It can be located on organization's data centers site who owns the private cloud.

iii. Hybrid cloud
Hybrid clouds combine the functionalities of public as well as private clouds. That is ,it is bound together by technology that allows data and applications to be shared between them. It also allowing data and applications to move between private cloud storage and public clouds storage and therefore it gives more flexibility and deployment options to a business. In a virtualized hybrid cloud environment, there are lots of small chunks to be managed individually *or else resources will not be optimized effectively.*

iv. Community Cloud
It is a multi- tenant cloud service model that is shared between many organizations. And it is governed and managed by all participating organization that are part of community cloud. With the community cloud the cost of deployment and access are spread across all the users.

V. NECCESSITY OF MOBILE CLOUD IN TERMS OF SMARTPHONE DEVICES.

i. Smartphone devices supports various types of applications and software's, these applications are easily available as smartphones are connected to cloud. Mobile cloud computing helps to deliver these applications to a particular mobile device. Further, with Mobile cloud storage all these applications can run on smartphone devices.

ii. Mobile cloud storage provides a storage space for applications and data in turn increases the storage capacity of a smartphone device. With Mobile cloud, smartphone user can use software and applications remotely on server with greater speed flexibility

iii. As there are number of applications running on a single smartphone device, there can be necessity to share or transfer data between two applications of a particular user. *For Example*, suppose a smartphone user a orders food on *Swiggy* and the payment is done using *PAYTM*, then here Mobile cloud plays an essential role in transferring of data between the application.

iv. Up-gradation of operating system or applications of smartphone takes place automatically and easily whenever it rolls out provided smartphone devices are connected to Internet

VI. BENEFITS OF MOBILE CLOUD STORAGE

B. Benefits of Mobile cloud storage to smartphone users
i. Flexibility
Due to Mobile cloud storage, users can retrieve their data from the cloud anytime, anywhere on any device provided that they are connected to internet.

ii. Multiple platform support
Users can download any software which are stored on cloud regardless of the underlying architecture of their device.

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iii. Data Backup & Recovery
Users can store their data of their smartphone on mobile cloud and in terms of device crash, users can recover the data by retrieving it from Mobile cloud.

iv. Real time data
Due to Mobile cloud computing, the users can get real time data as data is managed externally.

v. Security –
Mobile cloud is one of the most reliable technology to take the backup of the data as it is very secure.

C. Benefits of Mobile Cloud Storage to Cloud service providers.
ii. Supports Rapid Up-gradations of Applications –
As software companies are tremendously growing, new applications and version of existing applications emerging every minute. This new version can be easily uploaded on cloud which can be easily downloaded and used by smartphone users.

iii. Cost Efficient –
Mobile cloud computing bears the minimum cost of hardware, maintenance and up gradations. There are no charges for the up gradations and licensing of Mobile cloud computing.

VII. CLOUD-BASED SMART PHONE APPLICATION

Now a days there are any applications cloud-based application available for smartphones which are used by the users of smartphone devices to enhance the performance of their devise or for taking backup of their data over a safe, secure & flexible environment (cloud). Few applications are listed as below,

1. Goggle Drive: This is one of the popular and most used cloud platform. It is a great file storage d platform where user can save and edit documents,file whenever needed and also can share and backup their files. It supports up to 5 GB plus free data storage
2. Dropbox: Dropbox is another popular cloud storage. It is used to sync files from different devices. Dropbox provide free storage of about 2 GB.
3. Box: Box is an OpenCloud storage. It supports e-signing and wireless streaming of the data stored in cloud. It supports storage of free data of about 5GB.
4. IDriveSync: This mobile application can access your files anywhere .It is like sharing file application. IT is used to share and sync the data of social site to a particular application of website. It supports free storage of about 10GB to 15GB.
5. SugerSync: It acts like a intermediate between cloud storage and mobile application. The Pictures or videos taken by a smartphone gets directly save on cloud. It supports frees storage of about 5 GB.

VIII. CONCLUSION

Mobile cloud storage facilitates the mobile user to enrich their device functionalities by enable data sharing, data and application storing, Data transferring and sharing between the application etc. Use of Mobile cloud computing will further increase in future since number of smartphone users is rapidly increasing as well as software companies are rapidly developing application such as m-commerce, m-leaning, m-cash, m-banking. Many numbers of users are constantly using these applications as they find it convenient to get connected. Mobile cloud computing itself supports many of this application to share and communicate users data within the application. This paper is mainly about the importance of mobile cloud storage with respect to smartphone devices.

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UP-AND-COMING TECHNOLOGIES IN TRANSPORTATION SECURITY AND NAVY MANAGEMENT USING GIS AND GPS TECHNIQUE

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ABSTRACT
In the last few decades, our nation is such wonderful progress that many companies have established strong here. These companies carry a great amount of work with them. Providing transportation to such a large group is a difficult task involving much subtlety with it. Usually, this type of transport is through the local transporter-seller on a yearly contract basis; recently accidents happen, such as theft, rapes, etc. The development of satellite transportation technology makes it easy to identify locations. Vehicle tracking systems bring this machinery into the everyday life of the common person. Today GPS is used in engines, ambulances, police vehicles and fleets were common sights on the streets of urban countries.

1. INTRODUCTION

Transportation Information System is the system in which user gets the information about the particular bus in which user wants to travel. Transportation Information System may help to develop a public transport bus routing and scheduling for public transport. It would be help to design shortest and fastest public transport and also allocate bus stops, which would be help them in selecting the pick-up stops for the users, according to their convenience in the areas. TIS should not only be useful in the city but also in rural areas TIS propose the development of the *bus (star bus), this system uses GPS, GSM, and SMS technologies. It is a fully integrated system so that this could be applied to all vehicles then it is easy to control and manage vehicles at any time. Accidents could be avoided by controlling the speed of the vehicle.

The use of GSM and GPS technologies [3] allows the system to track objects and provides current information about current travel. If an SMS password is sent by the owner, it would automatically be stop the vehicle or we may use it for several other jobs, it would be provide real-time control. This system finds its application in the monitoring of traffic in real time. It was used as a valuable tool for travelers in real time. The current system may be able to processed monitoring from anywhere. The purpose of the system is to develop and integrate a new system [4].

GPS-GSM to provide the properties:

A) Location information,

B) Real-time tracking via SMS,

C) The web-pilot activity,

D) Communication takes place immediately which was quickly get a current report.

Different types of applications were used in TIS:

- Transportation vehicle tracking and information.
- Vehicle Automatic and control via server
- Military: Monitor Troop Movement
- Search and Rescue
- Weather Balloon Tracking
- Real- time SMS-based status of Transportation.

2. AIM & OBJECTIVES

The objective of the work is to build a GIS-based Public Transport Information System. The GIS-based public Transport Information System would include the following services.

a) Bus stop allocation.

b) Fastest and Shortest route for the buses.

c) Automatic Vehicle Location.

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In addition, this job aims to study how a public Transport Information System may increase the transportation safety.

Recent transport systems track vehicles using GPS or GPRS technology services. This system compresses the development of a hardware device containing a GSM modem and a GPS unit; this device would be installed in a bus and used to track its location. This box is connected to a central server and communicates via mobile digital communications i.e. SMS.

Nowadays there were many types of wireless access networks available including the vehicular ad hoc network (VANET). There are many features offered like immediate, high-availability, and high-bandwidth. Vehicular ad hoc network (VANET) plays an important role in communication in the future in Intelligent Transport System (ITS).

3. PROPOSED METHODOLOGY

In our work, we have used PIC as a microcontroller, which is used for connection to different peripherals. The existing project is an embedded application that endlessly monitors a running automobile and reports the status of the vehicle on demand. For this, the arduino is linked in series to a GSM modem and SIM908 GPS receiver. The GPS receiver continuously produces data. A GSM modem is used to send the location of the vehicle from a remote area. The GPS modem has many parameters as output. The data is sent to the cellular phone of the user who requested the location of the vehicle; it also stores the data in the database for future use.

GPS tracking device is a device that uses the Global Positioning System to determine the exact position of a vehicle or other assets to which it is connected. A GPS receiver is operated by a user on Earth, it measures the time it is taken from the radio signals to travel from four or more satellites to your site, then calculates the distance from each satellite and determines from this calculation, the length, and the height of that position. Using triangulation or trilateration method the tracking system determines the location of the vehicle with ease and precision [2]. Trilateration is a method for determining the relative positions of objects using the geometry of the triangles. For "triangular" measurements of a GPS receiver accurately the time it takes for the satellite to make its short journey to Earth (less than a tenth of a second) and measured according to its distance to the satellite via the time of Radio signal travel. In order to determine the distance between it and the satellite, the measured time is multiplied by the speed of a radio wave, which is [1] 300,000 km (186,000 miles) per second. The latitude and longitude coordinates with the user, the request would be sent via SMS, or would be transmitted and stored in the database using a cellular or satellite modem that is installed in the GSM modem device. This enables the user to display the asset's location on the Google map either in real time or later whenever the user wants the data for further analysis.

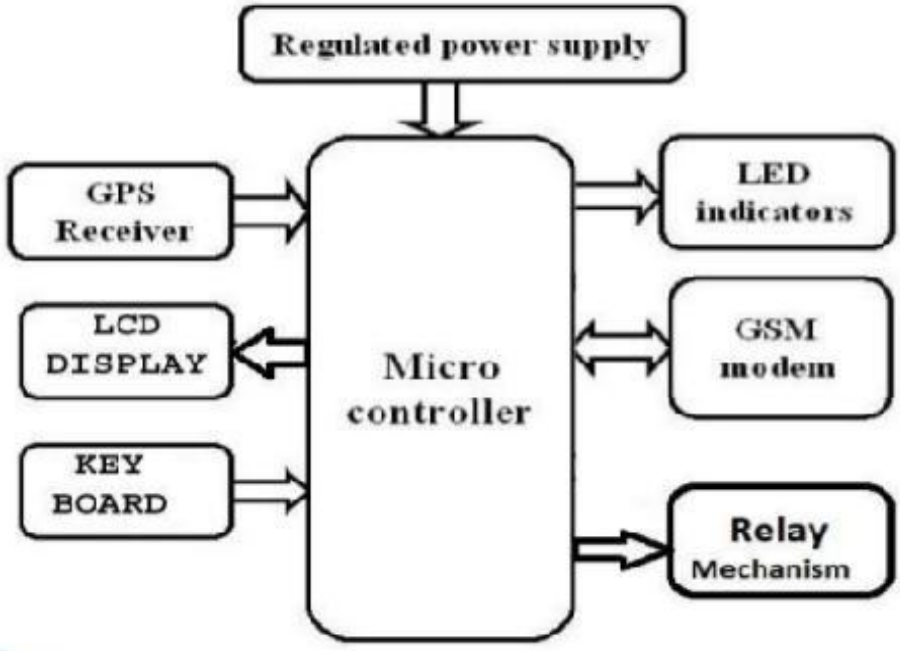

Fig-1: Block Diagram

Locations (latitude and longitude) were formatted with DDMM.MMMM [What Degrees and decimal minutes]. The software protocol consists of GPS Global Positioning System (Data Fixed) and GLL (current latitude / longitude position) but in this system, used only CGA. The flow diagram of the system is given as follows:

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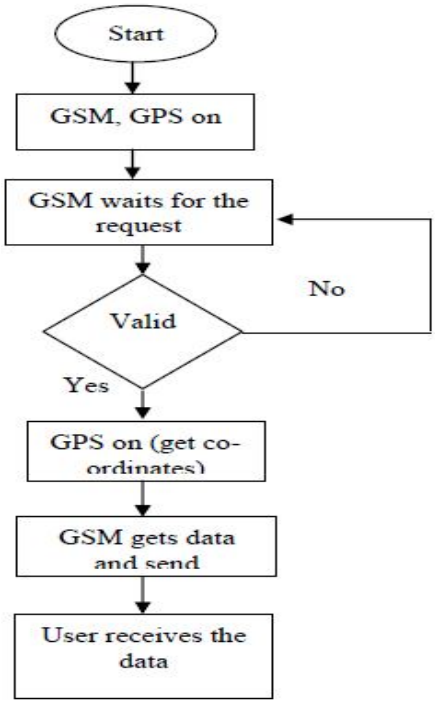

Fig-2: Program flow chart of the tracking system

4. LITERATURE REVIEW

Bus arrival time is main information for most of the city's passenger transportation. About Long wait at the bus stops, often it discourages travellers and makes them unwilling to take buses. If the context is effectively collected and used to estimate the bus travelling route and predict the time of arrival of buses at bus stops. The proposed system is based solely on the Community effort of the participants and is independent of the bus operation company, so it should be easily adopted to support universal bus service systems without the support of certain companies. Instead of referring to GPS-enabled location information, writer resort to more usually available and energy efficient sensing resources, including cell tower signals, movement statuses, audio recordings, etc. Such as cell phone tower signals, motion states, audio recordings, etc. That cause less voltage participation and encouraging their participation. Hence developed a prototype system with different Android based mobile phones, telephones and comprehensive experience with NTU campus buses and public buses Singapore over 7 weeks period. The results of the evaluation indicate that the proposed system achieves excellent prediction accuracy over the bus Operators and solutions supported by GPS. We have taken over our system and made rapid trials experiments with buses from London by system for 4 days, suggesting that the simple use of our system and promising performance in cities. Simultaneously time to propose solution is generally available and energy friendly [2].

5. FUTURE SCOPE

If the car is stolen, it is difficult to keep it with this design; we were able to control the stolen car. This helps us to monitor the vehicle completely [7]. There were several power control techniques and algorithms existing, but use compression algorithm and routing algorithm to cut the transmission power as less as possible to make higher packet reception rate.

6. TERMINOLOGIES

1) Latitude and longitude

Spherical geometry is the geometry of the two-dimensional surface of a sphere.Together, the angle comprising the system that was located or identify the current position on the planet coordinates. The latitude is defined relative to the equatorial reference, the value is positive when it is moving north, and is negative for the south. Longitude is measured in relation to the main meridian and is negative for the east and west positive

2) Routing

Forwarding means that a compass sensor is used to calculate the angle between the current direction of the moving vehicle and the magnetic north.

3) Tracking

Tracking allows the base station to control the vehicle continuously, without any interference from the driver, or the method for collecting continuously the coordinates of the moving vehicle, coming from the GPS receiver.

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4) Vehicle Disabling

Vehicle would only be deactivated by. The SMS from the GSM modem of the GSM modem owner, who is in the car it form that is generated in Visual Basic on the computer, is connected to GSM. If the message is sent to disable the vehicle, the vehicle would be deactivated. This feature is not present in any vehicle safety system.

7. TECHNOLOGIES

Software – vb.net application software

- Client
- Sever
- Android

Hardware

- Embedded technologies
- Control systems
- Sensor
- Vehicle real-time model
- GSM modem
- GPS receiver

Wireless technologies

- GPS
- GSM
- WI-FI

Communication protocol

- UART
- AT –Command

8. CONCLUSIONS

In this research, we proposed an energy efficient multipath routing protocol for WSN. This procedure is designed to reduce the routing overhead, improve the latency and packet delivery ratio and through discovering several paths from the source to the destination. It has a go downwards initiated path Discovery process with the location information of the source known to the sink.

9. ACKNOWLEDGMENTS

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BLOCKCHAIN - A TECHNOLOGY BEYOND BITCOIN

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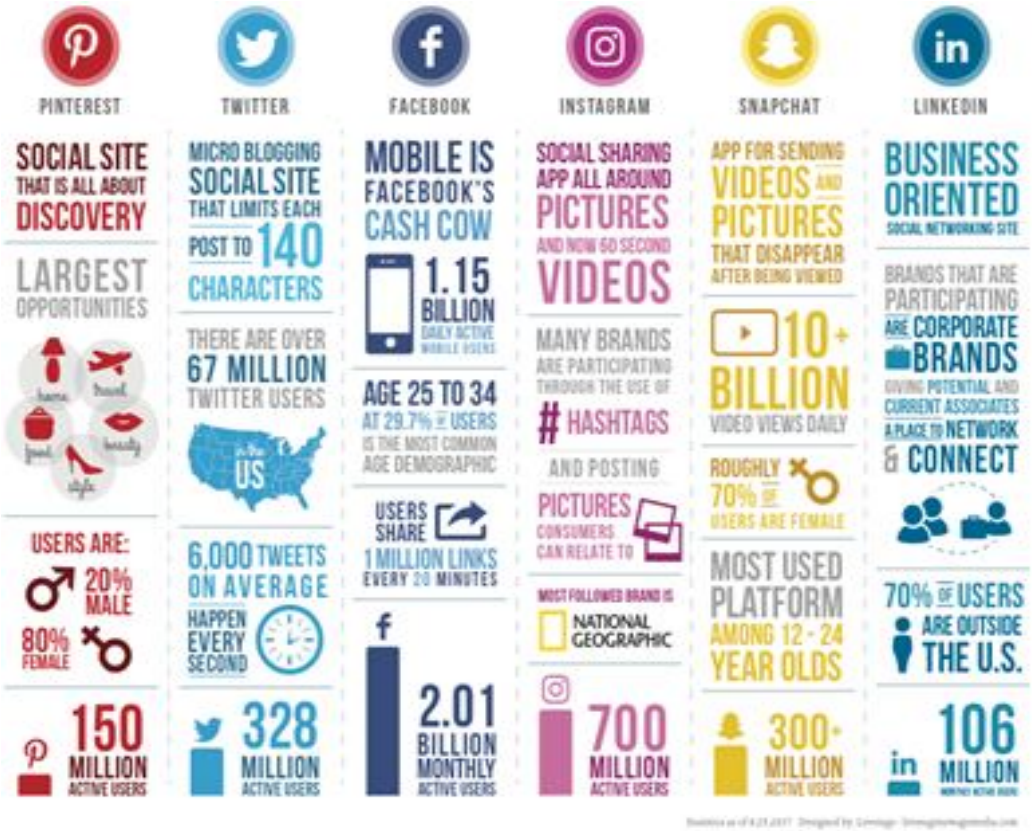
ABSTRACT
The transition of Internet since its birth. How it would change in the near future? Blockchain is not about only bitcoin its beyond the imagination where it can be used to change the way we consume different services via the Internet. This technology would improve the way the users interact and the data would be immutable and non hackable. For example: A music listening platform in blockchain can help the data owner own his/her data and make profit without sharing the profit with an intermediate service provider or centralized service.

Keywords: Decentralization, Blockchain, Web 3.0, Ethereum

1. EVOLUTION OF WEB FROM 1.0 TO 3.0

World Wide Web has been the primary and significant tool used by billions of people to share, read and write information to interact with other people via internet. Evolution of web happened from 1.0 to 2.0 and to Web 3.0. Web 1.0 marked the birth of Internet to user interactive web 2.0 and now it is emerging towards web 3.0 (Decentralized way of storing data in hash linked list data structure).



1.1 Web 1.0 : World Wide Web was just a set of static web pages with a load of information and non interactive information. Just like the wikipedia pages the content was just observable and user cannot interact with the information. No way customizing the user requirements as there was no way of data mining and Artificial Intelligence. Due to low speed internet and costly resource streaming videos and surfing content over the internet take at least a day.

1.2 Web 2.0: Faster internet and low cost and easily available resources paved the way for user interactive content over the internet. The web was not only about observing but also participating. The global sharing of content led to the rise of *'Social media'*. Youtube, Facebook, Twitter Instagram, LinkedIn and many other medium gave voice to the voiceless and a medium for like-minded communities to share their opinions. Publishing a public blog was easier and faster than 1.0. Retailers and business find a way of dragging customers and by analyzing market trends entrepreneurs were clustering the customers using models. Data played a significant part in 2.0 but the major disadvantage of 2.0 is the way of storing data in a centralized way. The whole data is gathered by net-giants (Google, Amazon, Facebook etc)

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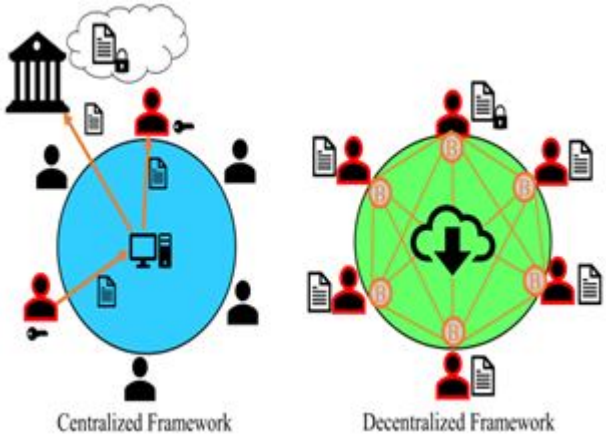
1.3 Information is money: According to report by UN, it is estimated that internet users increased from 738 millions to 3.2 billions from 2000-2015. That's a huge amount of data floating around and realized by big corporations, personal information is an enormously valuable asset. *People sacrifice the security, piracy and personal information for the convenience of these services. Their identities, browsing history and online information was sold to the highest bidders.* The data, used by the algorithms, customizes the internet and decide what a user want to see, avail and share by these organization. Data belongs to you but without any cost just to avail these services we sell the information.

1.4 3.0 Revolution: The applications are going to look almost the same as web 2.0 but the change is the backend and how the data is being stored. The transaction and payment methods that people are using usually is through a centralized medium. The net-giants own the data we just give the data to avail their services. If the data is stored in a decentralized database which is immutable, hashed linked list data structure this way of securing data, hashing it in a linked list which is immutable and owning our own data with transaction being simple and open source is known as web 3.0 powered by the *blockchain technology.*

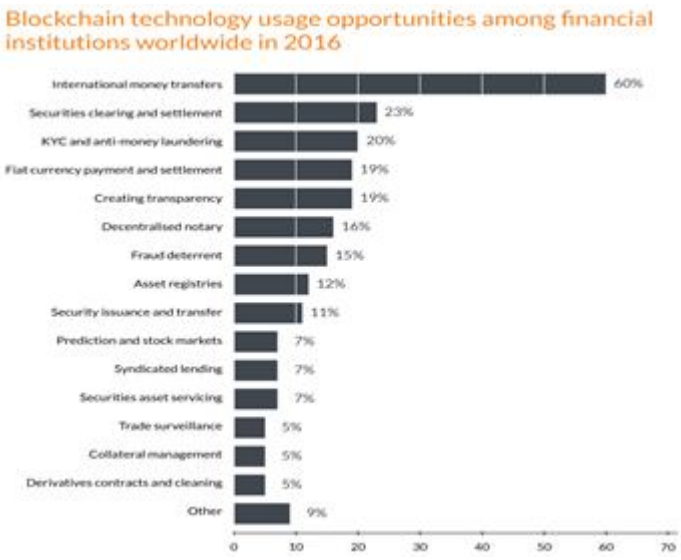


2. WHY WEB 3.0?

2.1 Anti-monopoly web: We no longer feel that we control our own data. We don't own our data. Your data is being used to spy on you, advertise to you and overall profit from you.

2.2 Artificial General Intelligence: We've got way too many problems in the world. If we solve Algorithms for AI. It can solve most of our problems. We can get an AI DAO(distributed autonomous organization) by starting with an AI and making it decentralized. *AI gets its missing link: Resources. DAO gets its missing link: autonomous decision making.* Because of this, AI DAOs could be way bigger than AIs on their own, or DAOs on their own. As the data is decentralized not owned by a single entity AI can use the data in the network with user's permission.

2.3 Data Permanence: We need a way to create permanent data and we can't afford to have crucial data to be lost. IPFS and storj are the alternatives of cloud storage in web 3.0 which would hash the information and we can refer the file by the hash not by the reference it is been stored.



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2.4 What's possible?: Solution for the above problem is blockchain technology. Blockchain can be used to create an Dapp(Decentralized Application) that is:

2.5 Decentralized: No single point of failure, first implementation of blockchain is the bitcoin. If we remove or hack one node rest of the system won't fail.

2.6 Open source and profitable: Earlier it was very difficult to build an open source app which would return a profit. Blockchain would help us to build an open source Dapp which is profitable.

2.7 Censorship resistant: Internet would be open for all. Internet would be borderless. An app now can be not available in India which is a disadvantage of Web 2.0 By 3.0 Anyone can access any website over the internet and every country would follow the same law. No restriction for the netizens to access the internet.

2.8 Community-governed/controlled: Democracy is the significant factor for Dapp as every node can participate in a poll. Every node can transact their vote which is immutable and non-hackable.

2.9 Blockchain: Blockchain is a distributed database system(decentralized). Instead of storing data in a single computer or node, the data is stored in millions of computer globally. Blockchain technology can be easily shared, trusted, public ledger of transaction but this technology cannot be controlled by the single user. Blockchain technology maintain continuously growing list of transaction data. This gives power to the end user to control their own personally identifiable information. Blockchain technology is the best solution for the age old human trust problem. It allows the user to trust the output of the system without trusting any actor within it. Blockchain plays a major role in the Web 3.0

3. USE CASES

3.1 Banks: Fintech is blockchain technology based community of banks for exploring, building and implementing blockchain solutions(Permissioned Private Ledger). Established in February 2017. State Bank of India (one of the largest banks in the world) was the first member of bankchain, BankChain now has 27 members from India and the Middle East. Signzy is a two-year-old startup company, is using blockchain with artificial intelligence to enable banks to authenticate and identify a person in a few hours.

3.2 Cyber Security: Although the ledger in the blockchain technology is public, the data is been verified and encrypted using advanced cryptography method. This makes the data more secure or data cannot be changed without authorization.

3.3 Private Transport and Ride Sharing: The decentralized versions of peer-to-peer ridesharing apps can be created in the blockchain technology, this technology allows both car owners and users to arrange terms and conditions in a secure way without third party service providers. The car owners can use the built-in e-wallets to pay for automatically parking, highway tolls, and electricity top-ups for their vehicle. The companies like UBS, ZF and Innogy use blockchain based e-wallets.

3.4 Government Adoption: Most of Government systems are slow, opaque, and prone to corruption. Blockchain-based systems can help them to reduce bureaucracy and increase security, efficiency, and transparency of government operations. Dubai, for example, aims to put all its government documents on the blockchain technology by 2020. In India, Andhra Pradesh became the first state to pilot blockchain technology into various departments and plans to deploy it across the administration.

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3.5 Cloud Storage: Data on a centralized server can easily hacked and is prone to data loss or human error. The data stored in blockchain technology based cloud storage is more secured and cannot easily hacked. Storj is blockchain based cloud storage

4.1 Pros:- Anything of value can be transferred and saved safely and confidentiality-without unlawful alteration. Transactions are verifiable by a vast, peer-to -peer global network. Cryptocurrencies are not able to be "frozen" in the case of economic crisis(such as your money in the bank would be). There will no longer be the need for intermediaries such as bank, lawyers, government, etc. Transaction are irreversible. 1 Bitcoin is worth $1252USD, and has increased in value over time

4.2 Cons: The majority of governments, offices, retailers and everyone who deals with money, do not understand, let alone use/accept cryptocurrencies as valid payment. Many people are currently employed in institutions that serve as intermediaries. There will certainly be a lot of resistance. Transactions are irreversible. Behind the scenes, there may be trouble with bitcoin, and there are rumors of it splitting into two separate cryptocurrencies

5. CONCLUSION

Blockchain has become a buzzword and every company or developer wants to take advantage of this technology. Before applying it developer has to know where not to apply and it can't be applied to each test case. Not only it would be inefficient but it would a mere waste of money and time. As a technology, blockchain should be used as the best solution for certain application domain. Before building a decentralized app developers must ask few questions Does the technology is valid for building the application:

1. What kind of data is to be stored? Is it permanent?
2. Do you need each node of the data to be able to add new data?
3. Who are the account holders of the blockchain and can you trust them?

5.1 Where not to use blockchain:

5.1.1 If transaction speed and performance matter to you: Do not opt for blockchain as it requires time for mining and applying hash function.

5.1.2 If you are not ready for high costs of development: If you are trying to implement blockchain based solution the price is much higher than the centralized database.

5.1.3 If the recorded data is subject to changes: Data once stored is immutable it can't be changed as the system is blocks of chain which is hashed and can't be overwritten.

Blockchain offers tangible benefits such as the immutability of data and fault tolerance which provide business an unknown competitive advantage.

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COMPARATIVE STUDY AND ANALYSIS OF BI TOOLS

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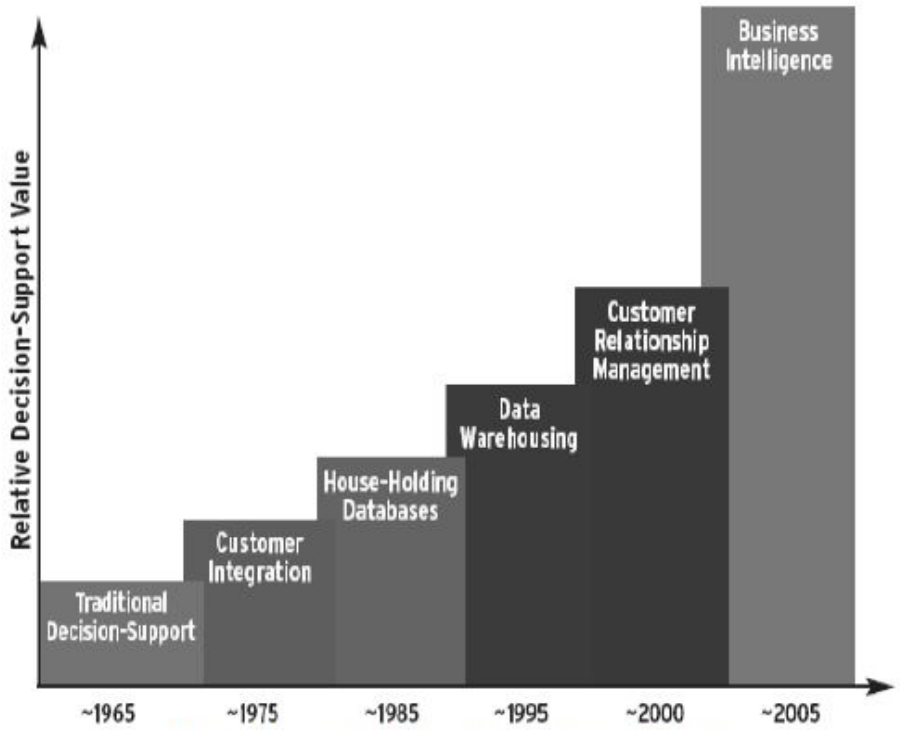
ABSTRACT
In today's era of difficult business surroundings, it becomes imperative for an organization to mobilize and generate helpful data and information. With the quick variations in the business environment, need for current and accurate information is obligatory not only for success but for effective decision making to stay in competition. Business Intelligence (BI) is growing rampantly in developed countries. It tends to be an umbrella concept for techniques, solutions and tools which supports managers for better understanding of business situation. It lures out knowledge from stored data. The informational data needs of societies and various governments and non- government organizations can be supported by BI tools. There by extracting new information to their users in the form of multidimensional analysis, statistics and forecasting, dynamic queries, reports and others. These tools naturally vary in cost, capacity and other factors to working for integration of data .The paper serves the purpose of discussing the comparison of major BI tools and their strength for implementation by organizations.

Keywords: Business Intelligence, Comparative Study, Strength, SAP, Power BI, Sisense, QlikView, Tableau

I. INTRODUCTION
The advent of low-cost data storage technologies and wide availability of Internet connections have made it easier for individuals and organizations to access large amounts of data. Data is often heterogeneous in origin, content and representation as it includes clinical, government, financial , administrative and various other sources.BI comes with the power to analyse such heterogeneous data and gather useful information out of it that can be used by decision makers to aid and improve the governance of enterprises and of public administration.BI is set of analysis methodologies and mathematical models which feat the available data to generate information and knowledge useful for complex decision-making processes.BI is the next step in achieving the holistic cross-organizational view. (Fig1) depicts the evolution of increasing decision support values generating there by a need of BI tools.

Fig-1: Increasing Decision-Support Values [1]



1.1 BI Architecture
Data Sources: Gather and integrate data stored in the various primary and secondary sources which is either operational data or unstructured documents such as email etc.

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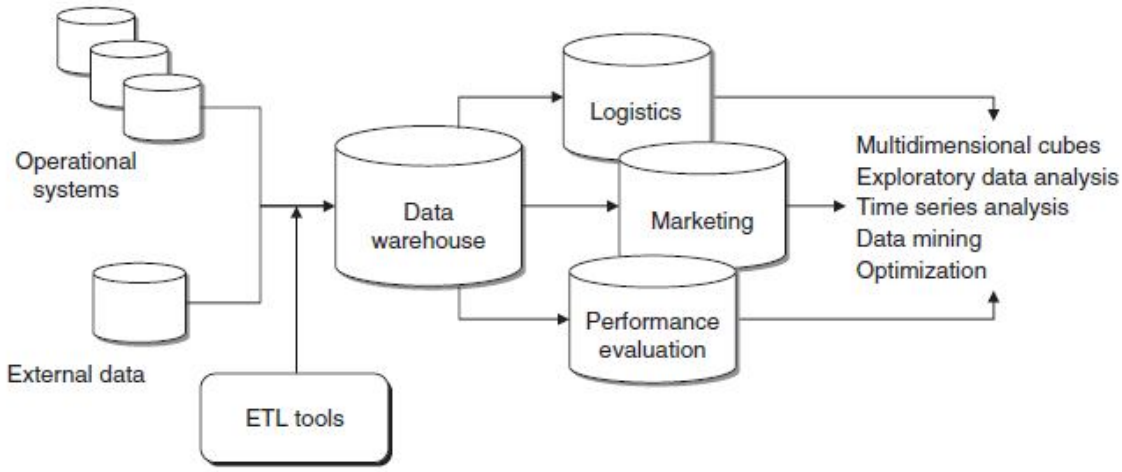

Fig-2: A typical Business Intelligence Architecture [2]

Data Warehouses and Data Marts: Using extraction and transformation tools known as ETL data is stored in databases intended for BI analyses.

BI Methodologies: Extracted data is fed to mathematical models and analysis methodologies intended to support decision makers.

1.2 BI Benefits

1. **Many alternatives considered**: Various solutions can be obtained using BI tools and decision makers can choose the best suitable one.
2. **More accurate conclusions**: With the application of Mathematical models and analysis methodologies corrective conclusions are drawn.
3. **Timely and effective decisions**: Using tools makes it faster to make corrective decisions.

1.3. Relevance of Business Intelligence in organisations

BI has arisen as an important area of study for both experts and researchers, reflecting the extent and impact of data-related problems to be solved in contemporary business organizations. So how does BI help an organisation move towards greater success? Going through a recent study carried out by Nucleus Research, it flashes that organizations earn an average of $10.66 for every dollar spent on analytical applications such as BI and predictive analytics. And it is a 1000 per cent return on investment!

Some of the ways in which BI can most directly affect and improve businesses and business processes include:

1. Aligning processes to the business objective – BI helps detect functions, people or activities that are improperly aligned with core business objectives. This in turn helps management take immediate action and improve practices.

2. Providing insights to the most difficult business problems – Quick access to large volumes of data helps extract critical facts at a rapid speed.

3. Determine patterns in customer behaviour – Knowledge of customer patterns helps an enterprise know who its most valuable customers are, how to retain them and in some cases, when to let certain customers go. There by providing help to grow the business.

4. Empower employees – BI equips businesses with the most important tool for successful decision making: real-time information! With this, every employee can make informed decisions, increasing the success rates of business processes multi-fold. Real time information helps transform effort into efficiency.

5. Monitor the usage of companies' resources – With BI, organisations can determine the cause of loss of productivity by tracking internet usage and how much time employees spend on activities unrelated to work. Better use of resources equals better returns for the company.

6. Scale performers in the organisation – BI helps reveal information on who the top and bottom performers are and enables one to reorganise a team to reap better returns from existing talent.

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8. Eliminate time spent on data entry –BI, when well-configured, can reduce and in some cases eliminate the time spent on data entry; time which can then be spent analysing outcomes and making better and more informed decisions.

1.4. What to consider for making choice of BI tool?

While choosing a BI solution, organization must pay attention to "The Technical Constraints". Often customers tend to find in the mid of implementation that certain requirements are unable to meet due to technical issues. Experts should be sure about the technology that is being used best fits the current infrastructure of the customers. Generally softwares once purchased tend to be used for min ten years or more so the total cost of ownership (TCO) can be sizable. So it becomes significant to invest time in choosing the best business intelligence software tool for having positive long-term effects.Thus from more than 350 BI solutions available in the market it becomes critical to find the best one. The paper here discusses the top 5 BI Solutions:

II. TOP 5 BI TOOLS

2.1 SAP

SAP BusinessObjects BI is a reporting and analytics BI platform aimed at business users. It consists of a numerous reporting applications that allow users to discover data, perform analysis to derive insights and create reports that visualize the insights. Using these reports they perform predictive analytics without needing the input of data analysts.It provides drag-and-drop functionality which allows users to search and analyse data from a wide variety of sources. It has front-end BI platform, which means data is not stored at the application level, but is integrated from the various back-end sources.

2.1.1The SAP BusinessObjects BI has various applications including

1. **Web Intelligence (Webi)**, which is a web browser tool enabling users to perform analysis, produce formatted reports and distribute the reports on SAP BO or export them to PDF or Excel.

2. Crystal Reports (CR), which is a data analytics and reporting tool for individual users or small and medium-size businesses. Creating dynamic reports from a varied data sources and deliver them to different formats. Reporting accessing dynamic-online or offline, from various devices.

3. SAP Business Objects Dashboards is a data visualization tool that allows users to create custom dashboards from reports including interactive charts, gauges and widgets.

4. Query as a Web Service (QaaWS), a tool for creating and publishing web services that can be incorporated in CR and SAP BO Dashboards and software applications.

5. SAP BusinessObjects Explorer, which is self-service data exploration tool that enables users to search through large volumes of data from various sources and then create data visualizations that can be shared across organizations.

6. SAP Lumira, which is a self-service data discovery and visualization tool that allows users to find and analyze relevant business data and create custom interactive dashboards and analytics applications.

2.2. QlikView

Is the fastest and easiest way to explore and analyse business data, grasp the overall picture, spot connections and make insights about complex data sets. Right information to the right person over the network is the attractive feature of this tool. It uses associative data model technology facilitating creation of unique interactive presentation. Helps user acquire a unified and coherent overview of the data in different databases.

2.2.1. QlikView has many areas of application including

1. Create a flexible end user interface to an information warehouse.

2. Get snapshots of data relations and make presentations based on data, providing interactive smart visualizations

3. Create dynamic graphical charts and tables most of it happening through drag and drop

4. Perform statistical analysis.

5. Link descriptions and multimedia to your data.

6. Build your own expert and BI systems.

2.3. Sisense

Is a business analytics software company. Its BI product includes both a back-end powered by in-chip technology that enables non-technical users to join and analyze large data sets from multiple sources,and a front-end for creating, visualizations like dashboards and reports, on multiple devices including mobiles.

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2.3.1. Sisense has many features including

1.In-memory technology called In-Chip analytics, designed to maximize the disk, memory and CPU with resulting low latency.

2. Cloud accelerated technology of this tool enable handling multiple users on the fly at the particular interval.

3. Additional feature of providing alerts when detected with results out of normal for certain parameters.

2.4. Power BI

Power BI is a business analytics tool that conveys insights to enable fast, informed decisions. Transforms data into fabulous visuals. They can be explored and analysed at local or the cloud system. Act as a team and share customized dashboards and interactive reports. Provides work environment for non- technical business users. Due to its resemblance with Microsoft products, it becomes highly versatile self-service tool.

2.4.1. Power BI has many features including

Artificial Intelligence – Ability to access image recognition and text analytics in Power BI, create machine learning models.

Hybrid deployment support – Contributes to built-in connectors that allow connections to multiple data sources.

Quick Insights – Generating sub division in data for applying analytics.

Common data model support -- use of a standardized and extensible collection of data schemas (entities, attributes and relationships).

Cortana integration – A common feature among mobile devices, allows users to verbally query data using natural language and access results

Customization -- Allowing developers to change the appearance of default visualization and reporting tools and import new tools into the platform.

APIs for integration -- Developers can use sample code and application performance interfaces for implanting the Power BI dashboard in other software products.

Self-service data prep -- Using Power Query, BA can ingest, convert, integrate and enrich big data into the Power BI web service.

Modeling view – Dividing complex data models in various diagrams, multiset objects and properties, view and modify properties for further cases to study.

Constant innovation - The Power BI product is updated nearly every month with new features and functions.

2.5. Tableau

Provides server, desktop and held software that allows users to connect, explore and visualize their data. Native connectors make them self- sufficient to querying Relational Databases, cloud databases and spread sheets. Providing visuals to enhance users ability for identifying patterns. Interactive dashboards delivery that support “insights on the fly”. It also allows user to query, spot tendencies and recognise opportunities. Empowers everyone in organization to see and understand their data, turning to be the centre point of any BI. It ensures a user can discover and share data in a confidential and secure environment that balances to meet the organization's demands. Tableau server visual tools helps in managing and monitoring almost everything from user permissions to data source connectivity as well as the status of the server.

2.5.1. Features that Tableau promotes for its software:

Remarkable Visualization Capabilities: Amicable visualization design capabilities and pleasing visualization outputs together increase the speed of user productivity and improve absorbing complex information to inform business decisions

Easy Implementation: Easy connection to data warehouse by means of few clicks

Query Execution: Performing queries without writing code.

Data management: Allows you to filter data and show relationships

Cross platform Capabilities: Interacting with dashboards by means of browser or any like devices

High Performance: The overall performance is highly rated by users as robust and reliable.

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III. TABLE OF COMPARISON

The table below depicts the limitations of the five BI tools considered in this paper[3]

Software Tools	SAP	QlikView	SiSense	Power BI	Tableau
General Observations	Requires large amount of hardware resources	Does not support online analytical processing (OLAP)	Does not support predictive modeling and analysis	No integration available for certain services	Tableau Server does not support data encryption
	Recovery is not easy in case of failure	Users cannot predict the profitability of projects or	Dashboards do not support advanced visualizations such as 3D graphics	Graphical visualization is fairly limited as compared to other BI tools	Does not provide multi-location support
	Less flexible with new format of MS Office	The solution does not help users identify patterns within data	UI of the mobile app is not user friendly	Does not support SQL queries	Solution is not user-friendly, especially the report-builder
	Requires a lot of internal IT support and maintenance	Lacks ad hoc reporting functionality	Difficult working with complex and huge data sets	Relatively difficult to work with huge data sets on Power BI	Sharing datasets difficult, requires a separate subscription package
	Not flexible with data input methods or formats	Does not allow users to schedule receiving BI reports at specific times in a particular format	Does not offer scheduled reports that can be sent via email so that users can consume reports outside of the online dashboard	Does not let users build scheduled reports, personalized user views, personalized notifications, personalized security views, or customizable reports	Requires IT support for integrations and other high-end tasks.
Competitors with Pricing	SAS Visual Analytics: $1,365 * Power BI: $9.99* Dundas: $6*	Tableau Server: $35* Power BI: $9.99* Sisense: $21,000 **	QlikView: $1,350 * Power BI: $9.99 * Tableau Server: $35*	Tableau Server: $35* QlikView: $1,350 * Oracle BI: $150 *	QlikView: $1,350 Power BI: $9.99 *

* per user per month ** 5 users per month

IV.CONCLUSION

Market is flourishing with numerous BI tools. This paper has analysed very few of them which can be used for the purpose of business. All the software tools mentioned here come with various internal flavours which enhance their capabilities and accessibilities. The correct choice of technology is the key to success which is obviously based on limited resources and the cost of investment. Considering the enormity of organization and the willingness to invest, it is suggested to go with fully or partially open source while the training, continuous support and deployment are provided by the service provider. In common, most BI tools are adequately advance so as to make its use as measurement systems, and those can replace exclusive based measurement systems.

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HEART DISEASES ANALYSIS AND PREDICTION USING DATA MINING AND MACHINE LEARNING ALGORITHM: A REVIEW

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ABSTRACT
Data mining techniques can be used to extract the information which is useful and as well as it retrieves hidden knowledge from the large volume of data which is used from health care industry for predicting various diseases .This techniques also helps in assisting the relationship and pattern among various data extracted. Heart diseases is one of the most common diseases that lead to death in the world. To overcome this problem, prediction of occurrence of heart diseases using data mining and machine learning algorithm plays an important role for automatic diagnosis of diseases in the medical data care centre. In this paper, detailed survey of various techniques and methods used in the health care solution for predicting the heart diseases is explained.

INTRODUCTION
There is a tremendous growth in the repository of electronic health data being collected by the health candepartments. But the major drawback in this huge data is the conversion of this big data in to knowledge. The major challenges which we may face here is the accuracy .Absolute accuracy is extremely important when it comes to patient care and computation of this massive data into quality information

But how can this healthcare providers shift this huge data into information efficiently? This is where data mining has proven to be extremely effective and efficient. Data mining has been used to uncover the patterns from large amount of stored information and later used to build predictive models.

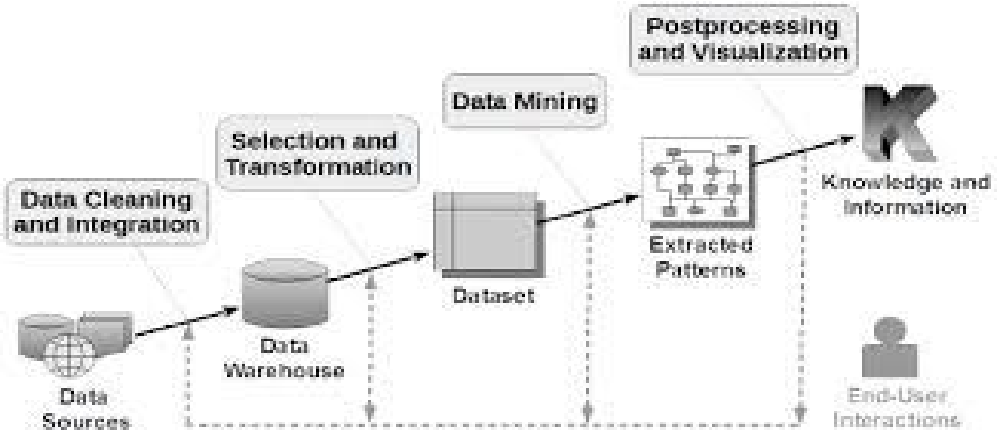

Figure-1: Data mining process ;source: research gate

Benefits of Data Mining in Health Care Industry
Patients receive more affordable, quick and better healthcare service. With data mining techniques, health care officials can identify and predict high risk patience and chronic diseases and design the right intervention needed.

Healthcare providers use data miming and data analysis to find more effective treatments .These tools compare symptoms,cause, treatment and its effect and then proceed to analyse which action will prove most effective for a group of patients.

Healthcare facilities and groups use data mining tools to reach better patient related decision. Patients satisfaction is achieved because data mining provides information that will help the doctors to take decisions as well as current and future needs.

HEART DISEASE
WHO report calculated that by 2030 almost 23.6 million people will be estimated to get chance to die regarding Heart diseases. In India,25% death occur in the age group of 25 to 69 to heart diseases. In India ,Urban are is more affected with 32.8% whereas 22.9% is affected in rural area. This itself conclude that the major increase in percentage is due to stress and pollution. Data` mining is the most efficient technique for predicting the heart diseases. The prediction of heart disease using data mining techniques is not easy task since the complexity and

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toughness of information is too high in medical domain data Prediction of cardiovascular disease is challenging andmore complicated task to achieve an automatic diagnosis ofsickness. Because an enormous amount of data are stored inhealthcare centers that are very complex and challenging toanalyses. Even if it is challenging task using prediction of heartdiseases in medical centers is plays significant roles to save thelifestyle of individuals and to make active and accuratedecision-making for stakeholders.

RISK FACTORS FOR HEART DISEASE

Risk factors are conditions or habits that make a person more likely to have a heart disease.

Risk factors	Description	General Symptom
Age	Age above 60 is more vulnerable to heart diseases	Chest pain, Shortness of breath, Irregular heartbeat, Fatigue, Fainting, Swollen feet.
Sex	Male are more affected	
Family history	Hereditary increases probability	
Smoking	Smoking increases probability	
Poor diet	Diet food is essential for development of heart	
Blood pressure	Blood pressure can effect in narrowing hardening arteries, as well as thickening blood vessels	
High blood cholesterol levels	It increases formation of plaques	
Diabetes	It is the disease as a result of sugar in our body	
Obesity	Overweight body is one of the reason for heart diseases	
Physical inactivity	helps heart to function properly	
Stress	Damage arteries	
Poor hygiene	It increases heart disease	

Related Works

Researches had done numerous work related to diseases prediction and detection using different data mining techniques and machine learning algorithm in medical field with the objective of achieving an accuracy in automatic diagnosis of disease and for better decision making in medical field.

In 2018, Wadhawan [1] proposed combination of K-Means and Apriori Algorithm for heart diseases prediction. The method incurred the accuracy of 74%. The Apriori technique found strong rules for prediction. The proposed method yielded results as good as a neural network

In 2017,The Azam et al.[2] In this research paper, the author had done a automatic diagnosis of coronary artery disease (CAD) patients using optimized support vector machine(SVM) ,which is optimized to improve the accuracy of prediction, which gives an accuracy of 99.2%

In 2017, Karthikeyan et al. [3] proposed Deep Belief Network (DBN) algorithm which was offered 90% accuracy in heart diseases prediction.

In 2017, EmranaKabirHashi,[4] This paper explained about the expert clinical decision support system to predict any disease using classification techniques. This paper is based on WEKA software and used percentage ratio method for train and test dataset using C4.5 and KNN, The accuracy level given is 90.43% and 76.96% respectively. C4.5 Decision Tree had given better accuracy compared to KNN and helped for clinical decision support system.

In 2017, HuseyinPolat et al.[5] The paper is used for the Diagnosis of Chronic Kidney Disease based on SVM by feature selection methods. The research paper gives 98.5% highest accuracy achieved by Filter Subset Eval with Best First. This accuracy resulted is very important for the diagnosis of kidney diseases for better medical decisions

In 2016 Marjia et al.[6] here the author had used KStar, J48, SMO, and Bayes Net and Multilayer perceptron using WEKA software. Based on performance SMO (89% of accuracy) and Bayes Net (87% of accuracy) achieve optimum performance than K Star, Multilayer perceptron and J48 techniques using k-fold cross validation. This paper focused on the diagnosis of diseases at an early stage and reduced the cost of treatment The accuracy obtained is good to predict if the individual has heart disease or not.

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In 2016, Patel et al. [21] had developed a methods based on J48 ba on UCI repository and LMT algorithm to predict the heart diseases. Performances of these algorithms are calculated in terms of accuracy and time complexity. The accuracy of J48 and LMT are 56.76% and 55.77% whereas execution time of these algorithms are 0.04s and 0.39s respectively.

In 2015, D'Souza [7] applied three techniques Artificial Neural Network, K Means Clustering and Apriori Algorithm to classify and identify whether the heart disease of a patient exist or not and their performance are compared. The results showed that Artificial Neural Networks outperform well compare to other.They have used ANN with 79.38% accuracy and K mean clustering with accuracy of 63.299% accuracy.

In 2015, Cemil et al.[8] had proposed the application of knowledge discovering in the prediction of stroke patients based on Artificial Neural Network (ANN) and Support Vector Machine (SVM), which give accuracy of 81.82% and 80.38% for ANN and SVM respectively for training data set and 85.9% and 84.26% for Artificial Neural Network (ANN) and Support Vector Machine (SVM) in testing dataset. According to this paper the ANN show more accuracy than Support Vector Machine (SVM) for this proposed work

In 2015, Adbar et al. [9] had proposed a method with C5.0, Neural Network, SVM, and KNN for the prediction of risk of heart diseases. Accuracy of C5.0, Neural Network, SVM, and KNN are 93.02%, 89.4%, 86.05% and 80.23% respectively. C5.0 performed well when compared to others. Further, it was also noted that the accuracy of C5.0 is at least 3.62% higher than other methods .

In 2015, Kau et al. [10] had proposed the data mining technique using SVM Classifier with Genetic Algorithm and obtained an accuracy of 95%.

In 2015, Priti Chandra et al.[11] had described the proposed paper with Computational Intelligence Technique for Early Diagnosis of Heart Disease using WEKA and 10-Fold cross-validation. They have used Naïve Bayes in their research paper which give an accuracy of 86.29% .

In 2015, Swati et al. [12] explained the application of Data Mining techniques in the Healthcare and Prediction of Heart attacks. Classification based on data mining techniques such as Naïve Bayes and KNN approaches were analyzed over huge volume of medical data. Accuracy of Naive Bayes and K-NN are 84% and 76% respectively.

In 2015, Rajendra Acharya et al. [13] explained that use of computer-aided diagnosis related to diabetic problem by heart rate variability signals using discrete wavelet transform method using different classifiers that include Decision Tree (DT), K-Nearest Neighbor (KNN), Naïve Bayes (NB), and Support Vector Machine (SVM). The average accuracy resulted is 92.02% by using DT within ten-fold cross-validation.

In 2009,Sitar-Taut et al.[14] used Naïve Bayers algorithm and Decision Tree to find the risk evaluation of cardio vascular diseases using machine learning algorithms. They have found out an accuracy by 62.03% and 60.40%

In 2009,Tu,et al.,[15] used data mining techniques on Cleveland Heart diseases data set and has done single data mining techniques using J4.8 Decision Tree and bagging algorithm and received 78.9% and 81.41%.

In 2007 Polat,et al.,[16] had used hybridized data mining algorithms. They had hybridized two algorithms ,Fuzzy –K nearest neighbor predicted an accuracy of 87% in prediction of heart diseases.

In 2009, Das ,et al.[17] had used Neural Networks Ensembles an hybrid approach to find the accuracy for the prediction of heart diseases using Cleveland Heart Diseases data sets and the claimed an accuracy of 89.01%.

In 2009, Resul Das et.al,[18] had conducted experiment on the heart disease dataset. Three independent neural networks models were used to construct the ensemble model. The experimental results gained 89.01% classification accuracy, 80.95% sensitivity and 95.91% specificity values for heart disease diagnosis.

In 2008,Humar and Novruz [19]proposed a hybrid neural network that includes artificial neural network (ANN) and fuzzy neural network (FNN)to predict diabetes and heart diseases. The proposed model is able to support good accuracy values 84.24% and86.8% for Pima Indians diabetes data-set and Cleveland heart disease data-set, respectively.

In 2011 Milan and Sunila[20] investigated several data mining algorithms to solve cardiovascular disease such as: Artificial Neural Network (ANN), Support vector Machine (SVM), aDecision Tree and RIPPER classifier. The accuracy of the ANN, SVM, Decision Tree and RIPPER are 80.06%, 84.12%, 79.05% and 81.08% respectively. SVM is able to predict the cardiovascular disease with higher accuracy.

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Table-2: Comparsion of Algorithms Used and Techniques Used in Various Related Work

Year	Author	Techniques used	Purpose	Accuracy
2018	Wadhawan	K-Means Using Apriori Algorithm	K-Means and Apriori Algorithm for heart diseases prediction	74%
2017	Azam et al.	Optimized SVM	automatic diagnosis of coronary artery disease (CAD) patients using optimized upport vector machine(SVM)	99.2%
2017	EmranaKabirHashi	C4.5	Cllinical decision support system to predict diseases using classification ttechniques	90.43%
		KNN		76.96%
2017	Husey in Polat et al	SVM	Detection and Diagnosis of Chronic Kidney Disease based on SVM by feature selection methods	98.5%
2016	Marjia et al	K star	Heart disease prediction using WEKA tool and 10-Fold cross-validation	75%
		J 48		86%
		SMO		89%
		Bayes Net		87%
		Multilayer Perceptrom		86%
2016	Patel et al	J48	predict the heart diseases. Performances of the algorithms are analyzed in terms of accuracy and time complexity.	56.76%
2015	D'souza	ANN	Three techniques Artificial Neural Network, K Means Clustering and Apriori Algorithm to classify whether the patients have the heart disease or not and their performance are compared.	79.38%
		K-Mean Clustering		63.299%
2015	Cemil et al.	ANN	Propose application of knowledge discovering process on prediction of Paralysed patients	81.82% for TRAINING DATA
				85.9% for TESTING DATA
		SVM		80.38% TRAINING DATA
				84.26% FOR TESTING DATAT
2015	Adbar et al.	C5.0	predict the risk of heart diseases.	93.02%
		NN		89.4%
		SVM		86.05%
		KNN		80.23%
2015	Kaur and Kaut	SVM Classifier with Genetic Algorithm	Prediction of heart diseases accuracy	95%
2015	Priti Chandra et al.	Naïve Bayes	Computational Intelligence Technique for early Diagnosis of Heart Disease	86.29%

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2015	Swati B et al.	Naïve Bayes	the application of Data Mining techniques in the Healthcare and Prediction of Heart attacks.	84%
		KNN		76%
2015	Rajendra Acharya et al.	KNN	diabetic related issues by heart rate variability signals	92.02%
		Naïve Bayes		
		SVM		
2009	Sitar-Taut et al.	Decision Tree	To find the risk evaluation of cardio vascular diseases using machine learning algorithms	62.03%
		Naïve Bayers		60.40%
2009	Tu,et al.	J4.8 Decision Tree	data mining techniques on Cleveland Heart diseases data set and has done single data mining techniques	78.9%
		Bagging algorithm		81.41%
2007	Polat,et al	Hybridised model of Fuzzy –K nearest neighbor	prediction of heart diseases.	87%

Problems related to Prediction Models in this survey analysis

From the above literature survey, the under listed issues are identified in heart disease prediction using

- Accuracy of Prediction is low with low attributes
- More False Classification
- Time required is more for prediction
- There is a limitation on ability to categorise correctly
- The problems related to noise and missing values

CONCLUSION

This survey projected various approaches used for heart diseases prediction with its method used along with accuracy percentage. This paper gives a broad overview of the existing techniques to the interested researches and beginners. This paper had compared the accuracy rate of various algorithm used along with their purpose used.

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APPLICATION OF ROUGH SET THEORY IN MEDICAL DOMAIN - HOMEOPATHY IN SPECIFIC

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ABSTRACT
Homeopathy is a medical system having a holistic and individualized approach of treatment. It is healing a patient rather that treating a patient. According to a study, there is very less or no side effects of these medicines, so it has gained popularity. Data mining has made a tremendous progress in the field of medical science it has been used for diagnosis purpose as far better results Classification is one of the very important technique in datamining, ROUGH SET THEORY proposed by Pawlak in 1982is also such technique of DM and knowledge discovery. Rough set theory is under continuous development and has many interesting applications in the field of medicine, pharmacology, engineering, metrology, image processing, banking sector, market research etc.

Keywords: Rough Set Theory, Data mining, Homeopathy

1. INTRODUCTION

Life has become too hectic and busy nowadays, people are busy completing targets, deadlines, goals, increasing expanding business, making profits….but in this rat race of meeting targets and deadlines for money making most valuable health is being affected lack of exercise and consumption of fast food is affecting our body. The most effective and economical way of treating such chronic disease is Homeopathy. There are no or very less side effects. As medical profession is noble and social profession doctors are expected to diagnose and prescribe a proper remedy. Thus it becomes a tedious and responsible job of a doctor. Data Mining tools and techniques can be positively help doctors for a better treatment . Thus the rough set theory which is technique of data mining in knowledge discovery can minimize the tedious job of a physician as classification is also one of the techniques used.

2. ABOUT HOMEOPATHY

This medical system was developed in Germany in 18th century by Samuel Haneman. It is based on his doctrine "like cure likes" (similia similibus curentur),a claim that a substance that causes the symptoms of a disease in the healthy people would cure similar symptoms in sick people. The treatment was given in the form of homeopathic preparations. Homeopathy is still less popular in India than in foreign countries though it has no side effects like other medical practices .It is also not costly as compared to the other medicinal systems still it is unpopular in India. The reason can be many, as finding a correct remedy in homeopathy is really a task. It depends manually on the physician or the doctor who will refer the repertories and find correct remedy for the patients.

The treatment is aimed at methodically improving the level of health of an organism by the administration of proven potentised medicine which are individually selected. The more detailed, peculiar and individual the pictures are, the more chance that they fully match for a specific remedy, which implies that a deep and prolonged curing response is likely to follow. Diagnosis in homeopathy is based not only on conventional diagnosis but also on specific personal characteristics (symptoms) of each individual patient. These characteristics are diagnostic instrument. Each homeopathic medicine has a limited no of more specific characteristics and a larger no, of more general traits. Homeopathic doctors have implicit knowledge about the occurrence of characteristics in patients cured by a certain medicine relative to the occurrence in the rest of population.

Basic Principles of Homeopathy

1. Similia principle
2. The use of potentised medicines or remedies
3. The homeopathic methodology

Homeopathic treatment is highly individualized –the patient's personnel physical and psychological characteristics, his/her clinical picture, diagnosis, constitution and present past and family illness are all relevant and significant.

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3. DATAMINING

As we are aware and it is known by all that data mining has proved to be a boon for several industries particularly in today's digital world where tremendous data is generated every minute. This data needs to be stored and managed well so that it can be utilized in a way which will help companies for prediction, market analysis, recognizing pattern for making projections and most important is decision making. This need of the market and industry gave rise to various techniques in data mining

These techniques are listed as follows

1. Classification
2. Decision trees
3. Sequential patterns
4. Association
5. Prediction

Datamining has important applications in the medical field.by using several DM techniques diagnosis can be made easy and accurate. The most important techniques among all of above specifically in the medical field are classification, clustering and association. There are few open source tools also used in medical field on large scale, they are listed below:

1. Rapid miner
2. Knime
3. Weka
4. R-Programming
5. Orange
6. Natural Language Toolkit (NLTK)
7. ROSETTA

The accuracy level of the results obtained can be checked by some additional tools in datamining these are as follows:

1) Artificial Neural Networks (ANN),

2) Rough Set Theory (RST),

3) K-means clustering

4) Single Nucleotide Polymorphism (SNP)

The diseases mainly diagnosed using the tools and techniques in datamining are Heart Disease, Cancer, HIV/AIDS, Blood Cancer, Brain Cancer, etc The accuracy level achieved by applying these tools and techniques ranges between 70%-98%

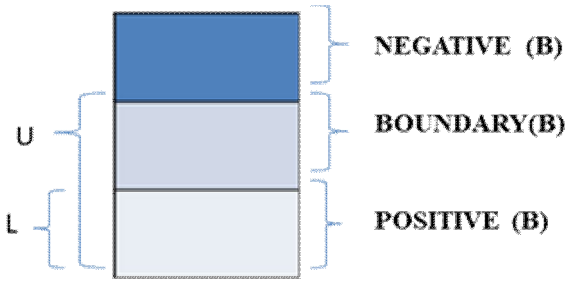
4. ROUGH SET THEORY

As seen above rough set theory is one of the important data mining tool. As put forth by Zdzislaw Pawlak it is a approximation of a crisp set. It is one of the important methods for knowledge discovery. RST manage the uncertainty from information which is inexact and noisy or ambiguous and vague. Rule generation is an important component in rough set analysis. So, medical systems which have uncertainty inherent can be handled in a better way using rough sets and its variants Main goal of RS is approximation from acquired data.It has a powerful essence in decision making in dealing with uncertainties. Rough Set is always with a boundary line while crisp set has no boundary line elements. This further gives rise to concepts of lower approximation and upper approximation.

Lower approximation (L): a subset characterised by objects that will definitely form part of an interest subset.

Upper approximation (U): a subset characterised by objects that will possibly form part of an interest subset.

Boundary region (B): a difference between upper and lower approximation is boundary region i.e. a subset of elements neither in L and nor in U is boundary (B)



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Patient	Attributes			
	Headache	**Bodypain**	**Temperature**	**Flu**
1	Yes	Yes	Normal	No
2	Yes	Yes	High	Yes
3	Yes	Yes	Very High	Yes
4	No	Yes	Normal	No
5	No	No	High	No
6	No	Yes	Very High	Yes

Information table

Information system or table: It consists of objects (rows) and attributes (columns) it contains data utilized by RS

Patient	Attributes		
	Bodypain	**Temperature**	**Flu**
1,4	Yes	Normal	N
2	Yes	High	Y
3,6	Yes	Very High	Y
5	No	High	N

Reduct1{BODYPAIN,TEMP}

Patient	Attributes		
	Headache	**Temperature**	**Flu**
1	Yes	Normal	No
2	Yes	High	Yes
3	Yes	Very High	Yes
4	No	Normal	No
5	No	High	No
6	No	Very High	Yes

Reduct2{HEADACHE,TEMP}

Indiscernibility Relation: The relation between two or more objects , where all the values are identical in with respect to a subset of considered attributes. In above information table:

Set {p1,p3,p4,p6} indiscernible w.r.t. body pain

Set {p2,p3,p5} indiscernible w.r.t. headache

Set {p1p2,p3,p6,} indiscernible w.r.t. Flu

Set {p2,p5} indiscernible w.r.t. . Headache, Bodypain, Temperature

Still there is different diagnosis this set is set with unconcluded symptoms .

Reducts: A minimum set of attributes that preserves the indiscernibility relation is called a reduct.

Core: The intersection of all relative reducts is called a relative core.

It is most important subset of attributes, removal of an attribute affects the classification. Core of dataset w.r.t. Flu is {Temperature}

Decision rules: the decision rules are generated with the help of reduct table using reduct {headache ,temperature}

- If headache=no and temp=high then flu=y
- If headache=yes and temp=high then flu=y
- If headache=yes and temp=high then flu=n
- If headache=yes and temp=veryhigh then flu=y
- If headache=no and temp=normal then flu=n
- If headache=no and temp=veryhigh then flu=y

Similary reduct{bodypain,temperature}

- If bodypain =yes and temp =high then Flu =yes
- If bodypain =no and temp =high then Flu =yes
- If bodypain =yes and temp =high then Flu =yes
- If bodypain =yes and temp =normal then Flu =no
- If bodypain =no and temp =high then Flu =no

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Further for reducing length of rule, accuracy and coverage

Single rule generated "If temp=high then Flu=yes"

5. APPLICATIONS OF ROUGH SET THEORY

RST has applications in various fields of artificial intelligence methods like Fuzzy logic, Neural Network and Expert System. RST has proven well suited for ambiguous and incomplete data. Such data is mostly found in medical field. RST can help to achieve a proper and correct diagnosis. Many a times even though the physician is an expert, experienced but due to incomplete and inexact data the diagnosis may not be accurate .RST has an ability to overcome these limitations and help an expert in accurate diagnosis.

The physical science uses data by observation and collection, which fits into formulae reasonably and solved for characteristics or relationship of data. But medical data is less responsive to such formulae unless some initial assumptions are there .RST offers a schematic approach for analyzing data without any initial assumption.

RST can be used for building pattern matching systems that can be applicable with different types of images in medical science and diagnosis related to those. Pattern recognition is one of the successful applications of RST.

The RS based clinical decision model is used to assist doctors.RS is used to support diagnosis by distinguishing between 3disposition categories, discharge, observation /further investigation and consultation.

CONCLUSION

Rough Set Theory is a theory with an approach to knowledge discovery. It is most suited to handle vague, incomplete and uncertain data. Which is produced in the medical field each and every second,especially in case of homeopathy where data is incomplete, uncertain and vague. Data differs from person to person . Due to various features of RST like upper and lower approximation, indiscredibility relation, reduct, core etc it is mostly used in medical field. Diagnosis, pattern recognition, finding minimal datasets, generating decision rules are few features of RST which can be used in disease diagnosis.

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COMPARATIVE STUDY OF CLOUD SERVICE PROVIDERS

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ABSTRACT
Cloud Computing – An emerging trend in technology. In other term now a day's Internet is called as "the cloud" which offers various services that are required by today's world to run a business, managing various applications with faster & flexible resources available at any time as and when required. The cost of cloud service is directly proportional to the usage of services for developing, deploying & managing applications. Cloud service providers are delivering the cloud services to run the infrastructure more efficiently & scale up our business needs. In this paper various cloud service providers are reviewed and compared on the basis of their different characteristics. This research paper will help the researchers/cloud community to select the suitable cloud service provider according to their work domain.

Keywords: Cloud computing, Cloud Service Providers, IaaS, PaaS, SaaS,Virtual Machines,VMware

INTRODUCTION

Cloud Computing Services Provider – Earlier hard drives were used to store our data on computer. Usage of hard disks to store large amount and complex data is replaced by Cloud Computing Services. It provides the services like storage for large amount and complex data, various databases, virtual servers, the software's, networking information etc through the Internet. The various cloud services like Email, Online Movies, Storing and editing documents and pictures utilizing cloud computing as a back-end. Cloud Service Provider offers some of the components which are part of the cloud computing like infrastructure as a service (IaaS), Software as a service (SaaS) and Platform as a service (PaaS) to run the businesses.

TYPES OF CLOUD SERVICE PROVIDERS

4. **Infrastructure as a Service (IaaS) Providers :-** This generally includes the Infrastructure services like servers,storage,virtual machines, operating systems, networks as per their availability and on demand of subscriber who pays for the service on monthly or quarterly basis as per their subscription. IaaS products may also provide the services such as load balancing, storage, monitoring and security.

5. **Platform as a Service (PaaS) Providers: -** Users can have an access to perform various functions using cloud infrastructure and services provided by the PaaS Vendors. In software development commonly used services are PaaS products. As compare with IaaS providers, PaaS providers are adding more of application stacks such as middleware, operating system to the underlying infrastructure.

6. **Software as a Service (SaaS) Providers: -** Wide range of business technologies are currently offered by SaaS vendors. Various cloud-based options of on-premises software's is made available for sell by traditional software vendors. These include various productivity suites, human resource management (HRM), enterprise resource planning (ERP), customer relationship management (CRM) etc.

In general customer utilizes the cloud based service on demand offered by various cloud service providers. Customer has to pay for the cloud based service on their subscription basis either monthly or quarterly. To fulfil the need of vertical market's requirements some of the cloud service providers tailored their offerings. Some of them are offering cloud based service to deliver industry specific functionality or any healthcare cloud products to store, maintain and back up personal health information.

So in this paper the review of some popular cloud service providers are taken into consideration for comparison so that users can select proper cloud services according to their usage and requirements from the best cloud service providers.

MAJOR CLOUD SERVICE PROVIDERS

In the public cloud computing the competition for leadership is brutal three way race – AWS vs. Azure vs. Google. Among many cloud computing service providers Amazon Web Services (ASW), Microsoft Azure and Google Cloud Platform (GCP) for Infrastructure as a service (IaaS) and Platform as a service (PaaS) holds the commanding position.

Among all Amazon is particularly prevailing. According to fiscal year 2018 report, Synergy Research Group reported that spending on cloud infrastructure services fly an outstanding 51 % over the last year's quarter. Even

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as the market has almost triple in size, its worldwide market share has held stable at around 33 % for 12 quarters. Microsoft Azure is on the whole strong in SaaS. Having changed leaders in Google Cloud in 2018 sited for aggressive growth and is known for offering discounts.

We will start cloud services comparison as follows:

1. Strengths & Weakness of AWS,Azure and Google Cloud

Sr. No	Vendor Name	Strengths	Weaknesses
1.	AWS	• Having Domain Market Position • Extensive training provider • Support for large scale organizations • Has Global reach	• Difficult to use for • Costly
2.	Microsoft Azure	• Second largest provider in the list • Integrated with MS tools and software • Support for open source technology • Existence of Hybrid cloud	• Documentation Issues • Management tooling is incomplete
3.	Google	• Specific for cloud native business	• Late entry in IaaS market
		• Open source technology and portability	• Very few features, services
		• Heavy discounts, flexible contracts • Expert in DevOps	• No enterprise focused

2. Amazon Web Service vs. M AZURE vs. Google Cloud: Compute

Sr. No	Vendor Name	Computing Services
1.	AWS	• Includes EC2 • Support for Elastic Container Service, Kubernetes • Elastic Container Registry, Beanstalk • Provides Auto Scaling • Elastic Load Balancing • Supports VMware Cloud on AWS
2.	M Azure	• Provides Virtual Machines, Scale Sets • Support for Azure Container Service (AKS) • Create Container Instances • Provides Cloud Services
3.	GCloud	• Compute Engine, Kubernetes • Used for Cloud Functions • Provides Container Security • Supports Graphics Processing Units • Used for App Engine

3. AWS vs. M AZURE vs. Google Cloud Platform: Storage

Sr. No	Vendor Name	Storage Service	Database Service	Backup Service
1.	AWS	• Provides Simple Storage Service(S3) • Supports Elastic Block Storage(EBS) • Providing Elastic File System(EFS) • Used for Storage gateway • Uses Snowball	• Supports Aurora • Provides RDS • Provides DynamoDB • Provides ElastiCache • Uses Redshift	• Glacier
2.	Microsoft Azure	• Provides Blob Storage • Supports Queue Storage, File Storage, Disk	• SQL Database,MYSQL,Postgre SQL	• Supports Archive Storage • Provides Backup

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		Storage, Data Lake Store	• DW • Used for Cosmos DB • Used for Data Factory • Provides Table Storage	
3.	Google Cloud	• Supports Cloud Storage • Uses Persistent Disk • Provides Transfer Appliance, Service	• Provides Cloud SQL • Uses Cloud Bigtable • Using Cloud Spanner • Supports Cloud Datastore	• Not

CONCLUSION

In this paper top three most dominant cloud service providers are reviewed and compared. The features of all these providers in terms of platform, availability, storage, speed, sustainability, pricing, support are compared so that depending upon researcher/community user needs anyone can select proper service providers to run their business.

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AN EMPIRICAL ANALYSIS OF ICT TOOLS FOR SMART FARMING

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ABSTRACT
Today, in India the economically most affected person is a farmer as he is totally depends on nature. We all are depend on the farmers, if he will grow good quality of crop with proper management of agriculture then we will get good quality of grains from the farmers and because of this it will affect on our health also. As I feel nothing is important in our life than our health. All factors of our health is depends on what we eat. Now days, everyone is behind to earn more money, even farmers as well. Farmers start taking crop production immediately one after another, as it will result in the crop production. Crop production will not give good quality and then everyone will suffer with different diseases.

This paper deals with different Information & Communication tools which are available for the farmers to do the smart farming and will get a good result in crop production. Through the ICT in agriculture will help to increase the efficiency, sustainability and productivity agriculture by providing information and knowledge sharing. By using different ICT tools we can predict pre harvest, post harvest, weather conditions, moisture percentage in a soil, soil quality, pricing etc. This study will help the farmer to get the information about different ICT tools which help in crop production with good quality and quantity.

Keywords: Information & Communication Technology (ICT), Internet of Things (IOT), Geographical Information System (GIS), Computer Aided Design (CAD), Artificial Intelligence (AI), Unmanned Aerial Vehicle (UAV).

INTRODUCTION
As health is totally depends on food grains. Every year global demand of food grain is growing day by day. To improve the production of food crops is only the solution to complete this demand. To increase the crop production, we required two most important factors are crop area and crop productivity. To increase crop area is very difficult due to scarcity of the land for farming purpose and unavailability of the resources as well to grow crops at available land. Crop grow is depends on different elements i.e. farming soil quality, weather, water management, which always vary significantly as per timing and space constraints. Before growing the crop production of crop yield planning is important and it will take various policy decisions. Many countries use the conventional techniques i.e. collecting the details of crop production manually by field surveys over a sample area or from full study area of data collection for crop monitoring and productivity estimation is depend on ground surveys and reports. This method requires more time and money.

OBJECTIVES
1. To study different ICT tools for agriculture
2. Use of technology for smart farming

Geographical Information System (GIS)
GIS is Geographical Information System used with remote sensing technique. By using GIS we can get the agriculture design of any farm as well as soil quality with the help of maps. It is also helpful in checking the crop condition as well. GIS is having Computer Aided Drafting (CAD) applications and we can achieve the same result with that. The power of a GIS lies in its ability to analyze relationship between features and their associated data. GIS technology is used for pre-harvesting and crop management. By using pre-harvesting techniques useful for farmers to increase the crop production, reduce production cost, and minimizes the bad impact to the environment. Geographic Information System (GIS) is a powerful for agricultural purpose to get all details through the different maps.

AI
Artificial Intelligence (AI) is a technology generally used in Computer Science field. It is very widely now a day's using everywhere with its different application like robot, wireless car, washing machines with six senses, air conditioners, vacuum cleaner etc. It is a machine where human works replaced by that intelligence. In agricultural purpose Artificial Intelligence is very useful in improving the crop productions as well as to check the soil quality, to check the moisture present on the farm of soil. To check the quality of the crop as well to

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check the requirement of the pesticides which are required for crop production. The applications of Artificial Intelligence in agricultural field are we can take care of crops production before the harvesting as well as after the harvesting and at the time of growing as well. It is very useful for the farmers to take a decision whether he have to grow the crop or not as well as it will give the good quality and quantity of the crop production or not. By using different study Artificial Intelligence found excellent performers with high accuracy and reliability.

Drone

Drone is also known as Unmanned Aerial Vehicle, It is a flying device, Drone is captured all details of the area which we will assign for the farming. It offers a less stressful environment, it is used for taking a better decision for crop production. Drone or Unmanned Aerial Vehicle is use with the help of an autopilot and GPS coordinates, as well it also has radio control waves. It requires the long distance between the crop or plants all the camera which fitted in a Drone. If the distance is not sufficient it will not capture the proper image. It is also useful for geographical survey. The images which it will capture will show the result in our mobile applications so that farmer can get immediate result of farming status and farmer can take the decision of farming. For agriculture it is cheap and giving a good performance to get the result of farming on it's regularly monitoring the present crops. Infrared sensors are used in Drones and it detects the plant health, enabling the farmers to react and improve crop better conditions, with different inputs of fertilizer or insecticides.

IOT and Smart farming

Internet Of Things is used in Agriculture for prepare the pre-harvesting soil, to check soil quality, to check currently moisture percentage present in a soil which help to grow plants, to check the percentage of insects present in each crop. Crop development through the different wireless sensors, as well as we can give the watering to each plant as per the requirement as it will check first the moisture level by using a sensor and then it will give a required watering to each plant. These data is very useful in predictive analysis.

Following are the different IoT agricultural applications

IoT is used to assist plant breeder to examine the condition of different wheat types by measuring the air temperature, soil temperature and humidity. This helps farmers to predict the harvest time, irrigation time and nutrients needed for the growth of plants.

Different IoT applications for Smart Farming

SR. NO	IoT Hardware	Applications
1.	PIC Microcontroller	It is used in security, home appliances like washing machine, remote sensors, air conditioner and industrial automations.
2.	Rasberry Pi	It is credit card sized computer. It is used to do small computing and networking operations. It provides internet access to connect the automation system with remote location controlling device such as driverless car.
3.	PIR Sensor	It detects infrared radiation emitted or reflected by an object. It is used to detect the movement of people, animals or other objects, as well used in Drones also.
4.	Soil Moisture Sensor	It is a sensor that senses the moisture content of the soil. When soil is dry, the current will no pass through it and output is said to be maximum otherwise zero.

Benefits

- Agricultural policy decisions
- Declaration of drought and shortfall in food grain and contingency planning
- Support to crop damage-assessment
- Advance crop planning and diversification
- Timely tailoring of agronomic practices
- Demand-based irrigation scheduling

Challenges of Smart Farming

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Smart farming generates huge data at different sensors involved in it. To store large volume agricultural data and processing these data need good software and hardware. For smart farming the cost factor involve in hardware and software part so it will increase the overall cost that farmer have to give.

CONCLUSION AND FUTURE WORK

This paper presents the empirical analysis of ICT tools for smart farming in agriculture area useful for rural development. By using different ICT tools we can manage crop production, soil management, maintaining soil moisture, waste management, water management, tracking of food supply, insecticides and pesticides control. In future I will try to implement some new agricultural model that will not face the present IOT challenges of smart farming.

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WALKING THE UNDISCOVERED ROAD FOR ANALYSING POTENTIAL SUICIDES THROUGH NEURAL NETWORKS

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ABSTRACT
In this competitive world, people have long working or studying hours with no time to relax or enjoy. Human computer interaction, social media have reduced a great amount of time spent with friends in parks, or speaking to each other and meeting them personally. Maintaining an interesting social life has led to living a miserable real life and due to "fear of missing" out people are glued to their phones and always upset and disappointed. Additionally, when people irrespective of age groups face hardships, they do not have a fall-back person to confide into leading to feeling lonely and shattered. Hence, this project discusses the severe problem across age groups and boundaries due to various factors like loss, rejections, disappointment, stress, anger, peer pressure, loneliness, failures and hardships that push the individual to the extent of ceasing their lives by committing a suicide. There is definitely a trend followed and an increasing number of suicide attempts amongst men, women and the youth and hence some decoding needs to be done here to unveil the reasons, traits and methods of people who are potential to commit a suicide and the ways they might resort to. This project with the help of neural networks, the machine learning algorithm discusses them all in order to inspect, identify and cut it off from the grass root so that no individual would ever be left with only this as a solution and with the help of some of our therapies, our friends and families can lead better and happier lives.

Keywords: suicide, suicide attempts, potential suicides, neural networks.

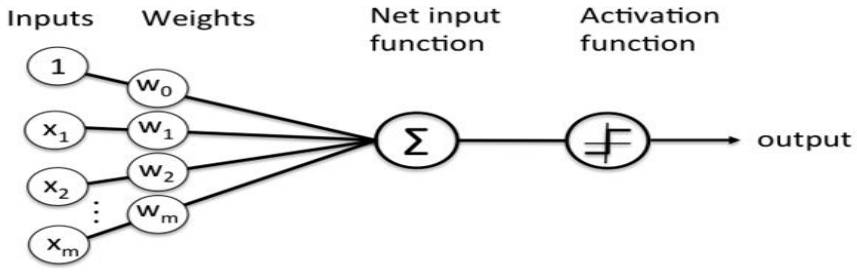
1) INTRODUCTION

NEURAL NETWORKS – Machine Learning encompasses a lot of applications, one of them being the neural networks. It is cost-effective, efficient and reliable to write training programs rather than hiring someone to write specific codes for a specific program. With the help of training sets and patterns, it gets easier to decode or understand complex situations and get effective results.

a) Recognizing patterns; behavioural, spoken or patterns of objects is easier with machine learning.

b) Recognizing unusual behaviours- complex situations pertaining to a person or an event.

c) prediction – based on the above studies a prediction is made to prepare better for the future. For examples: in this paper to understand the steps a person might take can help us in saving a life. Inspired by biological neural networks and deep networks, neural networks form an important part of machine learning. They are applied to any machine learning problem as they are function approximations. This project is a website aimed at researching, analysing and finding out the major reasons across age groups and genders for committing suicide. This project will help us and the counsellors, doctors or family members to adopt better approach in addressing their very own members of the family. A specific area is being selected for this particular analysis and research to infer for the majority of the population.



Schematic of Rosenblatt's perceptron.

OBJECTIVE

This project aims at finding out reasons and motivations for people across age groups to bring their life to an end. In current scenario the rate is increasing rapidly and it should be addressed by each one of us collectively. There being lot of factors associated with this, it is essential to understand them and observe the existence of these trait in the people we value. This research and website will enable the surrounding people to take a look for these signs and get an analysis done through this site and step-in to stop their loved ones from taking some painful measures. Some of the factors are mentioned below that are used for reference.

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SOME OF THE POTENTIAL FACTORS INVOLVED

Frustration and Anger

Disappointments

Rejection

Stress and Depression

Despondency

Loneliness

Peer Pressure

Fake Friends and Negativity

Abuse (Alcohol addict, chain smokers and drug abuse)

The mentioned factors cause the people around us to resort to such difficult, painful and unpleasant means. It is critical to address them at an early stage to avoid such issues.

To understand the reason behind these steps, a survey will be done and studied across age groups to identify actual facts and figures compelling people to commit suicide.

The survey also analyses the means chosen based on the reason, age group and gender. It is an aid to understand, decode and deconstruct the thought process of the mass population and their sufferings. Consequently, it will help us to guide, motivate and encourage them to live a promising and fulfilling life.

TECHNOLOGY

PHP – HYPER TEXT PREPROCESSING

CSS – CASCADED STYLE SHEETS

JAVASCRIPT

These three when used together help design a website, PHP takes care of the backend for database to store all the details of the users and the symptoms that can help in comparisons and improvements or deteriorations over time and CSS and JavaScript shall take care of the frontend. CSS also provides content accessibility, more flexibility and control in the specification of presentation characteristics, enable multiple web pages. The site may be developed on WordPress platform. Hypertext Pre-processor is a widely-used open source general-purpose scripting language that is especially suited or web development.

METHODOLOGY

Motivated by an investigation into the working of the human mind, artificial neural systems can gain as a matter of fact.

These incredible issue solvers are profoundly viable where conventional, formal examination would be troublesome or incomprehensible. Their quality lies in their capacity to bode well out of mind-boggling, loud, or nonlinear data. Neural systems can give robust answers for issues in a wide scope of controls, especially zones including classification, prediction, filtering, optimization, pattern recognition, and function approximation.

In this project I intend to throw light on the reasons of disappointment and failures which when left unaddressed take deep roots and compel the person to end their lives. Each individual being different may resort to some easier and simpler means to do so. This also is associated with age and gender. This is an attempt to bifurcate and sort out reasons, genders, attempts to what kind of means and what aids can solve this problem better.

Based on the mentioned behaviours an analysis will be done and processed by deploying neural networks algorithm and also through social network analysis to understand patterns of behaviour in the person.

Hereafter a result will be generated for the particular individual on how prone the person is to commit suicide and attempts at finding and suggesting impactful solutions for the individual will be done.

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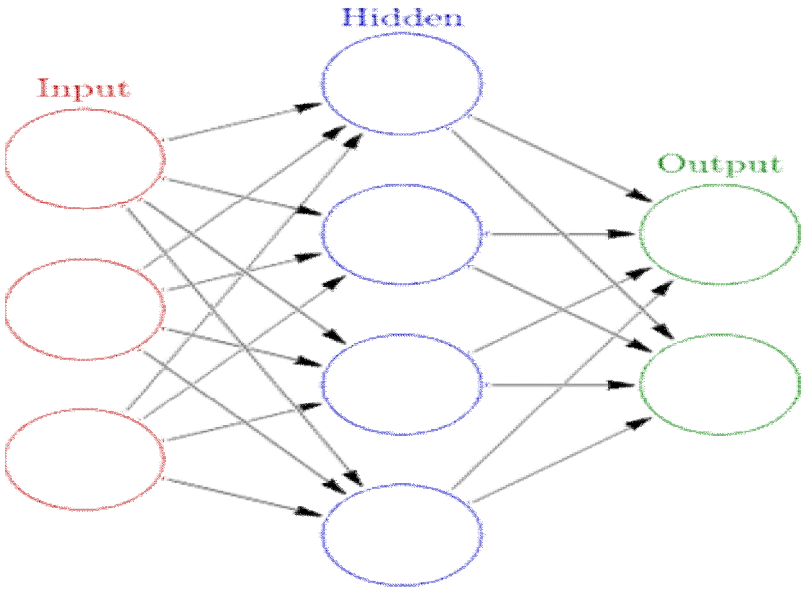


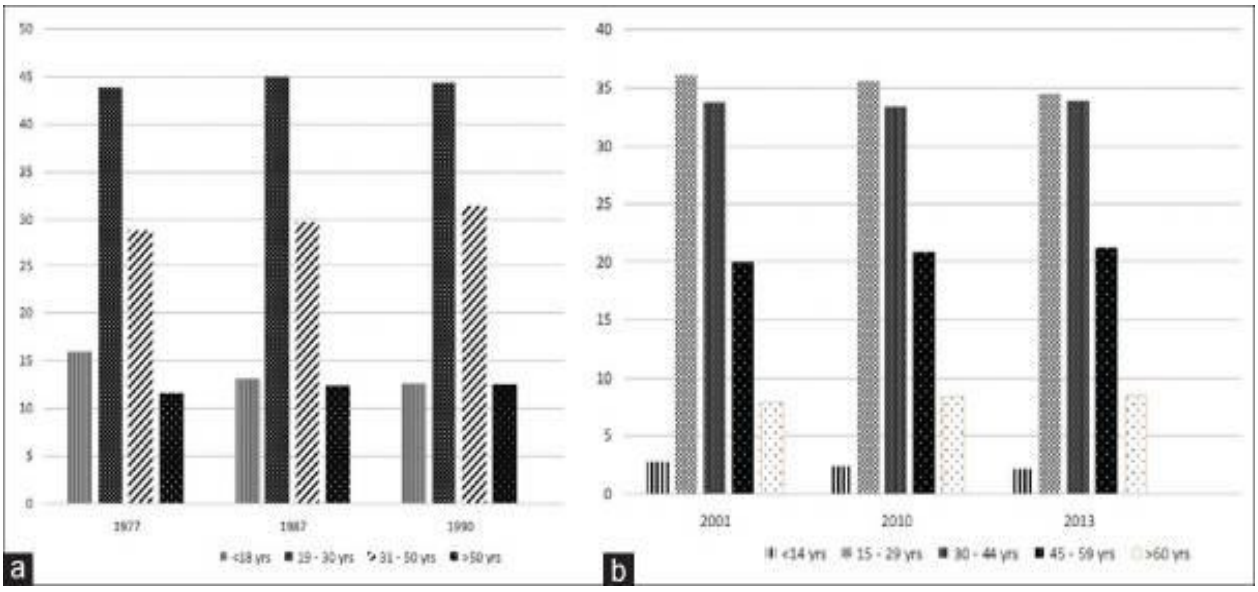
An artificial neural network is an interconnected group of nodes, akin to the vast network of neurons in a brain. Here, each circular node represents an artificial neuron and an arrow represents a connection from the output of one artificial neuron to the input of another.

LITERATURE REVIEWS.

1) Suicide in India – changing trends and challenges ahead

Year	Incidence	Rate
1967	38,829	7.8
2006	118,112	10.5
2007	122,637	10.8
2008	125,017	10.8
2009	127,151	10.9
2010	134,599	11.4
2011	135,585	11.2
2012	135,445	11.2
2013	134,799	11.0

Discussing the statistics for the increase in suicide rates for over 4 decades, we understand that instead of decreasing they have explicitly increased and this needs serious attention. However, of all the researches done for a country like India have been stating that youths have been dominating this sector than something constructive. The problems related to career, family, friends that stem up in this critical age group between 15 to 25 compel to this solution.



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This graph clearly shows that since 1977 till 1990 the percentage of suicide in the age group of 19- 30 was 45 % and the decades later sighed relief with 10% reduction in the rates yet it was quite high with 35% in 2001 to 2010 and approximately33-34% in 2013 which is 5 years ago. This paper discusses suicide attempt of farmers, students and armed forces as well.

It discusses problems like substance abuse, issues with parents, in-laws, spouses that eventually lead to suicide attempts. They have statistically stated that intervention of parents, in-laws and spouses have created an increased suicide rate, wherein they should be the reason to their happiness, the arrow has turned to them the other way. Change in trends of suicide attempts like cuts or stabs to hanging, poison, or drowning and burns. Lakes, beaches, sea-links have been blamed to have consumed the emotionally disturbed yet resourceful people of the society and country at large. Internet or the world of technology has also contributed its share in consuming the lives by bringing together people of similar concerns and promoting risky-behaviour.

2) Suicide: An Indian perspective

It states that suicide is the third leading cause of death amongst the youths. Suicidal attempts in women is also common and regions and cultures have their contribution too. Every second there's someone thinking of committing suicide and every minute there is someone who loses to life and death wins over. Mer calculation of people surrendering themselves to all the negativity inside or outside them and ceasing their lives isn't a good symbol for any country or state.

Additionally, it also discusses how ceasing one's life is considered to be sacred and holy in some Indic cultures, stating that it's is the highest sacrifice that one can give and it attains salvation "moksh". The women have also been committing suicide after or during the death of the husbands, "sati" which has been called off yet quite prevalent in small parts of the country. All this being discussed, it tries to change the lens at viewing suicide and states that it was a way of relieving oneself from the cycle of life and death and safest way to get rid of the problems. Moving ahead, it discusses, the part that it comprises is, the youth, unemployed adults or loneliness. Age group 15-29 is supposed to have made their mark in this no-entry zone by having committed most of the suicides.

Suicide has been associated with gender inequality, physical abuse, mental or physical disorders and inefficiency to cope with them. Men and women have different modes of attempting suicides, lethal and less lethal respectively so as to avoid detection in former and get rescued in the later. Divorce, widows or separated men and women also have been reported with suicide attempts and thus proved marriage also as one of the causes.

This paper further goes on to discussing methods resorted to for suicide like poison, burns, hanging, jumping or drowning to name a few. It has also tried to predict suicide and understand attempters versus completers and their behaviours. This paper can foster the project and prediction to safeguard our youth and motivate better lifestyle.

3) Indian research on suicide

This paper discusses the reasons and group of suicide attempts a decade ago were below the age group of 44 years. Each one of us is affected by suicide because we either attempt it or witness it. It states that the most vulnerable age group is 18-30 and most common method is poisoning. Females with lower economic background, being married whereas males with less monetary stability, hopelessness, depression.

DSH -Deliberate self-harm is also reported as one of the aspects to future suicide attempts. DSH is observed in the younger age groups and less lethal ways but have also observed prevalence of risky behaviour like slitting the wrist, jumping off the cliff or going deep-waters. This is one way in which counsellors can address the DSH and overcome it thus reducing the fatalities due to suicide.

4) Suicide in India: a complex public health tragedy in need of a plan

This paper states that in the year 2015 the suicidal rate marked was 10.6 per 100,000 population. AIDS related and maternal deaths have acquired more attention than the suicidal deaths, I believe it could be more due to the perspective that they ended their lives, why do they need attention. However, that isn't the case, this least - concerned attitude has magnetically attracted and pulled them towards this solution. Youth and older age are key risky periods for women to commit suicide whereas youth, middle age and older age are risky periods for men.

It also discusses that each of it can be inter dependent, if the suicidal rates in men decrease and their dependency on alcohol decreases then women committing suicide may decrease. Suicide attempts require our attention as this only helps s in attaining the SDG target- sustainable development goal.

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5) Suicide ideation and stresses among the working professionals in India

The second leading cause of death in the year 2012 discussed by WHO, being suicide. `It discusses that National crime record bureau has recorded suicides at a rate of 15 per hour, India being on the first position. An imbalance between the needs and means to be fulfilled. Feeble in adapting the consistently changing environment makes it stressful and pushes the individual to ceasing the life from this pressure and helplessness. This hopelessness or hopefulness is the bridge between the positive or negative influencer. As the negative influence increases due to increased hopelessness and despondency, the choked feeling causes the person to end his life. This is termed as Cognitive attitude by Aron Beck.

An individual may commit suicide if he feels isolated, unwanted or useless to put it across clearly. If a youth especially feels unrecognized and ineligible to contribute to the society, he or she might opt for these solutions. This is due to the sociological perspective given by Emile Durkheim.

Psychological Behavior says that the person intending to commit suicide may want a reason to do so, like taking revenge and then ceasing to life due to guilt, feeling hopeless. People with low serotonin, dopamine, norepinephrine chemicals in the body are prone to committing suicide. It has done some reliability, KMO and Bartlettes test, hypothesis testing.

It has discussed various issues that are

a. Love failure
b. Cancellation of marriage
c. Death of the dear person
d. Barrenness/impotence
e. Divorce
f. Unwanted pregnancy
g. Bankruptcy
h. Financial crisis
i. Unemployment due to recession
j. Professional/career problems
k. Alcoholism
l. Illness/sickness
m. Drug abuse
n. Physical abuse
o. Dowry abuse
p. Family problems
q. Family health issues

These 17 causes become the driving force to a person committing suicide.

6) Suicide in Youth: Shifting Paradigm

This paper discusses the various means of causing self-harm like burning, train-run over, suicide and poisoning. It talks about the existence of the term suicide and it being in practice since the existence of humans. It is as if since the day man found out that it could kill himself. Suicidal deaths occur more frequently than the deaths by world\s arm conflict or naturally.

It has strived hard to find out the pattern, life events and socio-economical, cultural and psychological status to understand the driving force for the same. Out of the 627 autopsies conducted 227 were termed to be ISH – intentional self-harm. It has discussed in the terms of most reliable or resorted approach for suicide to the least as follows,

- Unknown poisoning (39%)
- Jumping against moving train (25%)

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- Hanging (19%)
- Drowning (9%)
- Alcohol (4%)
- Burn (1.8%)

Smart suicide attempts are noted here, as trains are always available during the peak impulse times. Tracks being always occupied with trains and applying brakes being impossible, the depressed yet smart youth tend to take negative advantage of it.

7) The psychology of suicidal behavior
It accepts that all this while what we have been discussing is only the ways, means or motivations to take such a negative leap , however what we are missing out on is that we hardly know the reason for individuals committing suicides. Whether it is their negative life events like,

- Childhood adversities
- Traumatic life events during adulthood
- Physical illness
- Other interpersonal stressors
- Psychophysiological stress response

These have the potential to contribute to the psychology of an individual and mislead it to something dangerous, if only it could scare them.

8) Suicide and Suicidal Behavior
This paper states that suicide is an intentional ending of one's life and it is observed across countries and boundaries. This paper also talks about suicide ideation, suicide plan and suicide attempt as three categories of non-fata suicide thoughts. Suicide ideation is getting convinced with the idea of committing a suicide and nurturing those thoughts. Suicide plan is the means by which one then decides to take an action. Here, the methods come into picture. Suicide attempt is the actual behavior where a person attempts to die with self-harming steps like cutting, poisoning, hanging or drowning. It discusses that the ratio of suicide in India is almost for men and women as per the studies in developing countries. In countries like India, disempowering women and low status has become one the reasons It makes a wonderful research stating that the onset of adolescence and early 20's is the period of greatest risk towards committing suicide.

Additionally, it talks about preventive and curative measures. Training physicians to recognize and treat suicidal behaviors is the need of the hour, also making access to lethal things difficult is another means of hindering the process.

CONCLUSIONS

The approach to life is changing slowly and gradually. Understanding one another better and without judgements or pre-set notions one is able to help others better. If we are able to gauge what an individual around us is going through, we can make a difference in their lives and the society as a whole. Each individual's life and battles are different hence it's essential to have a tailored approach for each individual. The studies show that neural networks work amazingly well on such kinds of problems in order to understand behavioral patterns and predict the outcomes. The therapy can be suggested well only if the root cause or a proper illness diagnosis is done. Eventually a better consultation and an environment can be created to gift an enriched life to our deal ones.

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A STUDY OF MODERN SOFTWARE DEVELOPMENT PROCESS FOR MOBILE APPLICATIONS

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ABSTRACT
Over the past few years the mobile industry has captured the market at a very fast pace. Developing an application for mobile devices is not an easy task as the software development approach will not remain the same as implemented for traditional software like desktop and web based applications. This is because mobile application development is a challenging one because of the different types of mobile devices available and their limitations, fast changing needs of users, short development cycle, stiff competition and the security issues related to them. We require a suitable software engineering approach and a dedicated Mobile Application Development Lifecycle for developing mobile applications. Agile Model is the best approach to develop mobile applications as continuous interaction is required between the developers and users and frequent changes have to be incorporated. In this paper we study the characteristics of mobile application development and a systematic life cycle model is proposed for the Mobile Application Development.

Keywords: software development approach, traditional software, Mobile Application Development, mobile applications, software engineering approach, Mobile Application Development Llifecycle , Agile model.

1. INTRODUCTION

User interface is of utmost importance in mobile apps. User requirements as well as the technology changes frequently for mobile applications. A quick delivery is required to ensure users' satisfaction. So mobile apps have to be developed fast, continuously monitored for any problems or updations and immediately rectified or updated if required. There are various software process models available like Waterfall, Iterative, Incremental, RAD, Prototype, Spiral, Agile etc. Choosing a particular model depends on the type of software that we are developing as well as the development environment. Agile model is suitable for those projects which have a short development cycle, early and fast delivery is required and frequent changes have to be done even it is very late. This model lays more emphasis on continuous interaction between the customers and developers to get users' feedback and to ensure maximum customer satisfaction. Documentation is not given so much importance in Agile model. Due to these reasons Agile model is appropriate for the development of mobile applications.

2. MOBILE APP DEVELOPMENT CHALLENGES

- There are different models of mobile devices with different operating systems like Android, ios etc. So developers need to aim at cross platform apps for capturing the market.
- It has to be marketed quickly due to stiff competition.
- Mobile development life cycle is short.
- Mobile Apps require quick and frequent updates depending upon users' feedback.
- First release should be successful to ensure customer satisfaction and to capture the market
- Development teams are small.
- Privacy and security of user information is utmost important as mobile devices has access to sensitive personal information like username, password, credit card and banking information, confidential documents, camera, GPS location etc.

3. What is SDLC?

For the success of any software project i.e. quality and timeliness, we need to adhere to a systematic approach to develop the software. This systematic approach is known as SDLC which stands for Software Development Lifecycle or System Development Lifecycle. SW development is a complex task in itself. SDLC has various phases like requirements gathering, analysis, design, implementation, and testing which Software developers need to adhere to. There are various software development approaches like Waterfall Model, Iterative Model, RAD Model etc., and each one has its own strength and weakness and may prove to be better in one situation than in another. Apart from the traditional approaches new methodologies like Agile have also emerged. The challenge is to decide which model to select in a given software development scenario.

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4. PHASES INVOLVED IN SDLC MODEL

By and large every software development life cycle model has the following phases:

1) Requirement Gathering and Analysis-Information is collected from the customer to understand the problem.

2) Design- In this phase, developers chalk out a plan to find out the solution to the problem based on the requirements gathered and a software architecture is proposed.

3) Implementation-Coding the planned solution. The Software design is modified into source code.

4) Testing-Entire program is tested once the coding is complete. In this phase, the developed software is tested thoroughly and any defects found are rectified.

5) Deployment-Once the product is tested, it is deployed in the target environment.

6) Maintenance-After deployment maintenance of the product is very important i.e. to rectify any issues related to the functioning of the software as well as any enhancement or modifications.

5. GENERAL SOFTWARE PROCESS MODELS

There are a number of software process models used for developing software. Developers adopt the best-suited model for their project and development environment. Following broad types of process models are considered*:*

1) Waterfall Model-In this model the phases are distinct and sequential like Requirements, Analysis & Design etc. This model is rigid as each phase must be completed before the next phase can begin and no overlapping is allowed between the phases.

2) Iterative Model-In iterative development software is designed, developed and tested in repeated cycles. With each iteration, additional features can be added by undergoing through the same phases in each cycle.

3) Incremental Model- In this approach software is built and delivered in pieces. Each increment represents a complete subset of functionality. The process finishes when it satisfies all of users' requirements.

4) Rapid application development (RAD)-RAD approach gives more emphasis on process rather than planning. In contrast to the waterfall model, which requires the specification to be defined before development phase, RAD approach lays more emphasis on the necessity of adjusting requirements according to the customer's feedback as the project progresses. Prototypes are often used in this approach.

5) Agile Model-Agile processes are iterative in nature. While traditional methodologies emphasize detailed planning, modeling and documentation, agile methodologies aim at rapid development and delivery of software and satisfying frequently changing client requirements. Instead of redundant documentation, Agile model focuses on quick software development. Customers and developers continuously interact with each other. It encourages continuous improvement, rapid and flexible response to change. In practice developers use a mix of above methodologies or their own customized approach.

6. SOFTWARE ENGINEERING ISSUES FOR MOBILE APPLICATION DEVELOPMENT

There is stiff competition in the market today as numerous mobile apps have cropped up. To attract consumer's attention the app should be successfully functioning the very first time it is launched in market. So the developer has to follow a step by step process and use the correct software development methodology for building an app. Agile Model is best suited for Mobile Apps. It helps us deliver valuable functionality to our customers quickly, collect immediate feedback, and make rapid changes based on that feedback. These fast development cycles are impossible to implement in the traditional development model. After releasing the app in market its performance needs to be continuously monitored. Quick identification of problems and correction is required before it affects users' experience and harms app reputation. Users' reviews are very important as they contain valuable feedback and suggestions for improving the app. Security is a very important aspect for mobile apps.

7. PROPOSED PHASES OF MOBILE APPLICATION DEVELOPMENT LIFECYCLE

The step by step process involving various phases for developing mobile apps is called the Mobile Application Development Lifecycle. It is the same as Software Development Lifecycle (SDLC) but from the perspective of a mobile device. Following are the proposed phases: **OF**

- Planning and Brainstorming
- Storyboarding and Requirements Gathering
- Technical feasibility Analysis

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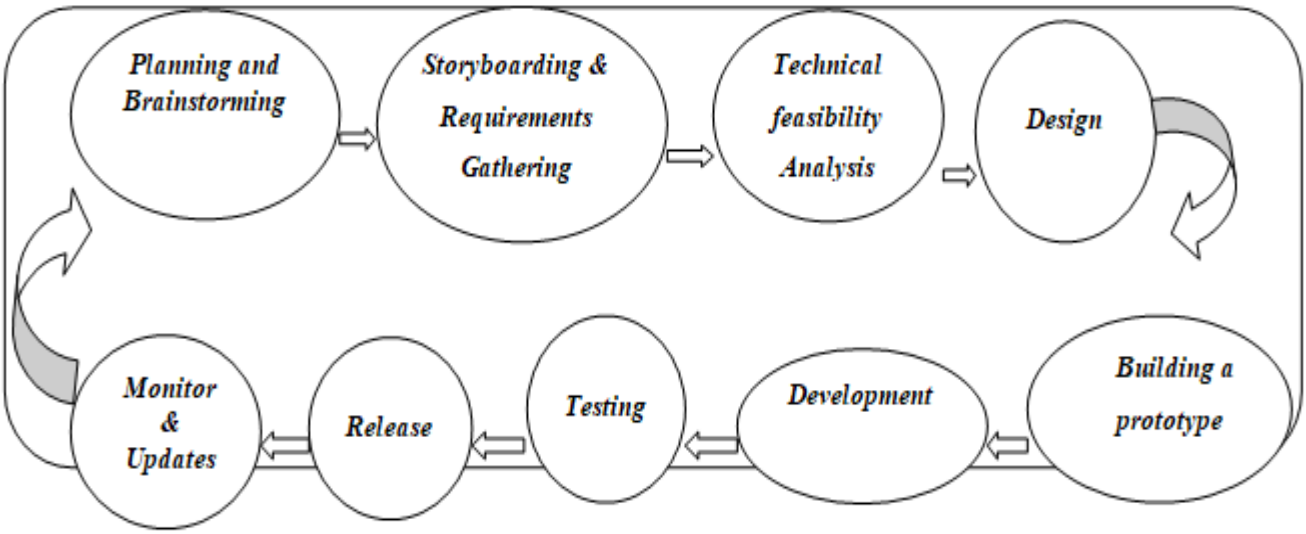
- Design
- Building a prototype
- Development
- Test
- Release
- Monitor & Updates



PROPOSED MOBILE APPLICATION DEVELOPMENT LIFECYCLE

- **Planning and Brainstorming**

The first phase is the most important where we have to focus upon some important aspects like the objective behind developing the app, whether any similar apps are there in the market, how this app will be unique and better than existing ones, who are the intended users, when and how will they use it, the app is being developed for which platform, whether the app will be free or paid, security issues related to the app etc. If there are similar apps in the market we have to find out the features which are absent in their App so that we can include it in our App, to make it unique. Time estimation and cost benefit analysis is also done in this phase.

- **Storyboarding and Requirements Gathering**

In this phase we have to draw sketches based on our ideas collected in phase 1. This will visually represent our ideas and it will help us to understand the requirements and uncover usability issues. In storyboarding technique we have to draw the user interface step by step depending upon the user interaction that will happen. Feedback from team members and users is very important in this phase to find out the loopholes and how to tackle them.

- **Technical feasibility Analysis**

We need to analyze the technical feasibility of the app. First and foremost we have to be clear about the platform for which we are building the app. Technical requirements for building the app will differ depending upon the platform (Android, ios) as well as the type of mobile device.

- **Design**

Before moving to coding we must design our App keeping in mind that User Interface and Responsiveness are critical. So it should be a user-centered design. We need to identify when, where and how a person will use the app, define the features, design the user interface to create the look and feel of App, design the interaction architecture and design the database.

- **Building a prototype**

We must build a prototype and give a quick feel of the App to the users. This will help us understand whether we are moving in the right direction or not. Involving selective users to use the prototype helps us to get the correct feedback to do the required changes.

- **Development**

In this phase, the application is coded. Coding for different modules can proceed parallely. Target platform should be selected keeping in mind the number of users of a particular platform, the number of competitors in

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the market, expenses involved in development and profit for the developers. We should target cross-platform Development to capture the market.

➢ **Testing**

The app should receive positive user feedback the very first time it is launched, otherwise it loses popularity. Testing is done to verify correctness, functionality and usability before releasing app publicly. Testing can be done using real device or emulators although emulators cannot substitute real devices. Testing on multiple devices is necessary. Once this phase is successful, the app is complete and is ready for release. However, this is not the end as regular updates and new features need to be added. The development lifecycle for the next version restarts immediately after launching the app.

Types of Testing

- Unit Testing-Individual functions are tested to validate whether they are performing as designed.
- Functional Testing-Checks the features and functionality supported by the app as well as response of the app when user interaction happens.
- Performance Testing-Checks the performance of the app like its response time, reliability and memory usage.
- Security Testing-Checks security vulnerabilities of the app and ensures safety and security of user's data and resources.
- Regression Testing-The app is compared with its previous versions to confirm that a recent change in code has not affected existing features and ensures that existing functionalities work fine.

➢ **Release**

In this phase the app is released to users through App Marketplaces like Google Play Store, Apple App Store, etc. The app should be released progressively i.e. to selective users first, in order to rectify any technical or user interaction issues before releasing the app publicly.

➢ **Monitor & Updates**

Last but not the least, we need to collect and process data about the app's performance. User reviews have to be continuously monitored. A quick identification and correction of problems is a must before it badly affects users' experience and harms app reputation.

8. CONCLUSION AND FUTURE WORK

In this paper software development challenges for Mobile Applications were examined. Mobile Application development is different from traditional software development. Agile model is best suited one. Mobile Application Development Lifecycle has been proposed to help developers in developing best quality apps. Future researchers can compare the mobile development practice for iOS versus Android. Future researches could also focus on mobile applications which are using cloud environment.

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COMPARATIVE STUDY OF ARCHITECTURAL DESIGN OF TRADITIONAL AND CLOUD BASED DATA WAREHOUSE SYSTEM

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ABSTRACT
This paper focuses on the Comparative study of Architectural Design Traditional Data warehouse with Cloud-Based Data Warehouse System.

Tradition Data warehouses are basically based on two design techniques invented by two pioneers Kimball and Inmon. Also known as Top-down and bottom-up approach, Were as cloud-based data warehouse architecture depends on the service provider. like Redshift by Amazon, BigQuery by Google and Azure by Microsoft.

This paper also addresses how these Architectural design help Organizations and Enterprises in managing the data Efficiently and which one to choose.

Keywords: Data Warehouses, Traditional Data-Warehouse , Cloud Based Data-warehouses, Amazon Redshift, Google BigQuery, Microsoft Azure, Panoply.

INTRODUCTION
Data has become an important entity which is used to find new possibilities to transform businesses. Traditionally, data has been gathered in an enterprise data warehouse but as the world of data is rapidly evolving in ways that are transforming the industry and motivating enterprises to consider new approaches of gaining insights in more accurate ways. A data warehousing is a technique for collecting and managing a Large amount of data from varied sources to provide meaningful business insights. It is a blend of technologies and components which help the Business strategist to make strategic use of data.

The Architectural Design of Data warehouse depends on the various factors, Data can be stored in many ways it can be stored by Using a Simple Database or Data warehouse can also be used for the storage purpose. The functioning of the data warehouse differs from a simple database in many ways. Data warehouses work as a relational database which is designed for query and analysis rather than for transaction processing. A data warehouse lies on top of another database or databases. It is structured in a way to make analytics fast and easy. Usually Data warehouse contains historical data derived from transaction data, but it is a relational database which is used for querying and analysis rather than transactional processing of data.

A data warehouse environment is a collection of the set of processes like extraction, transportation, transformation, and loading (ETL) solution, it also contains other technique to transform the knowledge gain by data mining and performing ETL process on a Set of data into useful, actionable information, and delivering it to business users.

Traditional Data Warehouse
Traditionally Data Warehouses are made up of three-tier architecture.

1) Top-Tier: This act as the Front end of the three-tier architecture, also known as client layer. it consists of Tools which is used for high-level data analysis, querying reporting and Data Mining.

2) Middle-Tire: this tier consists of OLAP Server which is responsible for transforming data into a structure which is suitable for analysis and complex querying. OLAP Server can be either used as a Relational OLAP model or multidimensional OLAP model.

Relational OLAP maps the operation on multidimensional data to standard relational operations, whereas multidimensional data and operation can be directly implemented by using multidimensional OLAP model.

3) Bottom-Tier: This tier also contains the Database server which is used to store Extracted data from various sources by using a different gateway. The Data sources fed into the bottom tier can include types of front-end data.

Approach to Design Traditional Data-Warehouse
Basically, Data-Warehouse can be designed by using two approaches proposed by the two pioneers, Bill Inmon, and Ralph Kimball.

Inmon is Known for his Top-down approach, in which a centralized data warehouse is created first Followed by the creation of dimensional Data Marts so it is also known as “enterprise data warehouse”. In this method, the

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data warehouse provides a logical framework. Inmon defined a term like subject-oriented, time-variant, non-volatile and Integrated Data.

Kimball is known for his Bottom-Up approach, these data warehouses are known as “dimensional data warehouse”. In this approach Critical Data Marts are created first which is useful for analytical needs of departments. after these Data marts integrated to form centralized data warehouse.

CLOUD-BASED DATA WAREHOUSE APPROACH

The warehouse is not capable of storing information with different file formats, its slow batch processing, high maintenance cost leads organizations to move to adopt cloud Data Warehouse solution[1].

Migrating on cloud-based data warehouse makes the maintenance and Scaling processes simple. Scaling-up and scaling-down of storage capacity is complex task in traditional data warehouse which can be done in a single click on cloud-based data warehouses.

Setting up traditional data warehouses are more expensive and time taking as compare to the cloud based ,so to overcome these limitations of traditional data warehouses enterprises are opting for Cloud based Data warehousing services.

According to study 83% Of Enterprise Workloads Will Be in the Cloud By 2020 [2]. The new cloud-based data warehouses offer features which are capable of overcoming the limitation of the traditional data warehouse. Each cloud-based data warehouse offers a unique architecture.

This section summarizes the cloud-based architectures used by the majority of the most popular cloud-based warehouses: Amazon Redshift and Google BigQuery.

Amazon Redshift

Amazon Redshift is one of the cloud-based representation of a traditional Data warehouse. Computing resources are set up in the form of clusters, every cluster is a collection of one or more nodes. Each and every node of clusters are capable of processing and computing as it has its own CPU, storage, and RAM. Amazon Redshift follows the Master-slave architecture, the master node compiles queries and transfers the data to another node which is responsible for computing. Master node also divides the data into chunks which are known as slices and distributes among other computing nodes[4].

It follows columnar storage technique, meaning each block of data contains values from a single column across a number of rows, instead of a single row with values from multiple columns.

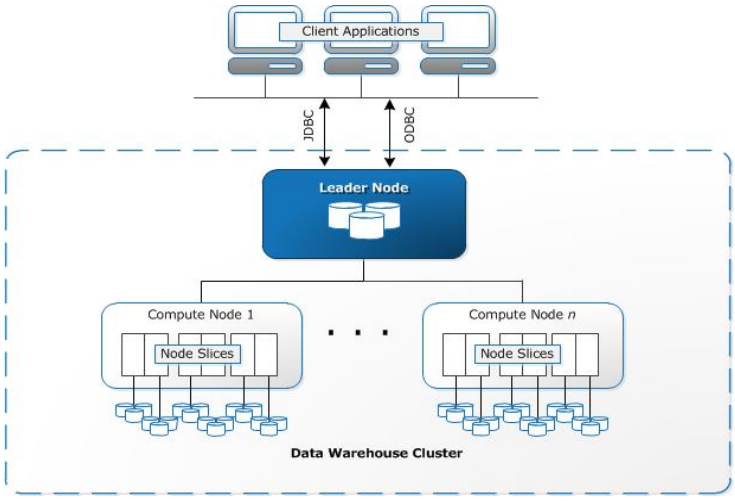

Image Source: AWS Documentation

Redshift uses an MPP architecture,

As the Slices are distributed among various node so execution of querying becomes faster as the compute nodes process queries in each slice simultaneously. The master node is also responsible for aggregating the results and returns them to the client application. Client applications tools can directly connect to Redshift using open source PostgreSQL JDBC and ODBC drivers. The direct connection of Client application, BI and analytics tools break down the complexity of Analysis. thus Analysts can perform their tasks directly on the Redshift data. Redshift only supports structured data. Pre-integrated systems including Amazon S3 and DynamoDB can be used to load data to Redshift, other data sources can be integrated using the Redshift API.

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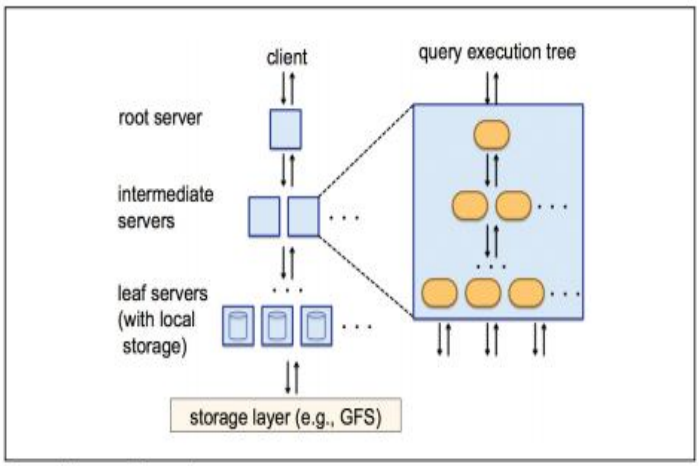
Google BigQuery

BigQuery allows clients to load data from Google Cloud Storage and other readable data sources. It is also capable of handling stream data, which allows developers to add data to the data warehouse in real-time, as it becomes available. BigQuery uses a *Dremel*, query execution engine which can scan billions of rows of data in just a few seconds. To scan data in the underlying Colossus file management system Dremel uses massively parallel querying technique. colossus divides the data files into chunks of 64 megabytes and distributes these hunks among nodes, which are grouped in clusters. Dremel uses a columnar data structure, similar to Redshift. The tree architecture of Dremel dispatches queries among thousands of machines in seconds.



Tree architecture of Dremel

Simple SQL commands are used to perform queries on data.

Panoply

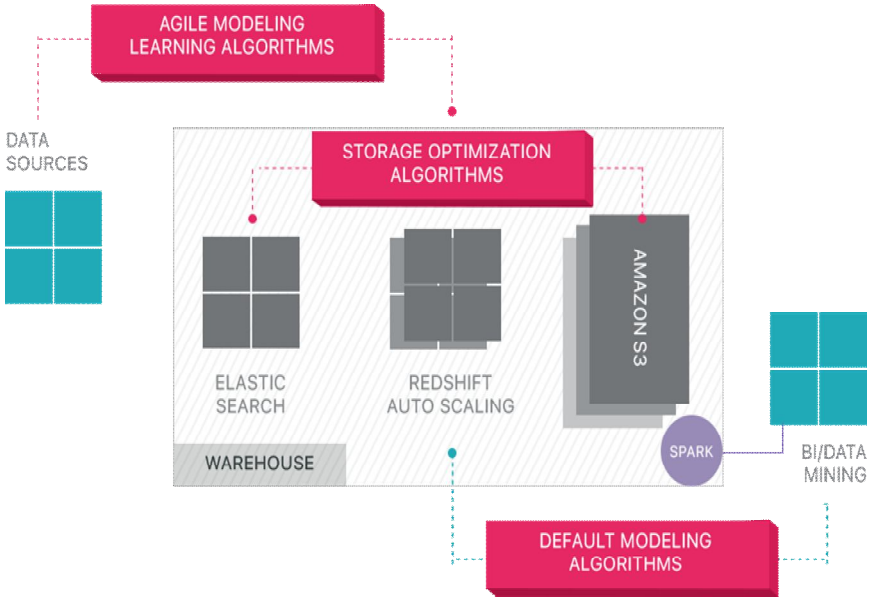
Panoply provides end-to-end data management-as-a-service. Its uses Machine Learning (ML) and Natural processing Language (NLP) techniques to record the progress of data from source to till getting converted those data into useful insights. As panoply is based on ML and NLP it reduces the time from data to value as close to negligible.

Panoply's AI inspired data infrastructure includes the following features:

Analyzing of queries and data – As it is AI-powered its capable of analyzing the case and finding the best suitable configuration method accordingly. It is capable of auto-generation of indexes, sort-keys, data types, vacuuming, and partitioning. Identifying queries that do not follow best practices – Simplifies the nested loops or implicit casting in equivalent simple querying to boost the performance.

Optimizing server configurations

Over the period of time by analyzing the query pattern and structure the platform can predict, that which serve setup will work best for that case and switch over that server seamlessly.



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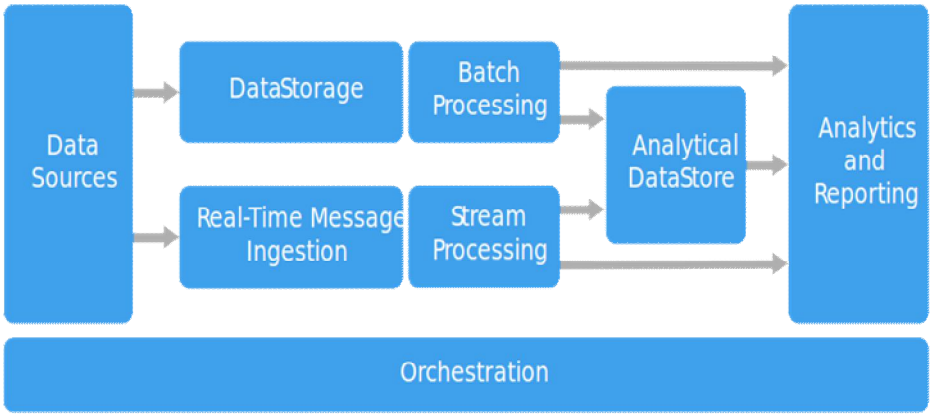
Microsoft Azure SQL Data Warehouse

Azure SQL Data Warehouse is a Fast, flexible, and secure .it provide flexible analytics platform for the enterprise. Azure SQL Data Warehouse allows scale-up and scale-down storage while pausing and resuming your data warehouse within minutes through a massively parallel processing architecture designed for the cloud. Seamlessly

Microsoft's Azure allows performing multiple tasks to create your hub for analytics along with native connectivity with data integration and visualization services, all while using your existing SQL and BI skills. Microsoft's Azure Virtual Machines platform is ideal for running SQL Server applications because of new virtual images optimized for performance and a simple configuration (Microsoft Azure). The SQL Server engine was redesigned for the multiple parallel processing (MPP) with Parallel Data Warehouse (PDW). The MPP architecture enables powerful distributed computing and climbing accompanying the client's need and reduces latency improving performance (The Microsoft Modern Data Warehouse, 2013). The company states that the warehouse relational data were not designed to handle a large volume of data. The proposed solution integrates the traditional data warehouse with non-relational data and thus supports any volume of information and real-time.



CONCLUSION

The comparative study of the architecture of traditional Data-Warehouse and the cloud-based data warehouses are presented in this paper.

This paper presents the data warehouse and its three types of Architecture. The architecture of data warehouse vary according to the need of a particular organization and design methodology like Top-down and Bottom-up approach depends on the strategic planning or on the design process of Data warehouse.

The traditional data warehouses have some limitation like scaling of storage capacity, batch processing and many more which can be avoided by moving on the cloud-based data warehouse. as it allows one-click up-gradation of storage capacity to process a large amount of data cloud service allows running multiple servers to make data processing faster which is not possible In traditional set-up.

For example Amazon's Redshift and Microsoft's Azure both provide automatic replication, automated back-up, and both are highly Durable but in terms of scaling SQL data warehouse of Microsoft is more Flexible as compare to Redshift as it provides freedom to adjust compute power. So the selection of Traditional/cloud data warehouses depends on the need and requirement of that enterprise.

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STUDY OF DATA MINING CLASSIFICATION TECHNIQUES

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ABSTRACT
Data Mining is a Knowledge Discovery Technique .Data Mining is a process of extracting knowledge from a large amount of dataset .Data Mining convert the data into understandable format .Data Mining consist two main model Predictive and Descriptive .Predictive model of Data Mining involves majorly four tasks-Classification ,Regression ,Time Series analysis , and prediction.

Keywords: Data Mining, Classification, Decision Tree, Rule based Classifier, Naive Bayes Classifier, k- nearest neighbor Classifier.

INTRODUCTION
Now-a-days there is a rapidly growth in business operations which generates large amount of data . To manage and manipulate the data various Data Mining model and tasks are used. Data Mining has mainly two models predictive model which predict the value of Data Mining using known values of different data. The Descriptive model which identifies pattern or relationship in data Predictive model has one of the task called classification. Classification classify the data or split the data into predefined groups. Classification referred as Supervised learning because the classes are decide before examining the data. Classification assigns the class label to a set of unclassified cases.

CLASSIFICATION TECHNIQUES
Classification classify the data into several predefine classes by using training data set. We run the classifier technique on Iris dataset .Iris dataset involves flower species sample data.

```
@RELATION iris

@ATTRIBUTE sepallength     REAL
@ATTRIBUTE sepalwidth      REAL
@ATTRIBUTE petallength     REAL
@ATTRIBUTE petalwidth REAL
@ATTRIBUTE class      {Iris-setosa,Iris-versicolor,Iris-
virginica}

@DATA
5.1,3.5,1.4,0.2,Iris-setosa
4.9,3.0,1.4,0.2,Iris-setosa
4.7,3.2,1.3,0.2,Iris-setosa
4.6,3.1,1.5,0.2,Iris-setosa
5.0,3.6,1.4,0.2,Iris-setosa
5.4,3.9,1.7,0.4,Iris-setosa
4.6,3.4,1.4,0.3,Iris-setosa
5.0,3.4,1.5,0.2,Iris-setosa
4.4,2.9,1.4,0.2,Iris-setosa
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5.0,3.4,1.6,0.4,Iris-setosa
5.2,3.5,1.5,0.2,Iris-setosa
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Decision Tree
Decision tree represent the data into tree like structure involves nodes, branches , leafs etc. In Decision Tree topmost node represent test on an attribute value , each branch represents outcome of test and leaf node of tree represent classes. Classification start at root node and continue till reach at terminal or leaf node.

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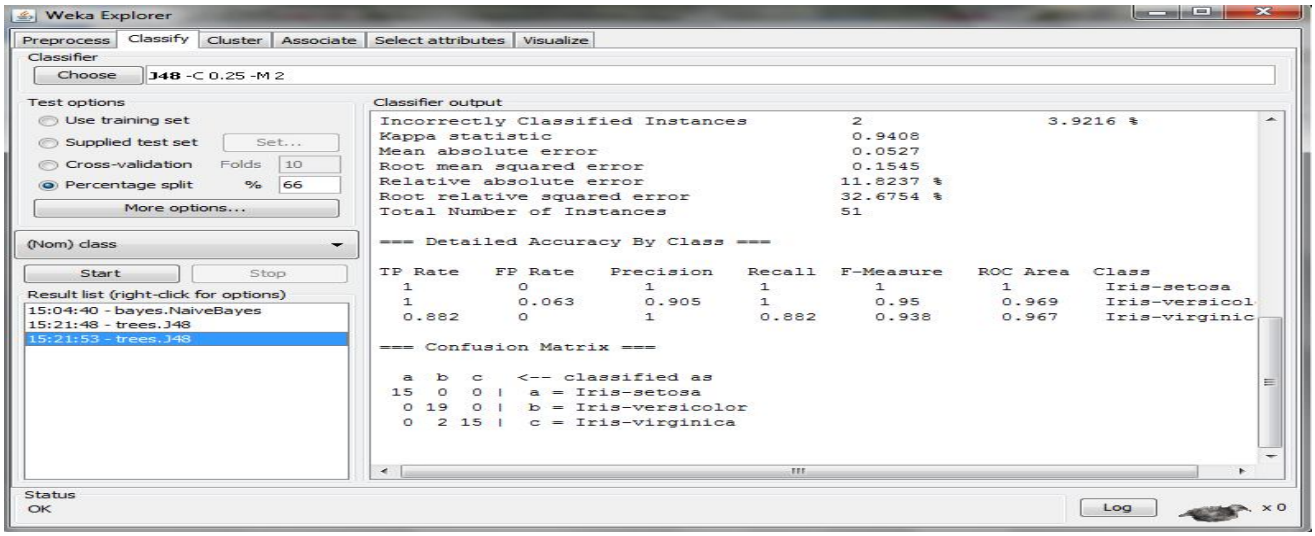
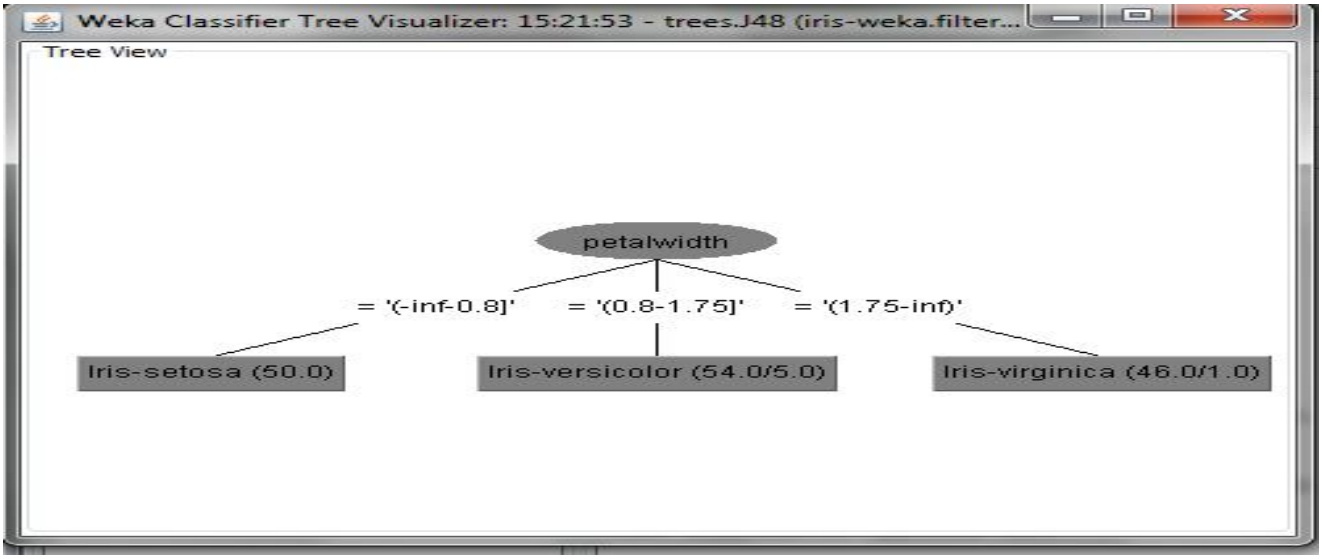


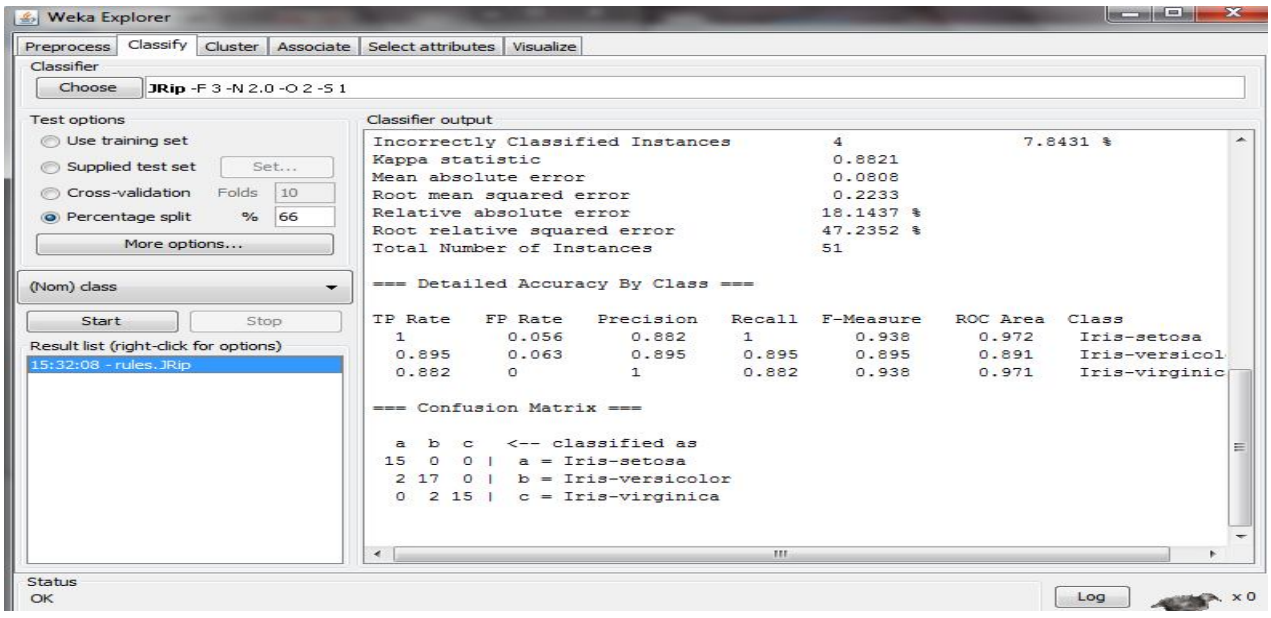


Rule Based Classifier

Ruled based classifier is purely based on Rules. We can express the rule in the following form-

If condition Then conclusion

When If condition is satisfied then rule will be triggered and fired. If part called as pre-condition or Antecedent ,Then part called as Consequent. Ruled can be judged by its coverage and accuracy.



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Naive Bayes Classifier

Naïve Bayes Classifier based on Bayes theorem. Naïve Bayes classifier helps to predict class membership probability. In this

Classifier mainly two probability are used. Posterior probability and prior probability.

P(H/X)=P(X/H).P(H)/P(X)

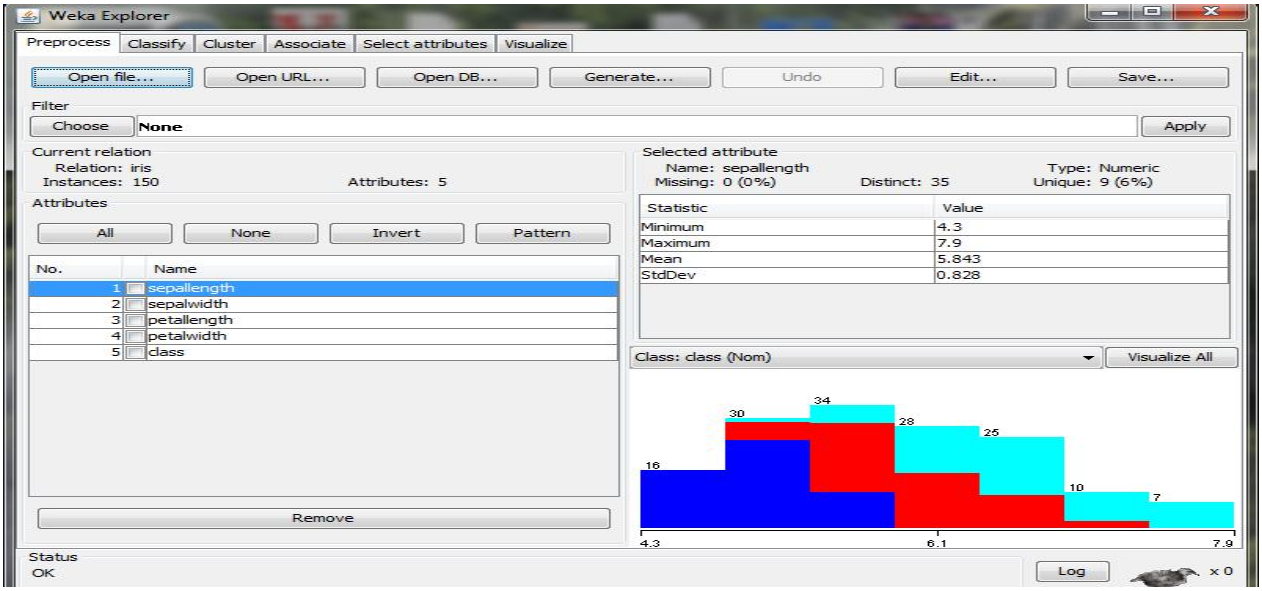
H=data tuple H=hypothesis

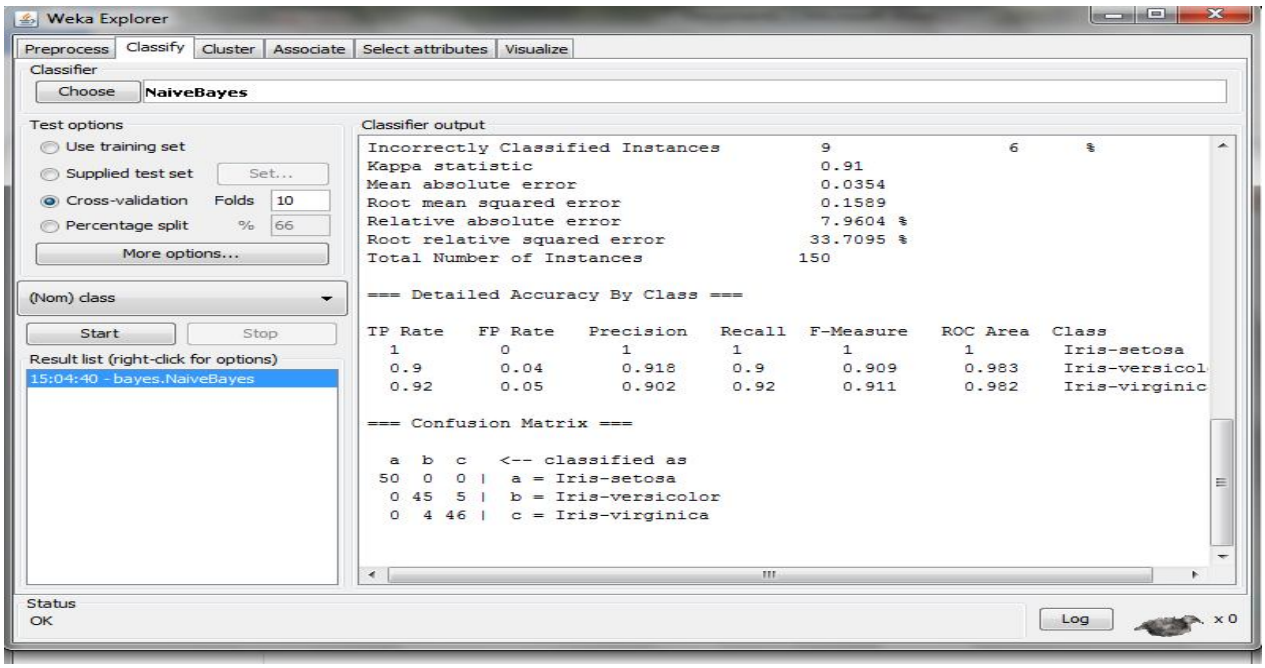
P(H)=Initial probability

P(X)=Probability that sample data is observed.

P(X/H)= Probability of observing the sample X.

Naïve Bayes Classifier predict that the given tuple X belong to a particular class.





Nearest Neighbor Classifier

Nearest neighbor is one of the simplest classifier. Nearest neighbor is one of the essential classification algorithm in machine learning. We are taken some prior data also called training data which classifies data points into groups . We can also take testing data which consist data point s which will need to classify. Now we can assign a data point to a group by observing what group its nearest neighbor belong to. It means point close to group having similar properties classified according to that group.

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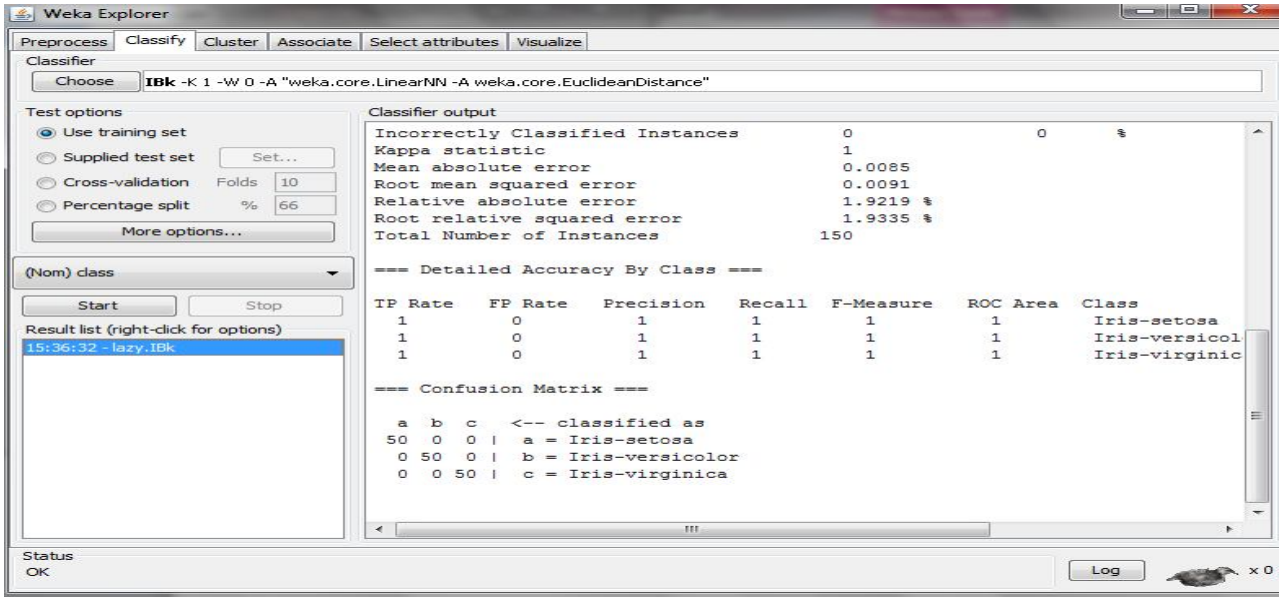

CONCLUSION

We select four popular classifier such as Nearest Neighbor ,Naïve Bayes , Rule Based, Decision Tree. Iris dataset involves three flower species information. The three classifier Ruled based ,Naïve Bayes , Decision Tree gives improved predictive performance but IBK Nearest Neighbor performance is not significant.

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EYE-TRACKING METRICS TO IDENTIFY VISION ATTENTION OF ADVERTISEMENT

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ABSTRACT
Organizations prefer to display their advertisement boards in public places which provide vision attention. Generally, advertisement companies predict the number of viewers to their client but actually, that number may be far from accurate. There is no system which can count the exact numbers of users who view the advertisement on a daily or weekly basis. This paper proposes an application which can provide better results over the existing methods. We have developed the proposed system to identify popularity of advertisement by collecting the count of the people who view the advertisement and this would help the advertisement companies to decide which place is proper to place their banners. It detects the face of the viewer and identifies the coordinates of eyes. Using this information, the system checks whether the viewer is looking towards the banner. Flags used in the application will increase as the number of peoples looks at the advertisement and keeps the record in the database.

Keywords: eye tracking, vision attention, face recognition, object detection

INTRODUCTION
Big and small companies use banners as one of the visual marketing methods to advertise and promote their products and services. Lots of things is to be considered while displaying the banner. The location of the banner is very important so that maximum people will be viewing the advertisement. As there is no system present in the market which can be used to analyze and provide some data which can be used to estimate which place is better for the banners and which is the busiest time of the season when people are interested in reading the advertisement.

Banners are designed to be displayed in places where a large number of people will be noticing their advertisement. Designers make the banner eye-catching with different techniques. Companies prefer to display their advertisement boards in public places which provide vision attention of the crowd. Generally, advertisement companies predict the number of viewers to their client but actually that number may be far from accurate and hence we are creating an application which can provide better results over the existing methods. There is no system which can count the exact numbers of users who view the advertisement on a daily or weekly basis. We have developed a new system to identify popularity of advertisement by collecting the count of the viewers who view the advertisement and this would help the advertisement companies to decide which place is proper to place their banners. The main features of the proposed system are,

- Estimate the numbers of the viewers who view the advertisement banner.
- Record the time and date of viewing.
- Provides date wise count of viewers.

Also, there is no system present in the market which can be used to analyze and provide some data which can be used to estimate which place is better for the banners and which is the busiest time of the season when people are interested in reading the advertisement. We have used an object identification mechanism to estimate the viewers count.

LITERATURE REVIEW
Object detection is a very fast growing research area with wide applications. Lots of research study is going in this area [1-3]. Face Detection is not something new to the IT industry as there are many studies carried out on different platforms and easily available over the internet. There are many methods which are being used for the face detection and eye-tracking one of the latest options are to use neural networking to detect the face using the deep learning[4-6]. Machine learning is being used in various fields including face detection, face recognition, speech recognition, object recognition etc. Neural networks are trained with sample images and the information is stored in digital format and used while the actual execution of the program. Neural network detects all the possible solutions to the problem and selects the best one based on the previous results [7]. Object detection is one of the fastest growing research areas and different machine learning algorithms are used for object recognition techniques [8].In [9], the authors proposed a system for old people to protect them and help them in daily tasks. The system uses security camera images to process the data and recognize the faces and alarms if

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there are strange people around. Then it sends the notifications to every member with the image. This system also supports voice recognition using machine learning to take commands.

In [10], authors have done a review study in the effectiveness of eye-tracking in visual marketing. From the review study, they have identified that effective tracking of eye movements can significantly contribute to visual marketing by providing viewers attention. In [11], the authors have done studies to identify the attention of workers by eye-tracking technology as a safety practice. Different methods have been proposed to identify visual object recognition [12]. Different methods are proposed to identify banner blindness using eye-tracking study in [13][14].

SYSTEM ARCHITECTURE

The proposed system is implemented in Python using the basic vision libraries. In our proposed system, the camera mounted on top of the advertisement banner captures video frames. As soon as the program starts its execution the initial step is to detect the hardware ports to collect the list of available hardware sensors like the camera. Once the camera has been detected successfully the next step is to verify if the camera is functional or not, as there can be driver issues. Figure 1.1 depicts the block diagram of the proposed system.

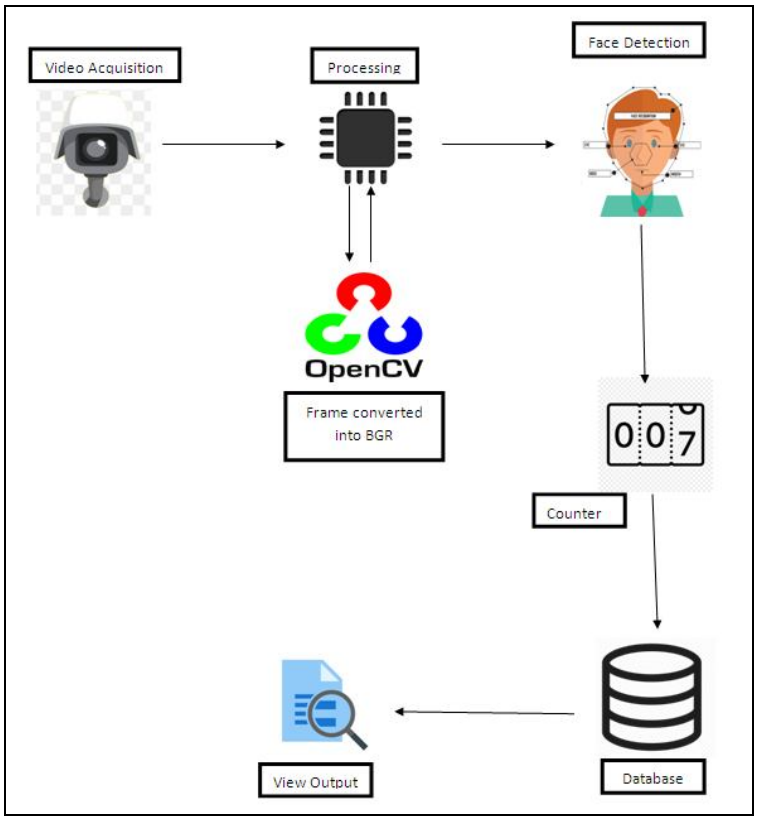

Figure-1.1: Block diagram of the proposed system

As soon as the camera starts video acquisition, the video is collected and converted to frames and each frame required to be converted in BGR colour format. Next step is the scanning of each frame and detects the facial matrices to identify the face. Once the eyes are detected in the image, the frames are scanned to identify lips and eye coordinates. Based on the identified lips and eye coordinates, the corresponding positions are identified. Based on this information the system can decide if the person is looking towards the banner or not. If the person is looking towards the banner, then the counter is incremented and updated in the database with time and date of the event. As the system also note the time and date of the view, the data can be used to calculate which the busiest time in which place and decide which place is good for placing the banner so that the vision attention of viewers will be maximum.

Matching frames are skipped for a time duration so that the same person is not counted again. Then next frames are acquired again by the camera and the same process is repeated till the time application is stopped by the client. Our system is implemented in Python using OpenCv library which utilizes machine learning to recognize the face. Thousands of patterns and characteristics, which is part of the machine learning algorithm, must be identified for face recognition. The algorithm breaks the task of recognizing the face into thousands of smaller tasks, known as classifiers, each of which is separately executed. The detailed flowchart of the proposed system is shown in Figure 1.2.

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More than 6000 classifiers exist, and each classifier should be matched for a face to be recognized. The algorithm starts from the top left corner of the image and breaks the image into small blocks. Each block is searched for the face recognition. Since there are more than 6000 tests to be carried out on each block, corresponding to the classifiers, millions of calculation to be carried out, which is time-consuming. To avoid this, OpenCV cascade classifier is used, which uses multi-stages to detect the face. For every block, cascade performs a rough test. If the test passes then it does a slightly more detailed test and continues so on. The algorithm has many stages available for face recognition and if all the tests pass then only the face is detected successfully. This time-saving feature helped OpenCV cascade detecting the face in real-time applications.

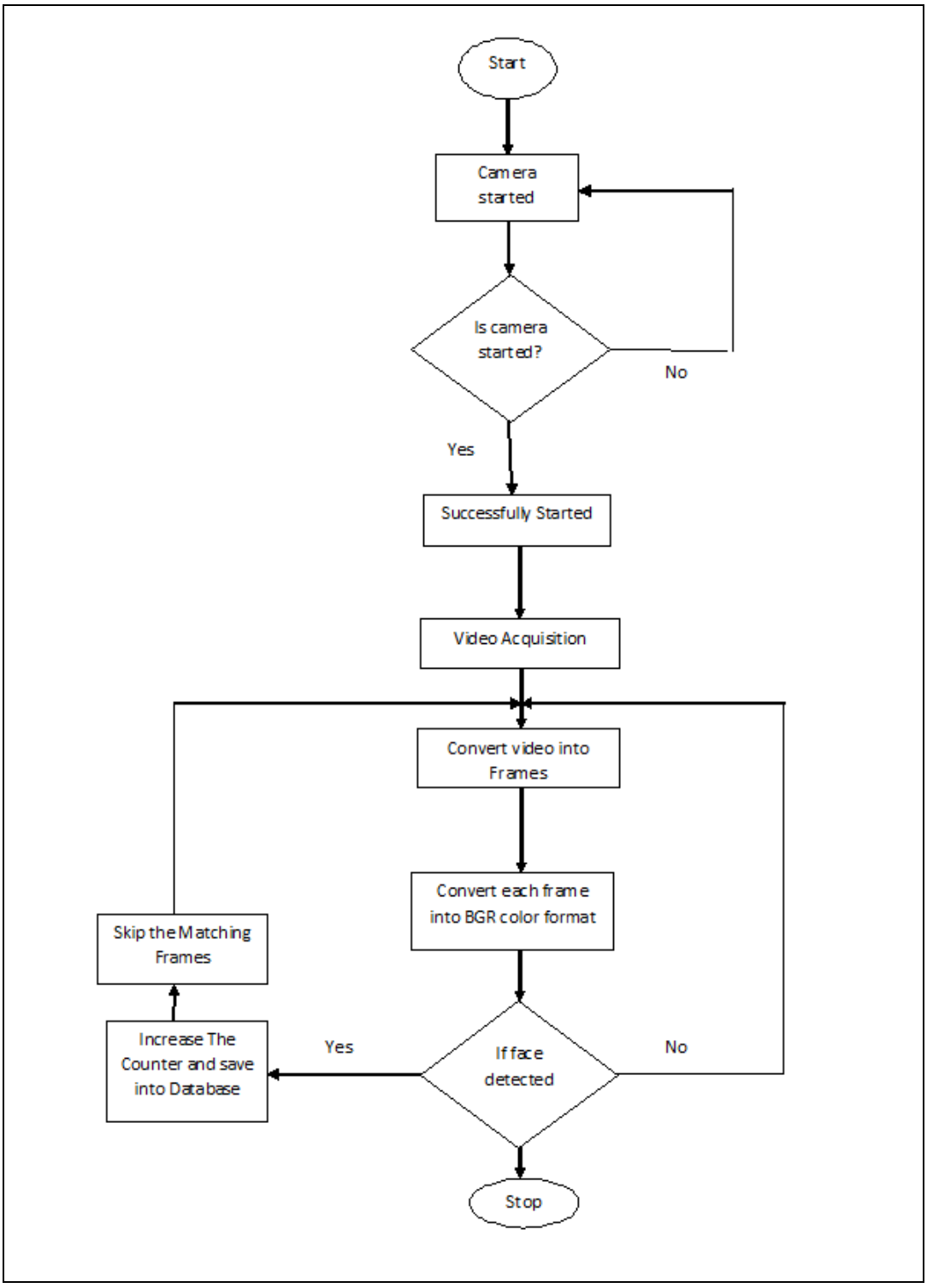

Figure-1.2: Flowchart of the proposed system

To improve the acceptability of the system, we have designed a simple user interface using Tkinter. Tkinter is the standard GUI library for Python. Python, when combined with Tkinter, provides a fast and easy way to create GUI applications. Figure 1.3 shows the face recognition of the image captured.

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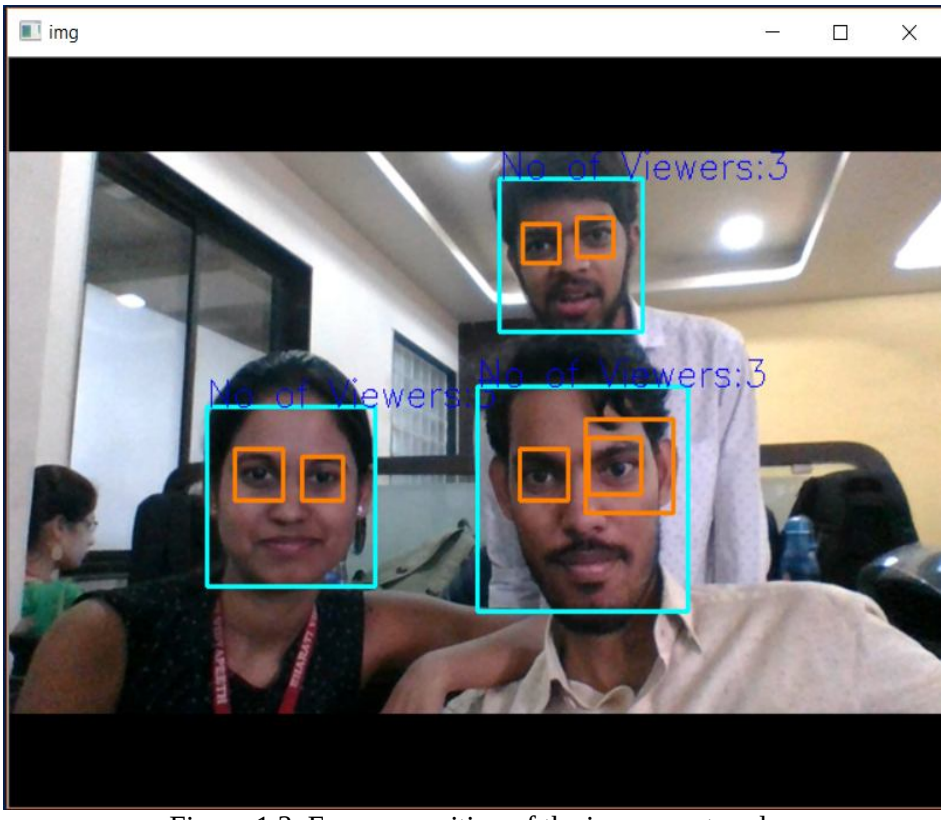

Figure-1.3: Face recognition of the image captured.

CONCLUSION

A system is proposed to estimate the viewers count based on the vision attention of advertisement using an eye-tracking mechanism. The object detection mechanism is used to recognize the face of the viewer. The proposed system is a single user application which identifies the attention of the viewers as it detects the face and if the viewer is looking toward the camera it increases the viewer count. The current limitation of the system is that it requires the ambient lighting condition to work. We would like to extend our study in future by incorporating the emotional reactions of the viewer.

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ICT AND ITS ADVANTAGES: HEALTHCARE, EDUCATION AND AGRICULTURE

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ABSTRACT

Nowadays in every field ICT is necessary. It is mostly used to manage information of various fields like education, healthcare, and agriculture. ICTs stand for information and communication technologies and are defined as a diverse set of technological tools and resources used to communicate, create store, and manage information. The technology changes according to how it is used. Information and Communication Technology (ICT) in education is the mode of education that uses information and communications technology to support, enhance, and optimize the delivery of information. Worldwide research has shown that ICT can lead to an improved student learning and better teaching methods. The purpose of ICT in healthcare is to provide better care for sick people. The use of Health IT in medical clinics improves the quality of healthcare that is delivered by providing accurate patient records and allows doctors to better understand the patient's medical history. The benefits of ICT in healthcare records include: Better health care treatment of patient. Agriculture is important sector of the Indian economy. Over 60 per cent of the population adopts agriculture as main occupation. In spite of a large of Indian economy, agriculture field is having environmental problem and also there is a problem of poor connectivity and disintegration of market, unreliable and incomplete information to the farmers, small land holdings, less knowledge of improved technology and so on. ICT based initiatives can be taken in a way so that farmers can be benefitted. The updated information and practical solutions of the agricultural problems helps the farmers for good agricultural benefits, make better decision of inputs and to plan the cultivation properly.

Keywords: ICT, education, healthcare, agriculture.

INTRODUCITON

ICT means Information and communication technologies which cover all the product that will store, retrieve, update, transmit or receive information electronically in a digital form. For example, personal computers, digital television, email, forum, blogs robots. Digital communication technologies allow people and organizations to communicate and share information in digital form. Education, Science, technology and innovation are the key factors of economic growth in both advanced and developing economies. Nowadays in Education field ICT is very essential. It helps us to grasp knowledge fastly. ICT sector plays an important role in rapid technological progress and productivity growth. Nowadays the role of Information and Communication Technology in the education sector plays an important role especially in the process of increasing the strength of the technology into the educational activities and benefits. It helps the students to improve their knowledge. Education sector can be the most effective sector to predict and remove the negative impact of ICT. The main purpose of information and Communication Technology Implementation in Education is to provide the project to the students regarding new trends to enhance their educational performance. Information and communication technologies are presently being employed in education to assist students to find out a lot of effectively by giving academics with access to a large vary of recent techniques. These technologies are also being used to facilitate teachers to do administrative tasks more efficiently.

IMPORTANCE TO STUDENTS

The use of ICT in the classroom teaching is essential. It provides opportunities for teachers and students to operate, store, delete, and regain information. It encourage independent student and motivate teachers and students. ICT-based Education is about using computers and technology as tools to enhance learning in various subjects such as English, Science and Mathematics. Advantages of ICT in Education is promotes Learning by doing research. For education, the purpose of ICT is generally to give idea to the students and teachers with the use and workings of computers, related social and ethical issues, and benefits of it etc. It is generally believed that ICT can empower teachers and learners as well as students.

USED IN SCHOOL

Schools use a various set of ICT tools to speak, create, distribute, store, and manage information. In some contexts, ICT has changed the teaching-learning interaction techniques such as exchange chalkboards with interactive digital whiteboards, use of students own Smartphone. We will use kind of e-learning parts like learning materials, video tutorials, self-instructional materials such as web resources, research papers & articles

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etc. Discussions are going to be continued completely different topics through discussion forums. In education system the assessment is integral part of the course to confirm that learning. It shall contain self-assessment quizzes, submission type assignments, tests, question and answers of main topics.

AIM OF ICT

Mainly aims of ICT are to help students to become competent and confident users who can use the basic knowledge and skills acquired to help out them in their daily life. It is also supposed to prepare students for the world of coming future days. It is help for learner to have an open and flexible mind.

ICT IN HEALTHCARE

Nowadays, the technology is changing the view of the world and leading us towards a sophisticated technical world. The promising role of ICT has created a huge impact on Healthcare. It enhances the standard of care, increases the patient security and data protection and reduces operating & administrative cost.

The telecommunication devices are more users friendly & used by many people across the world which has reduced the communication gap. Therefore, accessibility to information has become simple using ICT and helpful for people to find themselves more hassle-free while availing healthcare service.

In Healthcare sector there are various challenges such as storing the medical record of the patient and doctors data, maintaining Hospital information, maintenance of medical equipment and many more. Now, the Hospitals rely on ICT to revamp the entire method of the health care sector. Through ICT the urban and rural disparities have been broken & shortened. If a doctor has the right communication medium it is easy to provide treatment and care for the patient who is located anywhere across the world. The system helps the Doctor to endlessly monitor the patient's history, diagnostic report, and track the current health condition. The Doctor can also interact with patient; recommend taking medical examination and prescribing medicine. The village population lacks correct health care awareness thanks to the absence of correct info. The transportation difficulties in rural areas are an obstacle taking the patient to the hospital on time. This is a major reason for the increased number of transferable diseases and death rates in villages. This will be self-addressed by putting in correct line in order that the Doctors within the villages can communicate with the near cities and therefore the lifetime of many of us can be saved. Digitalized reports can help us to track our own health condition. It conjointly helps in obtaining second opinion from any medical practitioners round the world. This keeps the folks to be connected with their doctors and fine tune the patient- doctor relationship. This system ensures the folks to possess a higher medical expertise and leads them to a healthy life. This indirectly improves the health standing of the country.

The use of ICT in health care is often categorized into four main streams such as

- Health & Education
- Hospital Management System
- Health Research
- Health Data Management

In this Digital era, people can easily access, learn & communicate with others within a quick span of time. This makes data of patient and doctors accessible, available and open to all. Health education creates awareness among the general public concerning the communicable diseases, health status, prevention measures and various current diagnostic & therapeutic procedures. This gives a freedom to the folks to decide on the simplest hospitals and doctors to approach for treatment and to possess their life in an exceedingly healthy means.

ICT helps the Hospital management to lead the organization in a successful way. This helps the management to beat the challenges round-faced by the Hospital. ICT helps the management to improve the patient safety and satisfaction, get updated to the latest technology, have knowledge on population health & statistics and keep a note on the government mandates on track. Primarily, the workplace can be strengthened.

ICT in health care analysis helps find the potential interference measures to eradicate and scale back the unfold of diseases. We can notice new technology in designation that reduces the time and price. This saves the lives of the many people by providing treatment before. Through ICT, the traditional healthcare systems can be eliminated and new models can be formed for effective quality care.

The fundamental use of ICT in Hospital is for electronic storage of medical knowledge. This helps to retrieve the information easily. Through ICT the info are often transferred to the patient or to the Doctors for consultation. The patient will have medical records in hand which may be used anyplace, anytime.

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Information & Communication Technology offers various ways to improvise the Healthcare system. The healthcare field has to use ICT more intelligently to bring in more changes and elevate the healthcare to a much higher level which is important for the country's development.

HEALTH INFORMATION TECHNOLOGY (HEALTH IT)

It is a broad term that describes the technology and infrastructure accustomed record, analyze, and share patient health knowledge. Various technologies embrace health record systems, as well as personal, paper, and electronic; personal health tools as well as good devices and apps; and at last, communities to share and discuss info. Some of this technology will tell the patient whether or not they have to be proceed or not. The purpose of Health it's to produce higher look after patients and facilitate come through health equity. Health IT supports recording of patient knowledge to enhance care delivery and permit for analysis of this info for each aid practitioners and ministry of health/government agencies. This knowledge is employed for the implementation of policies so as to higher treat and forestall the unfold of diseases.

Health IT is helpful to increase patient safety, decreases medical errors, and strengthens the interaction between patients and healthcare providers. In low and middle-income countries (LMIC) the necessity for reliable and cheap case history package is preponderant. The OpenMRS community helps meet this specific want by developing associate degreed supporting the Open case history System – an ASCII text file electronic health record (EHR) platform, specifically designed for low-resource environments, and is completely free.

BENEFITS OF USING ICT IN HEALTHCARE

Increasing quality in the patient assistance. One of the most important flaws of this sector is the fragmentation of the health care and the difficulties for efficiently transmitting the information. ICT will facilitate improve patient safety through the direct access to the medical case story, checking the treatments on-line, keeping track of the patients' progress and anticipating possible medical errors. In general terms, they're considered usually positive tools among professionals and users. Since they supply the simplest way to extend the patient safety, their use is being promoted in many countries.

Cutting down the medical spending. Using ICT and high Games for Health facilitate scale back these prices by reducing the time needed to method knowledge and manage work. The system for image transmission and storage is crucial to push the event of the electronic medical case story and telemedicine since it races the tests and also the gathering of results.

Reducing administrative cost. Invoicing brings concerning several prospects of saving because of the utilization of ICT and also the new remote devices. Although the proof of those knowledge, electronic invoicing isn't wide utilized in most of the countries nonetheless.

Possibility to carry on brand new health models. ICT are outlined as technology with a high transformative potential, since it introduces new ways to carry out medicine and develop health care. They are positively essential to renew primary health care since they contribute to a customized following of chronic diseases; they improve the access to health care in rural populations; and they contribute to the optimizing knowledge measurement and direction.

ROLE OF ICT IN AGRICULTURE

Information and communication technologies will broadcast the precise and authentic info at right time to the farmers so they will utilize it and acquire advantages. The decision support system through ITC facilitates farmers for planning type of crops, practicing good agricultural practices for cultivating, harvesting, post harvesting and marketing their produce to get better results.

Varied info is needed in agriculture supported the various agro environmental condition regions, size of land holdings, types of crops cultivated, technology followed, market orientation, weather condition, etc. As reported by several researchers 'question and answer service' was one of the best facility by majority of the farmers to get personalized solutions to their specific agricultural problems.

mKisan/SMS Portal

This portal is meant progressing to serve farmers in 3 ways –

To disseminate information about diverse agricultural activities,

To provide seasonal advisories and

To provide various services directly to farmers through SMSs in their local languages.

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The SMS Portal endows with a platform for merger of service delivery underneath completely different sectors viz. Agriculture, Horticulture, Animal Husbandry and Fisheries.

Mahindara Kisan Mitra
This portal provides information to the farmers on the basis of the value of merchandise, weather outlook, crop advisories, loans, insurance, cold storage and warehouses together with success stories of progressive farmers which encourage the farmers.

Kisan Call Centers (KCCs)
KCCs were commenced on January 21, 2004 by the Department of Agricultural and Co-operation with the main intend of endowing extension services to the farming community in the local languages. The queries of farmers are tackled by agricultural graduates on help line, toll free number in their local language. The agricultural scientists conjointly visit the sphere personally to induce a thought concerning complicated agricultural issues to resolve them.

Village Knowledge Centers (VKCs)
Village information centers initiated in 1998 in Pondichery by MS Swaminathan which is a gateway of technical information related to agriculture , price of fertilizer, crop rotation, use of fertilizers and pesticides. Information is disseminated through public address system.

Component used through ICT to provide service to farmers:
Major elements that area unit utilized in our country for providing ICT services to the farmers area unit internet portals, mobile applications on android phone, SMS and voice messages on simple phones, videos and video conferencing with the experts. Agriculture specialists are playing important role for providing valuable information to the farmers.

CONCLUSION

1. Today's world is a world of information and data. We are always using data in various fields. ICT is beneficial in the field of education. It is possible for a class of students to collectively participate in Interactive Whiteboard lessons through the use of e-notebooks. Whiteboard programs help students to imagine 3-D images around the board. ICT technology takes us in future world. It is therefore the responsibility of all educators to maintain high levels of ICT fluency, particularly in regard to the use of the Interactive Whiteboard. Our goal must be to create curriculum outcomes for all students of all ages through the integration of ICT across all fields of teaching and learning.

2. Increasing demand on healthcare resources from an ever-growing population and ageing society means technology is now more important than ever. In the day-to-day life, there are serious information gaps add to a large extent to the costs of maintaining our healthcare system. Information and communications technology will be important in removing these deficiencies. However, ICT has an even bigger role to play in the management of healthcare by helping to cure, care and prevent.

3. Agriculture is one of the indispensable sectors in our country. It is well known fact that ICT can revolutionize agriculture in many ways. ICT projects are helping in agricultural information distribution and other areas. Deployment of ICTs needs to be stressed more.ICT for agricultural projects needs to be compared and evaluated precisely.Following are some suggestions that are relevant to government organizations and ICT developers that can be provided for future development and research:

Evaluation of the effectiveness of existing strategies and policies to run ICT projects in agriculture based on the feedback of grass root level workers/officers working directly with farmers in rural regions.

Transforming agriculture sector into the modern digital agriculture to further improve social and economical benefits in the agriculture sector. Improving the digital access by farmers with technological skills.

Analysing and managing Big Data in agriculture.

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IOT BASED TOLL AUTOMATION AND THEFT DETECTION

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ABSTRACT
To reduce the congestion and detect stolen vehicles at toll plaza we propose IOT Based Toll Collection System with Theft Detection. We make use of passive RFID tag. There is a RFID tag present on each vehicle and RFID reader is present in toll plaza. When a vehicle passes through the toll plaza each vehicle having RFID tag comes in the range of RFID reader present at toll plaza. Based on type of vehicle prepaid money is deducted and also the vehicle is checked for being stolen .Thus RFID serves two purposes one is deduction of money and other is checking for vehicle being stolen .To make the process of detecting stolen vehicles effective we propose the method that there should be central database connected to every toll plaza in the country, hence we use cloud services for central databases.

Keywords: RFID, Tags, Toll, Database, Cloud

INTRODUCTION
Our life is changing very fast and the route of automation in our day to day life is increasing at a very fast rate. This is the motive behind our research i.e. "Automation". Day by day the number of the vehicle passing over the road is increasing due to which the road condition is decaying rapidly. The government has some source of money to build and maintain these roads and this source is the Toll Station.

At the onset, the goal of our research was to design an Automatic Toll collection system for collecting toll and detecting theft vehicles .After studying various techniques like a weight based system, bar coding etc. We chose Radio Frequency Identification which is an emerging technology applied for tracking and communication. RFID is an area of automatic identification that has quickly been gaining momentum in recent years and has now been seen as radical means of enhancing data handling processes, complimentary in many ways to other data capture technology such as barcoding.

In today's era of technology, where the machines are being extensively used in all area of fields we are trying to emulate concept, which will be of great use in public transportation systems. Today a person to travel long distances into vastly known territories for the job, business or even for tourism. As the vehicle is increasing and roads are falling short, nowadays we see frequent traffic jams or long queues at the toll station waiting for paying the toll. Paying the toll every time through cash or checking the pass takes a lot of time and today time is more precious than money. We will also detect whether the car is stolen or not when it passes through toll by using RFID. Therefore our project is aimed at reducing the time consumed for the manual transaction and human effort.

The number of vehicles passing through toll plaza is on a rise every year. Size of toll plaza is constant. This leads to congestion of vehicles at the toll plaza since the manual way of toll collection is in process.

Congestion of vehicles ultimately lead to various problems such as fuel wastage, increase in pollution-level, time wastage. Also, detecting stolen vehicles using manual way is very difficult. So in order to simplify the above mentioned tasks, we propose to automate the toll collection process which further enables us to reduce the overhead of finding the stolen vehicle.

Why implement detection of stolen vehicle with toll deduction?
When a vehicle is stolen, a person launches FIR at the police station for a stolen vehicle. For this the person has to visit the police station and then launch the complaint. On hearing the complaint the police officials search the stolen vehicle by manually checking the number plate of every vehicle passing through. Also where to search the stolen vehicle is itself a big problem. It is also a costly affair to search a large area for a stolen vehicle. So what if, finding stolen vehicles becomes an automated task, Using automated way of finding stolen vehicle will result in the reduction of overhead burden on police officials. Also, the time taken to find the stolen vehicle is also reduced to a greater extent. Hence, we propose to check the vehicle for being stolen at toll plaza itself. Thus at the toll plaza, the vehicle will be checked for being stolen as well as toll amount will be deducted according to vehicle type.

What to use in order to implement toll automation system with theft detection?
We had two options to implement the toll automation:

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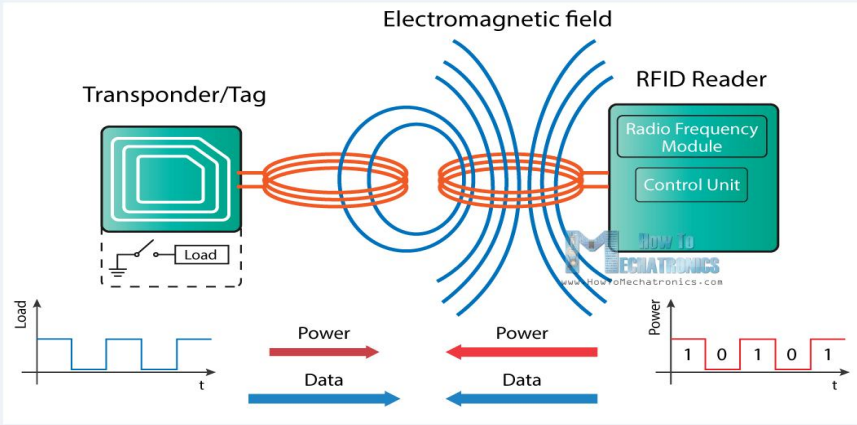
1. **Barcode Scanner:** A barcode scanner is an electronic device that can read and output printed barcodes to a computer. Unlike a flatbed scanner, it consists of a light source, a lens and a light sensor translating optical impulses into electrical ones. Additionally, nearly all barcode readers contain decoder circuit analyzing the barcode's image data provided by the sensor and sending the barcode content to the scanner's output port.
2. **RFID (Radio-Frequency Identification):** Radio-Frequency Identification (RFID) is the use of radio waves to read and capture information stored on a tag attached to an object. A tag can be able to read from up to several feet away and does not need to be within direct line of sight of the reader to be tracked.



RFID (Radio-Frequency Identification) is a form of wireless communication that incorporates the use of electromagnetic or electrostatic coupling in the radio frequency portion of the electromagnetic spectrum and used to uniquely identify an object, animal or person.

Why RFID better than barcodes?

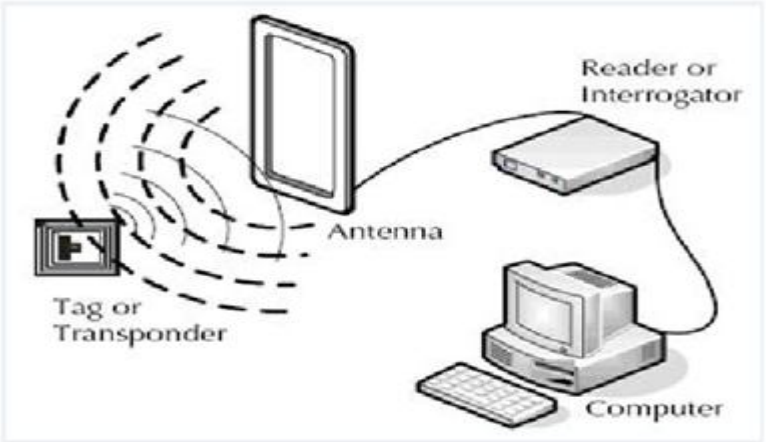
Use RFID as an alternative for barcodes for increase in use. Among its benefits, RFID can identify individual objects, animals or people without direct line of sight and it can scan items anywhere from inches to feet away depending on the type of tag and RFID reader. Read time for RFID tags is typically less than 100 milliseconds.

Barcodes, on the other hand require the direct line of sight and closer proximity than an RFID tag. They also take longer to read typically more than half a second or more because barcodes represent a product type verses an individual object represented by an RFID tag, additional information cannot be gleaned from them. In addition to this barcodes are not read write and because they are printed on the outside of the object are limited in terms of reuse thanks to wear and tear. RFID tags are more rugged and better protected often in a plastic cover.

How does a RFID system works?

The RFID system can be made by combining two parts: a tag or label and a reader. RFID tags and reader are embedded with a transmitter and a receiver. The RFID component on these tags have two parts: a microchip that stores and processes information and an antenna to receive and transmit a signal.

The tag that containing the specific serial number for one specific object to read the information will be encoded on a tag, a two way radio transmitter-receiver called an interrogator or reader can emit a signal to the tag by using an antenna. The tag will respond with the information written in its memory bank



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SCOPE OF RESEARCH

Whenever the matter of Integration of systems comes to mind, we think of a system having the following important features viz.

Accuracy: All the functionally bonded logical dependencies will have to be integrated.

Efficiency: The whole system will work under all circumstances and on a long run it will work efficiently irrespective of the proprietary format.

Cost Effectiveness: As our software does not require any special software for implementation hence is less costly as compared to other existing systems. As the existing systems are not altered, and integration is done in the background hence there is no need for training.

REVIEW OF LITERATURE

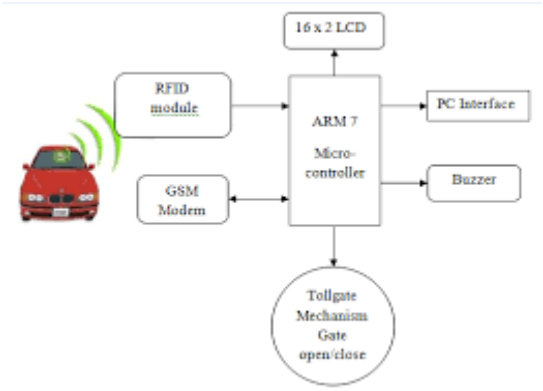
The Toll collection system has changed dramatically over the years, from being a single borderline, a small passage booth to the huge collection of infrastructure that has a key role in the revenue generation as well as the working of the traffic of a city or even state. While the majority of the population is travelling via different routes it has become a necessity and a regulatory method to control traffic. Also, there has been increasing incidents of vehicles being stolen by theft .So we propose this suggestion to catch the theft when the person passes through the toll plaza.

The following papers were referred and reviewed in order to understand the role of toll collection system:

Satyasrikanth P, Mahaveer Peena and **Dileep Reddy Bolla**,"Automated Toll Collection System using RFID" this paper mentioned the benefits of electronic toll collection system over the manual toll collection system. It states that congestion is controlled effectively because of automated toll collection, Thus throughput is increased drastically at the toll plaza after implementing automated toll collection. The paper extends automated toll collection process by stating, we cannot only help the vehicle owners and system administrators from vehicle theft detection but also can track over speeding vehicles, and crossing the signals. Moreover, it is also beneficial for the operators as it helps in controlling the audit which is centralized.

METHODOLOGY

The proposed system uses passive RFID tags and RFID reader to perform automation of Toll plaza. Whenever the vehicle with RFID tags comes in the range of RFID reader at the Toll plaza, the RFID tag is checked for sufficient balance and for the stolen vehicle. If sufficient balance is present in user's account associated with RFID tag and car is not stolen then a certain predetermined amount of money is deducted. Thus green LED glows and a gate is opened automatically. As soon as the vehicle passed away from the toll plaza then due to IR sensor gate closes.



If sufficient balance is not found and the car is not stolen then the car is moved to the manual way in order to reduce queuing of the vehicle where the processing is done.

Even in case if the vehicle has the minimum balance which is expected then also the gate will not open if the car if found to be stolen. In order for the vehicle to be eligible for passing through the gate, the vehicle should not be stolen as well as the vehicle should have a minimum balance. If it is found to be stolen the gate does not open and immediate message is sent to the police officer who further carries their task.

When the vehicle is reported for being stolen then police officials lodges the complaint of the stolen vehicle on the web Interface provided to them. The complaint is instantaneously reflected on the database, stored in the cloud. The complaint can see if the police have lodged the complaint through Web Interface.

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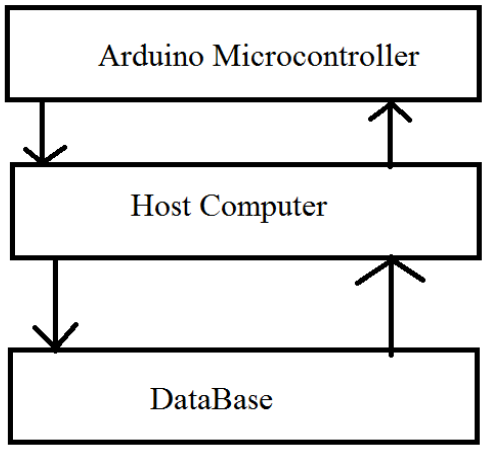
Proposed Methodology

The figure below shows the overall system architecture and defines how the overall system does its work.



1. The Arduino reads that the RFID card number and sends to host computer.

2. The host computer sends the request to the database for accessing the data of the unique key.

3. The database sends back the data corresponding to the key.

4. The host computer computes various conditions and accordingly sends the signal to Arduino which indicates Arduino to open or do not open the gate.

Major benefit of "Toll Automation with Theft Detection" are:

1. Queuing of vehicles is reduced thus congestion at toll plaza is reduced to a larger extent.
2. Overhead of finding stolen vehicles is reduced for the police officials.
3. Reduction of fuel, money, time.
4. RFID tag cannot be cloned, hence more secure.
5. The human error gets reduced due to use of an automated system.
6. Reduction of management costs.

CONCLUSION

The automated way of toll collection will result in reduced fuel consumption, time, and money. The throughput of toll plaza will increase drastically. Also since every vehicle having the unique RFID card number, this helps the police to know if any stolen vehicle passes through the toll plaza. Thus RFID present in every vehicle helps to catch the stolen car theft. The system lessens the burden on authorities of the toll plaza and keeps the flow of traffic smooth at the toll plaza. Thus the implementation of RFID based toll plaza will lead to the reduction in the fuel consumption, time, and money. Also, vehicle's theft detection will become simple.

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MANUSCRIPT SUBMISSION

GUIDELINES FOR CONTRIBUTORS

1. Manuscripts should be submitted preferably through email and the research article / paper should preferably not exceed 8 – 10 pages in all.
2. Book review must contain the name of the author and the book reviewed, the place of publication and publisher, date of publication, number of pages and price.
3. Manuscripts should be typed in 12 font-size, Times New Roman, single spaced with 1" margin on a standard A4 size paper. Manuscripts should be organized in the following order: title, name(s) of author(s) and his/her (their) complete affiliation(s) including zip code(s), Abstract (not exceeding 350 words), Introduction, Main body of paper, Conclusion and References.
4. The title of the paper should be in capital letters, bold, size 16" and centered at the top of the first page. The author(s) and affiliations(s) should be centered, bold, size 14" and single-spaced, beginning from the second line below the title.

First Author Name1, Second Author Name2, Third Author Name3

1Author Designation, Department, Organization, City, email id

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3Author Designation, Department, Organization, City, email id

5. The abstract should summarize the context, content and conclusions of the paper in less than 350 words in 12 points italic Times New Roman. The abstract should have about five key words in alphabetical order separated by comma of 12 points italic Times New Roman.
6. Figures and tables should be centered, separately numbered, self explained. Please note that table titles must be above the table and sources of data should be mentioned below the table. The authors should ensure that tables and figures are referred to from the main text.

EXAMPLES OF REFERENCES

All references must be arranged first alphabetically and then it may be further sorted chronologically also.

- **Single author journal article:**

Fox, S. (1984). Empowerment as a catalyst for change: an example for the food industry. *Supply Chain Management*, *2*(3), 29–33.

Bateson, C. D.,(2006), 'Doing Business after the Fall: The Virtue of Moral Hypocrisy', Journal of Business Ethics, 66: 321 – 335

- **Multiple author journal article:**

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