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Department of Computer Engineering

Shivajirao S. Jondhale College of Engineering

Sonarpada , Dombivali (East)

Publication Partner

Indian Academicians and Researcher's Association

Year 2019-20

Samarth Samaj's

Shivajirao S. Jondhale College of Engineering

Dombivli (E)

Approved by AICTE, Recognized by DTE, Govt. Of Maharashtra,

Affiliated to University of Mumbai

About Shivajirao S. Jondhale College of Engineering

Considering the need, demand and place around the city the Samarth Samaj started Shivajirao S. Jondhale College of Engineering at Dombivli (E), from the academic year 1994-95. The Engineering College is one of the esteemed institutions of S. H. Jondhale Educational complex and it is named as Shivajirao S. Jondhale College of Engineering. It is situated 3km from Dombivli Railway station on the eastern side, Kalyan Sheel road behind Venkatesh petrol pump, Sonarpada, Dombivli (E) Dist. Thane M.S. India. The Campus is spread over 17 acres of prime land with beautiful landscape and buildings and all facilities. The college has Administrative Office, Classrooms, Library, Well-furnished Reading room, Well Equipped Laboratories, Drawing Halls, Students Common Room, Engineering Workshop etc.

Sr. No.	Courses	UG Intake
1	Chemical Engineering	60
2	Computer Engineering	90
3	Electronics & Telecomm.Engineering	60
4	Information Technology	40
5	Mechanical Engineering	60
6	Production Engineering	60

About Department of Computer Engineering

Department of Computer Engineering is having intake of 90 seats and having quality infrastructure with 9 well equipped laboratories having latest configuration of PCs in every lab. The entire infrastructure is as per the norms of AICTE to facilitate teaching-learning activities in the department with the help of well qualified staff members. Students are benefitted by participating in many Technical and Non-Technical activities which are promoted by the Department in association with various student committees like CSI, ACES and IEEE.

About IARA

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.

Samarth Samaj's

Shivajirao S. Jondhale College of Engineering, Dombivli (E)

Approved by AICTE and Affiliated to University of Mumbai

Vision

To impart quality technical education to create competent and ethically strong professionals with capabilities to accept new challenges.

Mission

- Our efforts are dedicated to impart quality technical education based on a balanced programme of instructions and practical experiences.
- Our strength is to provide value based technical education to develop core competencies and ethics for overall personality development.
- Our endeavour is to impart in-depth knowledge and versatility to meet the global challenges.

Quality Policy

- To establish a system of Quality Assurance, which would on a continuous basis evaluate and monitor the quality of education and training imparted at the College, improve the teaching-learning process and ultimately develop the college as a center of excellence.

Samarth Samaj's

Shivajirao S. Jondhale College of Engineering, Dombivli (E)

Department of Computer Engineering

Vision

To impart quality technical education for creating competent and ethically strong professionals with capabilities of accepting new challenges in Computer Engineering Department.

Mission

- Our efforts are dedicated to impart high quality technical education to prepare engineering graduates who excel in programming skills.
- Our strength is to serve society by producing globally competent professionals.
- Our endeavor is to provide all possible support to build strong teaching environment to provide quality education in Computer Engineering.

Message from the President

I, as an Agriculturist and Industrialist urge to develop excellent educational facility in the region around Kalyan, by establishing a group of quality institutions in this area. The general location and the ambiance of the surrounding of the site are conducive to excellent academic pursuits. I recognize that education is an instrument to enhance the capabilities of a human being to become a knowledgeable, creative and good citizen. I have kept a very clean vision in developing institutions for promoting techno-economic and knowledge base society. To achieve this, I have appointed very experienced and dedicated faculty. I have provided excellent infrastructural facilities, well-equipped laboratories, and a very rich library. I want to create an academic environment in which students can learn and develop their knowledge-based personalities. I am eager for the collaboration of these institutions with other academic institutes of higher standards, with Foreign Universities and other R & D Organizations to achieve academic excellence. I recognize further that faculty and students are the backbones of the system and therefore, I have provided the state of art facilities to achieve a world-class education. I believe, creating academic culture, effective resource management and multi-institutional integration in research will principally accelerate standard of technical education. I have used this thought process in the overall development of institutions under my trust. Quality being a bigger challenge before the technical education system, I consistently motivate and provide advanced training programs to my faculty and students by adopting an excellent teaching-learning process.

Dr. Shivajirao S. Jondhale
President, Samarth Samaj

Message from the Principal

We the faculty, staff, and students of the Shivajirao S. Jondhale College of Engineering aim to become a leading Engineering College for HIGH-QUALITY EDUCATION AND RESEARCH in Engineering. The infrastructure with the state of art library, communication skill lab, computing facilities, laboratories, campus amenities and a team of the competent faculty are ready to contribute to the suitable environment for the development of the YOUNG BRAIN INTO BRIGHT PROFESSIONALS. The teaching and learning process at Shivajirao S. Jondhale College of Engineering is designed to produce the right combination of skill, knowledge, and attitude, while the emphasis is to be placed on understanding of Basic concepts and fundamentals in each course, the student will also be encouraged to think across different subjects in interdisciplinary and multidisciplinary term through problem-based learning, group projects, and hobby club activities. Institutions campus provides a unique environment to the students that promote culture, art, sports and human values. Various student societies will provide a platform for several competitive extracurricular activities promoting individual and teamwork skill. We sincerely believe in developing the required capability, quality, and competence in our students that will make them create the value of their organization, society, nation and entire mankind through green and sustainable ways of development. Thanks to the extraordinary leadership of incumbent President and his closely guarded virtues of practicing angel from a social angle. As the Principal of this outstanding Institution, it is my pleasure and honor to invite you to be a part of mission, vision and contribute to the development of this region and our great nation with devotion, dedication, and discipline. Wishing students a bright future!

Dr. J.W. Bakal
Principal, SSJCOE, Dombivli (E)

Motivation

Department of Computer Engineering has a great initiative publishing the technical research papers of our students and faculty members. Every year department motivates students and faculty members to publish their work in worldwide accepted, reputed peer reviewed journals so that the effort taken by them will be appreciated by the community and they will get new insight for their future work. Department motivates them to publish the technical papers based on their research and project work during final year of their degree in National and International Conferences and in reputed International journals so that the quality research and implementation work done by the students and their guiding faculty members would get high recognition. This year we are publishing the project work done by our student through this special issue in support with Indian Academicians and Researchers Association (IARA).

We highly appreciate the efforts taken by our young researchers and respective guides for their project work and writing the research papers. We also appreciate the efforts of project coordinators, editing committee and whole publication team for maintaining the quality of work in selection, paper writing and editing.

I thank Indian Academicians and Researchers Association (IARA) for their support to publish the work done by our faculty and students in their esteemed journal and hope the similar coordination in future.

Congratulations to all!

Prof. Pramod R. Rodge
H. O. D.
Department of Computer Engineering

Publication Committee

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Research Papers

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AUTOMATIC QUESTION PAPER GENERATOR

Prof. Diksha Bhave[1], Monika Sanap[2], Rohini Choudhary[3] and Diksha Khobragade[4]
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Student[2,3,4], Computer Engineering Department, SSJCOE, Maharashtra

ABSTRACT
In today's age, education is the most important way of achieving success. Examination prepares students in their quest for knowledge. So, having a proper examination paper is quite necessary. The project is Automatic Question Paper Generator (AQPG) using Semantic Search Approach. It will enable college authorities to automatically generate question paper out of existing question set in the database. This system will use the database to harness the question paper where the database could consist number of questions. It will produce a random question paper set using Semantic Search Algorithm such that the question paper does not repeat in the same paper. Once the question is entered into the system then you can easily generate question paper in one click. In this way the system will help to generate question paper uniquely and in less time.

General Terms: Semantic Search, Questions, Education.

Keywords: AQPG, Automation, Unique, No repetition, SOUNDEX, OTP, XML and PDF.

1. INTRODUCTION

A design of suitable automated system for generating question papers and managing related data may prove vital in an Educational Institute. In this paper, we have proposed an integrated automated system that stores questions related to a particular course and prints a question paper based on its syllabus and curriculum. We have implemented a role-based hierarchy which restricts access to the users. The system also deploys security mechanisms that prohibit duplication of question papers. There are provisions to enter and edit data suitable to any educational organization with complete freedom for specifying courses, semesters, syllabus and pattern. This enables an educational institute to generate question ensuring security and non-repetitiveness of question papers and is a boon for organizations with limited staff and resources. Our system aims to provide fast operations, data storage and high security for all its tasks.

2. LITERATURE SURVEY

[1] Alana Susan Mathew, Vidya. N, in Sree Budhha College of engineering, Kerala, India. Proposes "Classifies each key phrase based on a Wikipedia article matched with the key phrase by using a rule-based approach" which analysis use of natural language processing and LDA based on maliet tool.

[2] Rohan Bhirangi, Smita bhoir, Ramrao adik institute of technology navi Mumbai Maharashtra India. Propose " Enables an educational institute to generate question ensuring security and non-repetitiveness of question papers, and is a boon for organization." Which analysis use of telecommunication to facilitate transmission of information and use of internet and wireless network Thought of as medium for information communication technology

[3] Gauri Nalawde, Rekha Ramesh proposes "This system offer flexibility by supporting all four tags and allows entry of every property in the form of ranges i.e. lower bound and upper bound. Which analysis semantically tagged question repository and use of XML format and Microsoft word document.

3. PROPOSED TECHNIQUE

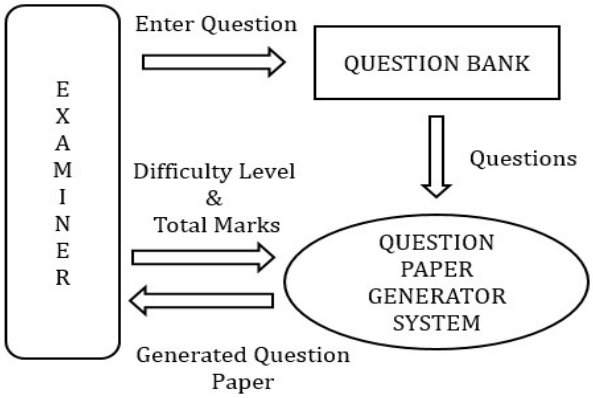

Figure 1: Proposed Technique

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In our proposed system, we are developing an application which would be useful to generate question papers without any time consumption. In our application, we would update the database with the set of questions with respect to each subject as well as each topic. Also we are updating sample templates of the question papers required in future. And then we propose a system for automatic paper generation with the least probability of repetition of the questions as we have a huge amount of question sets from the subject. The proposed system helps us to save time generating a paper with detailed study of the subject and also is unpredictable from student's point of view as the questions generated are randomly selected. Sentence similarity measures are increasingly becoming more important in text-related research and other application areas.

4. SYSTEM FLOW

There is a separate login section for Admin and Faculty (Examiner). Instead of generic password, we have used One Time Password (OTP) method to authenticate the user. OTP method is considered as more secure as compared to generic password method. Every new user needs to register first into system. Users can be created by Admin login only. After login each user can navigate to their respective profiles where they have various tabs (menu) of responsibilities. There are various menus such as Add Questions, Generate Question Paper, View/Download Question Paper and User Dashboard. By default the user will be navigated to dashboard page once the user successfully login into the system. Logout functionality is provided to end the on-going session. Figure 2 represents the use case for system flow.

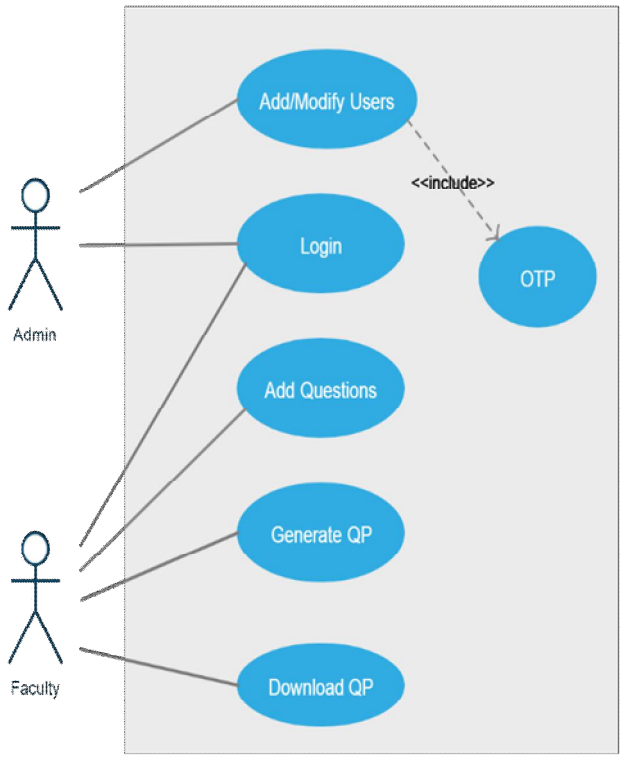

Figure 2: Use case for system flow

4.1 The whole system is divided into two modules i.e. Admin module and Faculty Module.

4.1.1 Admin Module

The admin is highest level authority of the system. Admin is responsible for user creation in the system. Admin supervises on other modules and it has total control over the system and its respective tasks.

4.1.2 Faculty Module

The faculty module is responsible for adding details regarding the question paper. Faculty can add, edit and delete the questions. Faculty can generate new question paper as well as download the existing question paper in XML, Word and PDF format.

While generating the question paper, faculty can select the priority of each module in question paper as low, medium or high. Repeated question from previous papers can also be selected by faculty while generating the same.

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5. SEMANTIC SEARCH ANALYSIS

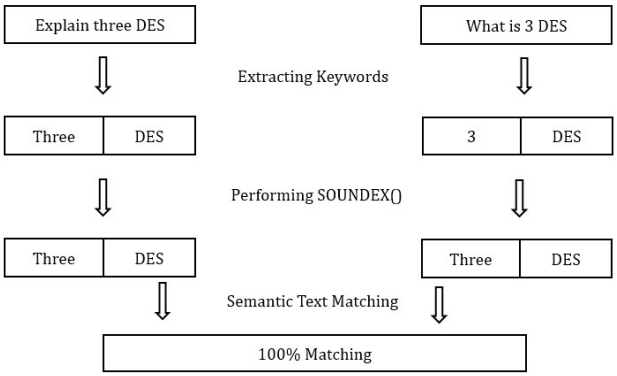

Figure 3: Flow of semantic search analysis

This is our own design; this design overcomes the limitation of existing database search method. We are using combination of Semantic search technique and SOUNDEX () functionality of SQL Server. We create unique keywords of the question which can be later used to match the similarity between questions. SOUNDEX () usually returns a four character code to evaluate the similarity of two expressions. It converts the text to a four character code based on how the text will sound when spoken. For example, rohini and rohinee will sound similar when spoken. We are using semantic search technique to match the extracted keyword from the question. Let's take an example to explain the concept in detail. Consider there are two questions in question bank. What is 3 DES and Explain three DES. Ideally the answer to both questions will be same. So in such cases, both the questions should not occur in a generated question paper by system. For above questions, we generate keywords such as 3, Three and DES. Now using SOUNDEX() we match 3 with Three. Later by performing semantic keyword matching we get the 100% matching result. Figure 3 represents the flow of semantic search analysis

6. RESULTS

Automatic Question Paper Generator (AQPG) system is successfully developed. The system developed is used to generate question paper automatically by performing combination of SOUNDEX() function and semantic search algorithm. Unique questions are generated from various questions available in question bank. Question papers can be downloaded in PDF, Word and XML Format.

7. CONCLUSION

Proposed an Automatic Question Paper Generator System which is fast, streamlined, randomized and secure. Every task performed by this system is automated so that storage space, bias, and security is not concern anymore. The proposed system is very helpful for many educational institutes. In the future, more advanced concepts will be explored for improving the efficiency of the project. Also consider improving the current question paper generation method though more advanced applications such as image identification and so on. Figure 4 represent the final UI for generating question paper.

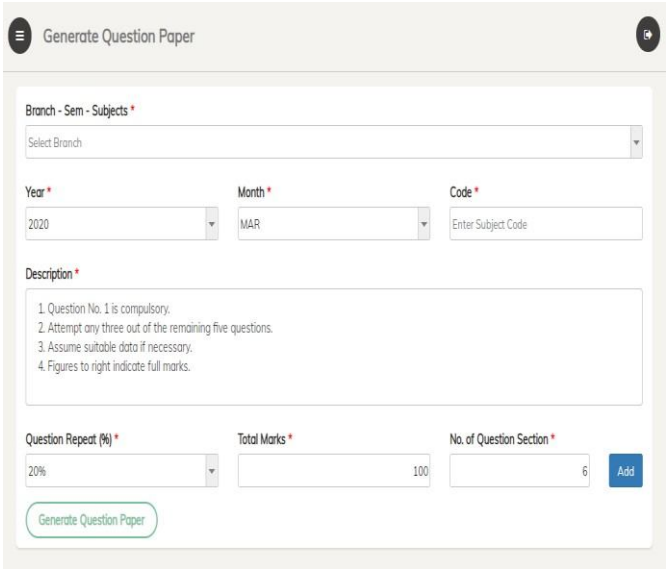

Figure 4: Generate Question Paper UI

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BIOMETRIC ATTENDANCE SYSTEM

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ABSTRACT
Fingerprint attendance system aims to make the attendance procedure of an educational institution automatic using biometric technology. This will save time wasted on calling out names and maintaining sheets and it gives a fool-proof method of attendance marking and will make the process easy. A hand-held device is used to mark the attendance without the intervention and supervision of the teacher. As it is a mobile device the device can be passed and students can mark attendance during the lecture time saving a lot of time. Students would be made to place their □nger over the sensor to mark their presence in the class. It can communicate with a host computer using its USB interface which is directly available in NodeMCU. This device operates from a rechargeable battery. GUI application in the host computer helps the teacher to manage the device and attendance and to do any work related to attendance.

Index Terms- Fingerprint, Classroom attendance, Portable attendance system.

1. INTRODUCTION

Attendance plays an important role in student institution. Normally attendance is taken in classroom is by calling roll number of the student or by asking the students to manually sign the attendance sheet, which is passed around during the lecture. The process of manually taking and maintaining the attendance records becomes highly troublesome. Biometric systems have reached a sufficiently advanced stage where in they can now be deployed in systems easily. With the recent development of various cloud-based computing storage system, data can be securely stored and retrieved whenever required. Fingerprints and iris scanning are considered to be the most reliable for use in Biometric. A system that records the attendance making use of a biometric scanners and stores them securely over website. The system consists of fingerprint scanner which is used for as certaining a student's identity. If the fingerprint scanned matches with records present in the database, attendance is granted to the student by updating to the website. Biometric Systems are automated methods of verifying the identity of a living person on the basis of some physical characteristics or even some unique features, like a fingerprint or face pattern or eyes or even some unique face features, or some aspects of behavior, like handwriting or keystroke patterns. Some of the most used biometric characteristics are shown in the picture below. A biometric system based on physical characteristics is more reliable because of its uniqueness than one which adopts behavioral features, even if the latter may be easier to integrate within certain specific applications.

2. PROBLEM DEFINITION

Attendance management system is software developed for daily student attendance in school, college and institutes and can even be used in companies. It makes it easy to access the attendance information of a particular student in a particular class. This system will also help in evaluating attendance eligibility criteria as a student. By just a click on the mouse, the system will be able to produce the student's attendance report thus reducing the need for manually maintaining the attendance which is prone to human errors and time consuming and hectic. This application is built to help the teachers by making the attendance process automatic. It also emphasizes the speed of performing attendance tasks easily. The Student Attendance will be based on the semester and branch. According to the year wise and division wise the attendance will be marked for the students. It includes present, absent columns for each student so that they would mark the attendance like period wise just by scanning their finger print. By just a click on the mouse, the system will be able to produce the students' attendance report thus reducing the human errors and time consumption. The student teacher has a unique user login id and password. The student can only view the attendance record on a weekly basis. Staff, teachers and even students can print the attendance record. There is no backup for the attendance record once the lecturer accidentally loss the attendance sheet. Throughout the whole semester, lecturers have to record and evaluate the student attendance through a piece of paper. Almost the last few weeks before the semester ends, the student attendance will be key in order to generate the black- list report. But if the lecturer lost the attendance sheet, which means the record will be lost as well and lecturer will end up unable to enter the correct attendance records to the system at the last few weeks of the semester. Course mates help those who did not attend the class sign the attendance which is also known as 'buddy-signing'. Most of the time, the lecturer faces a problem in which the attendance list is full. It happens because most of the

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students only attend the class for the first few weeks and after that they will request their friends who always attend the class to sign their attendance. Since teacher is always busy in lecturing and have no time to check their attendance one-by- one, so students take advantages from this point to help their friends sign

3. LITERATURE SURVEY

Many researchers had used a fingerprint based attendance system which makes use of a Fingerprint sensor/scanner along with other technologies. These systems are class based on the tools and techniques used to implement the system.

IOT based portable attendance system using Biometric system. In this paper an attempt is made to solve manual class attendance monitoring problems in developing countries using IOT and Biometric technology. The application of Biometric systems uses IoT for student attendance monitoring as developed and deployed in this study is capable of eliminating the time that is wasted during manual collection of attendance and an opportunity for the educational administrators to have face-to-face classroom statistics for allocation of suitable attendance scores. The Internet of things (IoT) is used to monitor and manipulate the data stored on servers. IoT does the work of sending the data stored from device to the server using GPRS. IoT Based Biometric Attendance System (IJARCCE)-This paper presents a simple and portable approach to student attendance in the form of an Internet of Things (IOT) based system that records the attendance of students using a biometric fingerprint scanner and stores it securely over the cloud. This system aims to automate the troublesome process of manually taking and storing and maintaining student attendance records using paper.

4. MODEL

4.1 R305

R305 Fingerprint Module is a serial fingerprint scanner which we can connect directly to the PC's com port. The R305 Fingerprint Sensor can connect easily to any controller via MAX232 IC. This Fingerprint scanner is capable of storing and comparing the fingerprints and gives desired output accordingly. Fingerprint scanning process includes two parts: fingerprint enrollment and fingerprint recognition (the matching can be 1:1or1: N). When enrolling, the user needs to enter the fingerprint two times. The system will process the two finger images, generate a template of the finger based on processing results and store the template. While matching, the user enters the finger through an optical sensor and the system will generate a template of the finger and compare it with templates of the finger in the database. For 1:1 matching, the system will compare the fingerprint with a specific template designated for 1:1 matching, for 1: N matching, or searching, the system will search the whole finger library for the matching. In both circumstances, the system will return the result, either it be success or failure.

4.1.2 Oled Display

OLEDs basic structure consists of organic materials placed between the cathode and the anode, which is composed of electric conductive transparent Indium Tin Oxide (ITO). The organic materials compose a multi-layered thin film, which consist of the Hole Transporting Layer (HTL), Emission Layer (EML) and the Electron Transmitting Layer (ETL). By applying the suitable electric voltage, holes and electrons are injected into the Emission Layer from the anode and the cathode, respectively. The holes and electrons combine inside the Emission Layer to form excitons, after which electro-luminescence occurs. The Transfer material (TML), Emission layer material (EML)and choice of electrode are the key factors that determine the quality of OLED components.

4.1.3 NodeMCU ESP8266

NodeMCU is an open source LUA based firmware developed for ESP8266 Wi-Fi chip. By exploring functionality of ESP8266 chip, NodeMCU firmware comes with ESP8266.

Development board/kit i.e. which is also known as NodeMCU Development board.Since NodeMCU is an open source platform, their hardware design is open for edit/modify/build. NodeMCU Kit/board consists of ESP8266 WIFI enabled chip. The ESP8266 is a low-cost Wi-Fi chip developed by EESP8266 if Systems with TCP/IP protocol. NodeMCU Dev Kit has Arduino like Analog (i.e. A0) and Digital (D0-D8) pins on its board. It supports serial communication protocols i.e. UART, SPI, I2C rtc. Using such serial protocols, we can connect it with serial devices like I2C enabled LCD display, Magnetometer HMC5883, MPU-6050 Gyro meter+ Accelerometer, RTC chips, GPS modules, touch screen displays, SD cards etc.

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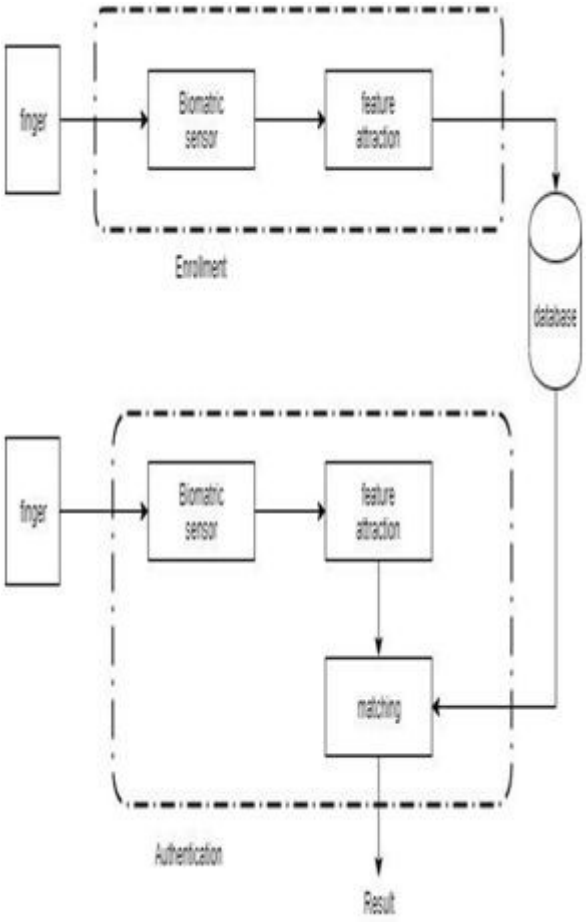

Figure.1 flow diagram

5. Implementation

5.1 The enrolment processes

The fingerprint of each student is recorded. The fingerprint of the student is scanned using the fingerprint scanner in the system. Each fingerprint is assigned an ID number. The ID number is stored on the NodeMCU board. This number is unique for each student. Enrolment of fingerprints is performed only once. The student IDs can be changed or replaced as and when required.

5.1.2 Fingerprint Comparison and Recognition

The system is mobile and can be passed around during the lecture from student to student to record attendance. During the fingerprint comparison and recognition process, the student's fingerprint will be compared with the fingerprints which are stored in the NodeMCU board. During this process, a yellow colored LED will glow. This will indicate the student that the system is ready to take fingerprint input. The student then has to place his/her finger on the fingerprint scanner for recognition. The fingerprint is then verified with the stored fingerprints.

5.1.3 Validation of Recognized Fingerprint

In the previous process, the fingerprint input is matched with the stored fingerprints. If it matches with a fingerprint present in the NodeMCU, a green colored LED will glow. This will indicate to the student that the fingerprint has been recognized as successful. Otherwise, a red colored LED will glow. This will indicate that the fingerprint does not match with any of the stored fingerprints. The student can then try again when the yellow LED glows, it will start the Fingerprint Comparison and Recognition process again

5.1.4 Granting Attendance

Uploading Data to website If the fingerprint is recognized, the attendance granting process starts. The unique ID number of the student is recognized. The attendance data is logged into Google Spreadsheet by uploading the student's ID number in it, for uploading the ID number in Google Spreadsheet, Pushing Box API is used. After the attendance is granted, i.e. the ID is stored in the database, the Fingerprint Comparison and Recognition process starts. The system can then be passed on to another student.

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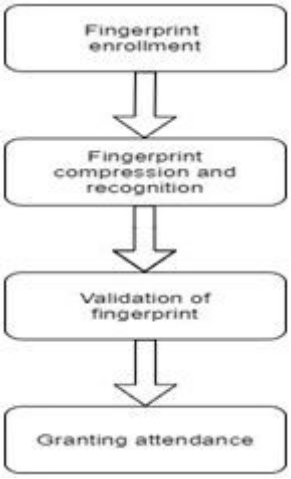

Figure 2.Block Diagram

6. RESULT

Once the code uploaded to the NodeMCU will boot up with the adafruit logo then it will try to connect to the Wi-Fi. Once it gets connected it will display Connected. This log can be viewed on Monitor display as well as in OLED Display. So now you can start registering the user using the website. The user fingerprint is taken twice and stored in EEPROM of the fingerprint Sensor. It is to be noted that only 127 fingerprints can be stored in this R305/R307 module. So once the fingerprint of multiple users is stored, you can start scanning and registering the attendance. In case if the fingerprint is not matched it will display an error message. When a registered user scans his finger for the first time it will display a welcome message.

7. CONCLUSION

The traditional practice of manually taking and maintaining student attendance is highly inefficient and time consuming. The attendance monitoring system based on biometric authentication has a potential to stream line the whole process. An Internet of Things (IoT) based portable biometric attendance system can prove to be of great value to educational institutions as it proves to be highly efficient and secure and handy. The cost involved in making this system is quite less, when compared to conventional biometric attendance systems. The use of a database to store the attendance record makes all the data easy to access and retrieve as end when required by the teachers. The use of a fingerprint scanner ensures the reliability of the attendance record. The system, due to its lack of complexity, proves to be easy to use and user friendly and can be used by anyone easily

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BLUETOOTH CONTROL PICK AND PLACE ROBOT

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ABSTRACT
Robot is a multifunctional and reprogrammable device which is designed to work like human health care, industrial aerospace application. As we know the robot can work 24hrs without rest so they can perform dangerous and accurate work to increase productivity. This paper is dealing with the design and control of vehicle type robot can move in the desired direction. The working is based on the Arduino Uno board, microcontroller, motors and android apps.

Keywords: Arduino board, robotic arm, microcontroller, mobile application, Bluetooth module.

1. INTRODUCTION

A robot is a machine which is programable by computer to perform various tasks. Robots are designed to reduce the efforts of humans and to increase productivity the industrial robots are designed to reduce the manufacturing cost. Android apps can control the motion of a robot. Mobile robots can move around in their environment and not fix physical locations. Microcontroller ATMEGA328P-PU can be interfaced with the Bluetooth module through UART protocol and code is written in embedded C language which is easy and understandable to the user. A robot can be controlled as per commands received from the android app.

The tools of pick and place robots can be interchanged to provide multiple applications and can be reprogrammable. The purpose of this work is to design and implement an android-controlled Bluetooth robot which is capable of picking and placing the objects and which is used for home automation and many more fields. Here we used the Arduino Uno board to do required functioning and it is also interfaced with Bluetooth module. It is also called the brain of the robot which contains a program written in embedded C language.

HC- Bluetooth module dc motor is used to control DC voltage. The dc motor is used to provide a variable speed drive system because of dc motor a robot can be moved in forward, backward, left and right direction according to the priority of voltage applied. Electrical machines are used to covert Robot is a machine which is programable by computer to perform various task. Robots can be autonomous or semi-autonomous they designed to reduce the efforts of humans and to increase productivity the industrial robots are designed to reduce the manufacturing cost. Android apps can control the motion of a robot from a long distance. Mobile robots can move around in their environment and not fix physical locations. Microcontroller ATMEGA328P-PU can be interfaced with the Bluetooth module through UART protocol and code is written in embedded C language which is easy and understandable to the user. A Robot can be controlled as per commands received from the android app. [1]

2. PROBLEM DEFINITION

We use smartphones to control the robot. For this, first we have to develop an android application. The Bluetooth module allows for two-way communication. It is used to transfer commands to the robot. Various microcontrollers are used for interaction.

2.1 Our pick and place robot work as follows:

i. The wheels underneath base help to move the robot to the desired location.

ii. The rigid body supporting the end effector bends or straightens up to reach the position where the objects are placed.

iii. The end effector picks up the object with the grip and places it at the desired position.

3. LITERATURE SURVEY

Various researchers have been made by different researches in developing this project. But they serve different technologies and have different applications. Some of those papers are mentioned bellow stating their technologies and applications.

The objective was to build a robotic car that is low cost and easily affordable. By using HC-05 Bluetooth sensor technology to develop a robot, for home automation systems and smart living. The robot is controlled by a mobile application.

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In the next research paper [2], they developed an Android Controlled Arduino Based Robot Car. In this they developed a mobile application an android studio that is used to control the robot car.

The next paper is dealing with [3] configuration of an android smartphone that can control a robot via Bluetooth technology. The phone uses motion sensors and records the gestures sent to why an android mobile phone. It also has an inbuilt Bluetooth module for controlling the movements of a robot.

[1] Developed android controlled robot automation. The main aim was to transfer information wirelessly between a smartphone and a robot and developing a robot and its communication system underneath a low price and open source philosophy. He used a 3D design technique to style when fed to the 3D printer can print the parts of the robot in a layered manner one by one and can use these parts to assemble the robot simply. He has used Arduino microcontroller and Wi-Fi technology in the robot.

4. MODEL

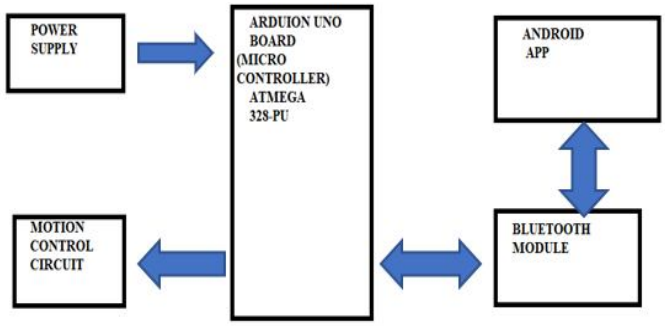

Figure.1 System model

This is the system diagram of our project which shows how the project works and also defines the flow of modules.

4.1 Android smartphone:

As we know android is a very popular operating system. Here we develop software in the android studio that is used to control our robot. Android smartphones support various software and application. they are user friendly and more reliable to the user.

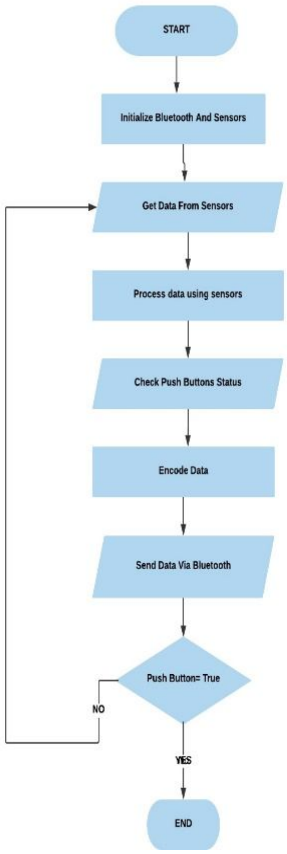

Figure. 2 Flowchart

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Figure.1 explains the basic flow of our system that is Bluetooth pick and place robot. Here first we have to initialize the sensors to get the commands from the application. After initializing the data is processed to the sensors.

4.1.2 The basic pick and place robot work as follows:

- The wheels help the robot to move in the desired location.
- End effector- It is the body connected to the last joint of the rove to pick and place objects.
- Sensors- they are used to sense the internal as well as the external state to make sure the robot functions smoothly as a whole. Sensors involve touch sensors, IR sensors, etc.
- Robotic arms pick and place the object to its desired locations.

4.1.3 Basic Algorithm for a pick and place Robot.

Step1—Start

Step 2—Find the position of X and Y with the help of a sensor.

Step 3—Check the value of Y is greater than 300, if yes, move the arm to lower level and go to step 5.

Step4—If the value of Y is less than 300, then move the arm to the upper level and go to step 5.

Step 5—Consider the value of X and move the arm in the left or right direction accordingly.

Step 6—Extract the frame from sensor 2 and adjust the arms position until the object is centered.

5. Following are the system requirements:

5.1 Hardware requirements:

- DC Motors.
- Power adopter.

5.2 Software requirements:

- Arduino Uno Board.
- Android Studio.
- Windows 7

6. RESULT

We aimed to develop a Bluetooth control pick and place robot. Controlled by an Android application. We used various motors for the robotic arm to pick and place the object also to move the bot car in the physical environment. For those also we used embedded C language programming which is stored in the Arduino board.

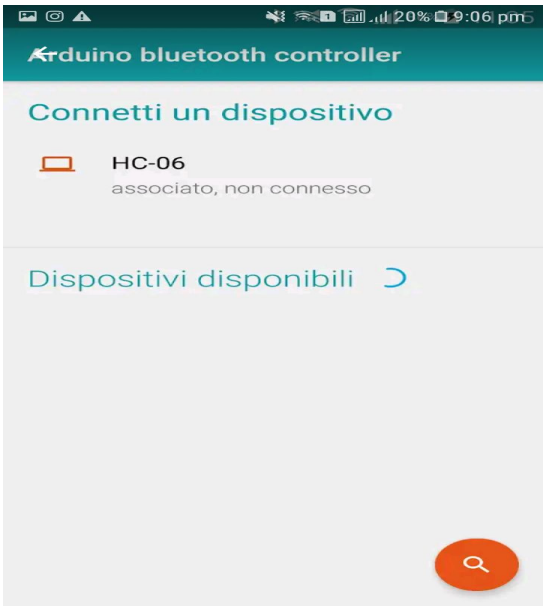

Figure .3 Bluetooth Controllers

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Figure. 4 Command windows

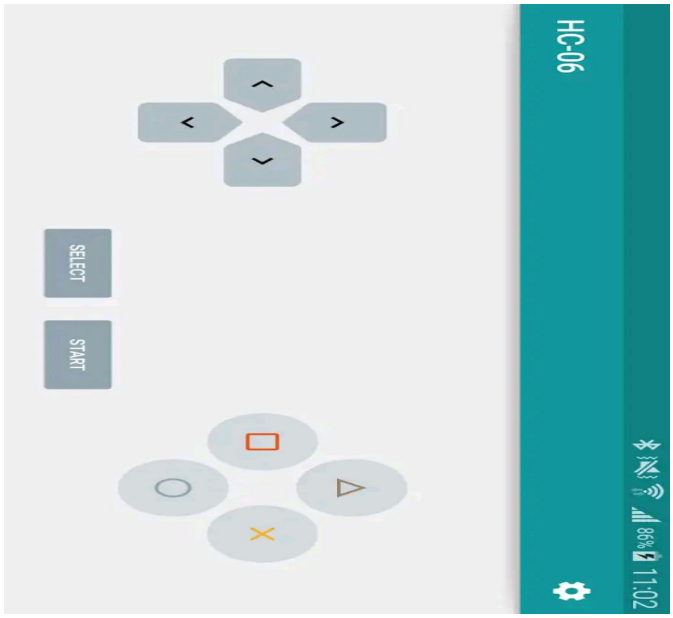

Figure .5 Result 1

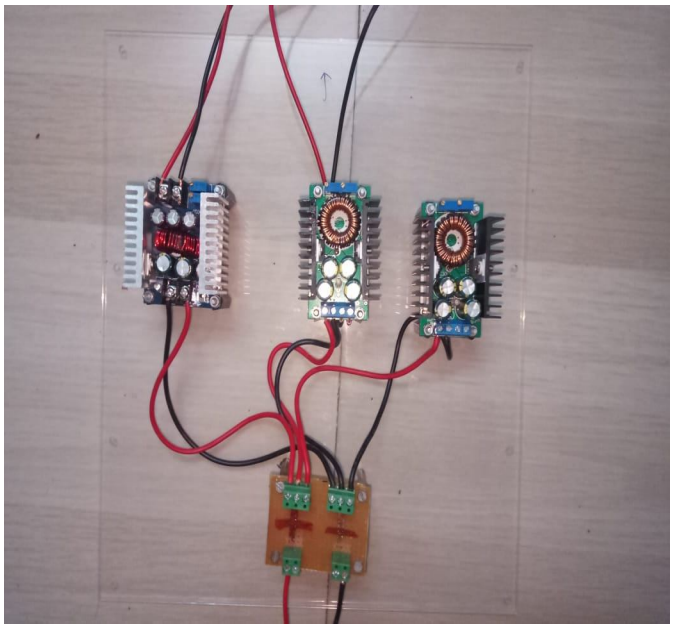

Figure .6 Result 2

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Figure .7 Result 3

7. CONCLUSION

Our system consists of a total of six motors. four motors for a robotic arm and two motors for a car. The arm should handle proper pressure and Bot car should move in basic four directions. The proper commands are given to the robot from the HC-05 Bluetooth module. Using RF communication, we can control the pick and place robot.

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BOOK RATING AND TRADING SYSTEM

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ABSTRACT
Book rating and trading system is a platform where students can sell there used book with other student ad desirable price and also can purchase used books from other student at affordable price. This platform will eliminate the third party agent for example shopkeepers who takes the percentage of commission between selling and purchasing of used book .This platform can be a website as well as application with extra features of rating on books depending on the pictures which sellers will upload, which means using crowd source for rating the books. This rating will help buyers to get idea on condition of book which seller is trying to sell. Our paper contains the detailed information about how we explored this idea, from facing problem as a student to creating solution for it using our profession skills

Keywords: Book rating, Book trading, crowdsourcing

1. INTRODUCTION

As education is getting costly so the books as well. Student purchase the new books from book stores and use them for 6 months but the condition of books makes them still usable. Most of the times students ends up trashing books or selling it back to retailer where he offers price which is not negotiable and trades goes unfair with shopkeepers. Same problem arise purchasing used books where retailer sells the used book at unfair price. Therefore there was a need of platform where students can sell and purchase books directly with students also negotiation of price is also possible eliminating third person agent and saving that middle commission from shopkeepers and saving that win by sharing it among sellers and buyers. Student has to register themselves on the website which will allot the a portal where if they are willing to sell the books only thing they have to do is upload the details of the books along with images which will help to give the rating to books. Rating system involves Crowd sourcing for rating the system. Students who are will to purchase books can search for the intended book they are willing to buy and results will the books nearby sorted depending on rate given by rating system.

1.1 Crowd Sourcing

Crowd Sourcing is used my many big organizations and service providers to generate data. In crowd sourcing internet users are the source of information and data which is generated can be on any type and form. This data is used to analyze and later to create and conclusion. Data acquired from crowd sourcing can be used as a review about product by making them images or any information available to them[1].

In our project Traboo we have created extra feature called Raboo. In this we are making use of crowd sourcing by asking users of platform to rate the books which will create the Average of that rating and will be shown as rating on website to get interested users, idea about condition of that book. In crowd sourcing its hard to convince users to review data ,for that Raboo also has perk system which is a reward value generated as users rate the book. In return to that reward values users can have access to some exclusive features which we can add to our website in future

2.PROBLEM DEFINATION

The very day we get our results, the books we used to study from won't be used later.

The Question "what to do with the books?" starts tickling the owners head. Then the same owner thinks of buying new books too.

The original source of trading books was only through shopkeepers. Other sources too existed but restricted to the social circle of any individual. The person having the will to buy even second hand books were forced to reach a shopkeeper who by his own profession of business try to find some extra bit of profit from reselling the same book to some other customer. The shopkeeper in the chain of second hand book trading only acted as a temporary buffer for the books. A buffer being paid by the seller and buyer of the book only to store the books.

This was a very unfair trade as a third party took advantage of the book exchange sequence between two unknown individuals. The need of an unbiased way of exchange of books was needed to keep the second hand trade of books healthy.

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3. LITERATURE SURVEY

We visited book stores and did survey about the second hand book prices . We found out that used books , shop keeper purchase is at 40% of original price & sells that book at 60% of original price. We later found out that all book retailers have the same policy. There was need to create a platform where students who are willing to sale the books can communicate directly with the students who are in need to purchase the books at low cost. There is no such platform developed like website or applications which can provide facilities for purchasing and selling of used books.

There are commercial websites which allows users to trade second hand vehicles, electronic device, raw material etc[3]. but there is no such platform developed to trade used books. Books are the only stationary which has huge number of varieties and combination which make them valuable also used for education purpose. E-commerce is new trend in this internet era. Following are the most successful E-Commerce start-ups[2].

4.MODEL

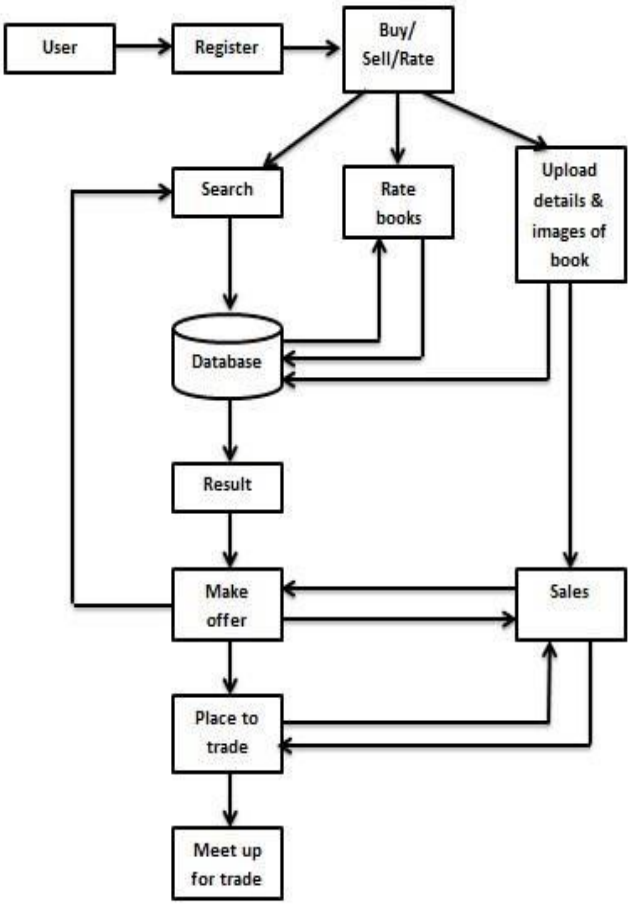

Figure 1: System architecture

In Figure.1 architecture, it's a complete structure of our book trading website. First block is of user who have to register itself to the website by filling the signup form which contains first name ,last name, username, password, email address and address. Username is unique and it has to be choose by the user itself.

Once user has registered itself to the system it has to login the website for getting started. After Login user is directed to the home page of website where user can view the recommendation page with an user interface to navigate his desired book. From homepage user has to decide whether he have to sell book , purchase book or rate book.

Selling book has to be done by adding details of the book by opening sell form ,where all details has to filled along with the images of book which are required to analyze the condition of the book which are going to be used in rating system and as reference for users to rate that particular book

Once book details are uploaded any user interested in purchasing book and easily navigates to that book if his requirements matches to details of book uploaded. Rating system based on machine learning and crowd sourcing will help buyers to get idea about condition of book and price of the book which seller is demanding.

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On home page there is label of username from where user logged in can navigate to profile where user can view the details about the books they have bid on and books they have uploaded to sell. Clicking on those cells of bookid they can get the details about how much other user have offered them and how much other user have asked by negotiating on the books they bid on. On clicking on bookid cell user have 3 options to accept ,reject or negotiate. If the user accepts the deal meetup model policy is been called where both party decides the place of meetup and timing in the same way they decided the price of boo by negotiating. Unique one time password is generated which both party has to type on website for that deal to be succeed from there part only after that deal is been successful.

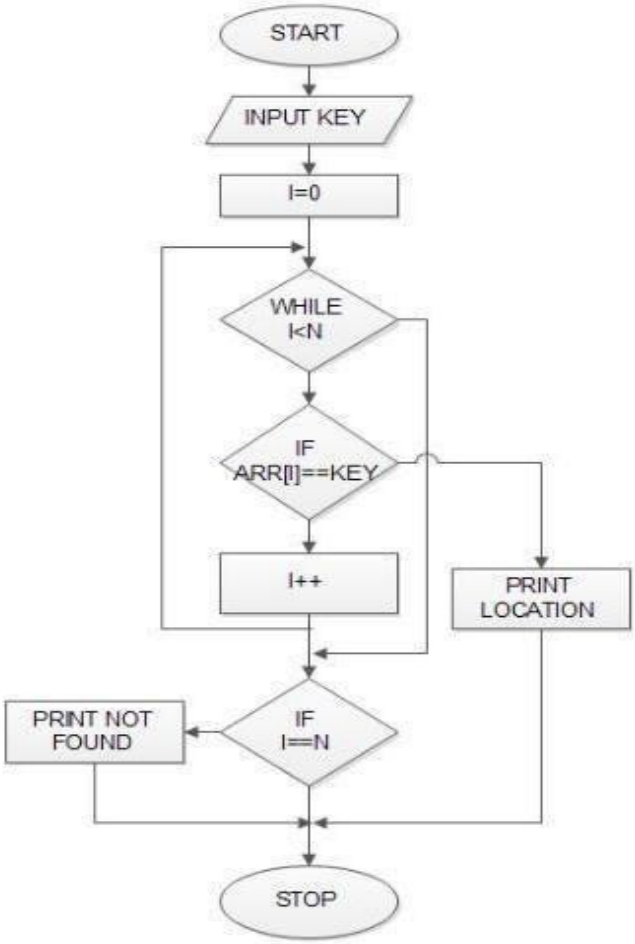

Figure 2: Flow Chart

In Figure 2 shows the flowchart of how search and filter on homepage will work, to search the desired book of user from database where details of book uploaded are stored.

5.RESULTS

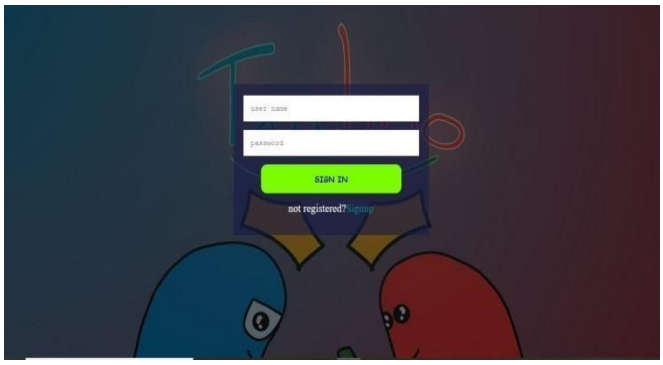

Figure 3: Login

Above Figure 3 is login page of our website which contains the two input where user has to enter there username and password created during signup. If user is not registered to website they have to click on signup which will open the signup form from where user can register themselves to system.

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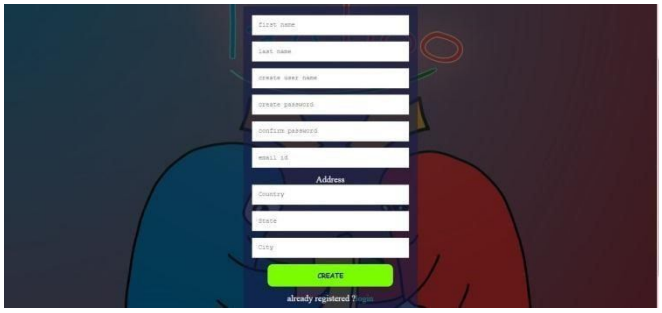

Figure 4: SignUp

Above Figure 4 is signup form where user has to registered themselves to the website and create login and username using which they can login to the website and have access to the platform of Traboo . Credential are created by user itself which they use as there login credential and each user has unique username , availability status of username is shown in realtime itself.

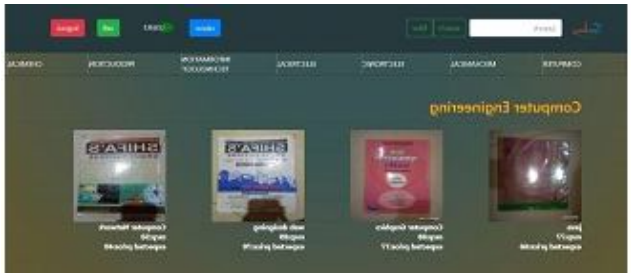
Figure 5: Home

Figure 5 is home page consist of navigation bar in which home logo is used to return home from whichever form user is navigating .It consist of search bar in which user can view any book details and profile by typing bookid .It also consist filter button , raboo button, username label ,sell button and logout button each button navigate user to intended task.

Figure 6: Sell Form

Figure 6 is Sell form is open after clicking on sell button on home page. User has to upload book details along with the images of the book . Once uploaded book profile is created and ready to view by other interested buyers.

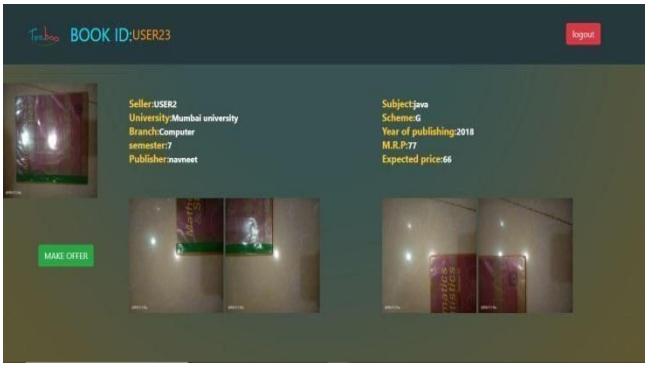

Figure 7: Book Profile

This Figure 7 is book detail page where user can view the profile of book along with rating and images of book where they can decide whether to buy or not seeing the actual condition of book. On this page User makes bid on the book If they are interested by clicking on the make offer button below.

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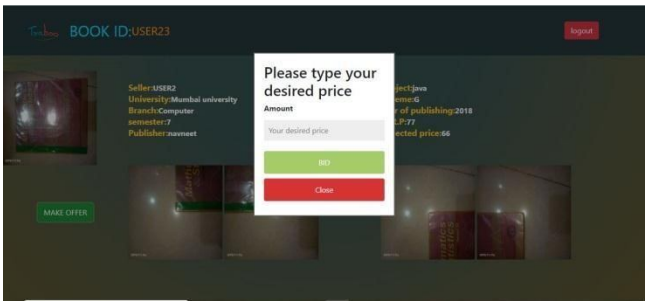

Figure 8: Bid on Book

Above Figure 8 is form opens when user clicks on make offer button where user enters the price which he thinks is and fair price for book or accept the price which seller had asked from where the deal path is decided.

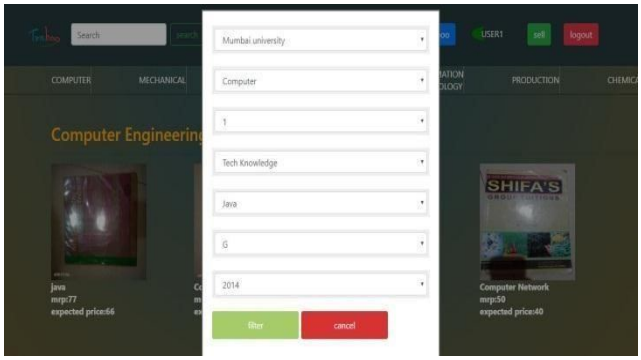

Figure 9: Filter Form

Above Figure 9 is form is opened when user clicks on filter button on home page. Where user selects the details of books which they are interested in searching or buying. Clicking on filter button will show the books which seller has uploaded by matching the details user have specified on filter page.

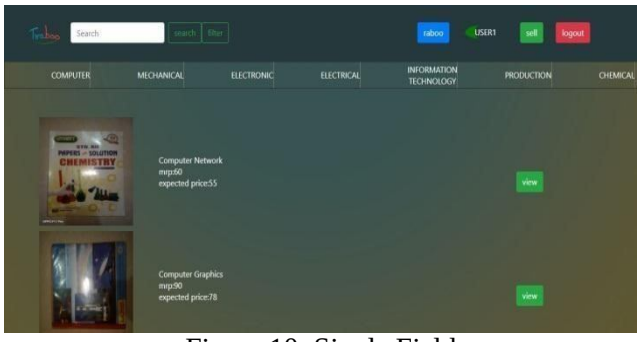

Figure 10: Single Field

Above Figure 10 is form is a result of filtered search or navigation. Using this feature user can filter unwanted result and only view the books which they are interested . clicking on view button on right side of book search user can view the book profile opening the book profile form.

Figure 11: User Profile

Above Figure 11 form opens clicking on username label on home page. This page consist of details about books user has put on sell and books which user has bid on. It consist of 2 table with bookid in there sell. Clicking on book id will open the details about book status and price which other users have offered or negotiated.

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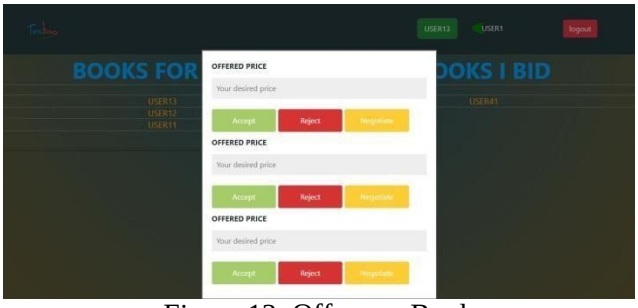

Figure 12: Offers on Book

This Figure 12 form consists of offer which other user has offered along with three option button where user has to decide whether to accept reject or negotiate the price. Accepting the offer will start the second stage of deal, rejecting will empty the offer section and negotiate will allow user to negotiate the price back.

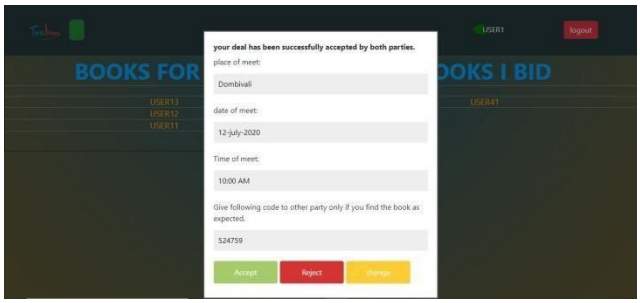

Figure 13: Deal Accepted

This Figure 13 is what the second stage of deal where users decide the place and time of the meetup to trade the book. Form is opened when user accepts the offer price , in the same way price was decided place of meetup and trade is also decided . This form also consist of unique OTP which they have to give it to other party which they have to put on website indicating that they have meetup done trade successfully and clear from there side.

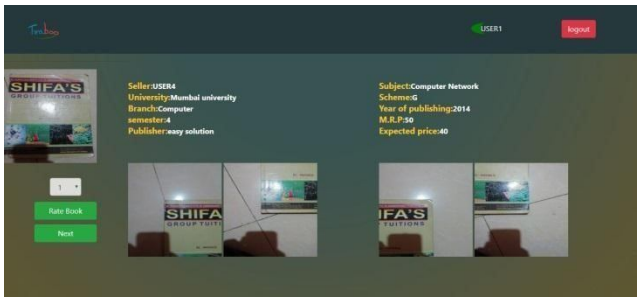

Figure 14: Rate Book

Above Figure14 is form is similar to book profile. This form is opened when user click on Raboo button on home page. This is the special feature of our website where we get the rating of the book using crowd sourcing. On this form users rate the book seeing the images and details of the book which user has uploaded where multiple ratings from multiple users are use to generate average rating of the books in return a user gets the perk record which will later used to reward the users who are rating it accurately.

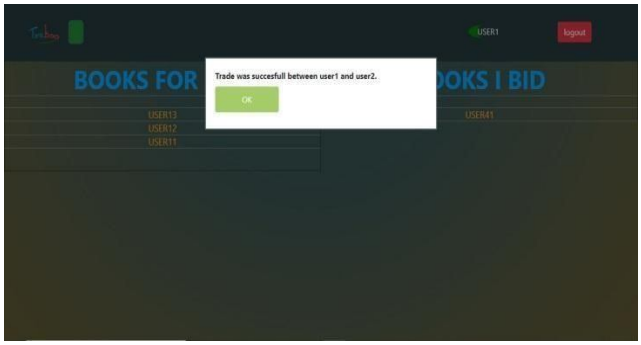

Figure 15: Trade Complete

This Figure15 is the success message of trade has been successfully took place between two parties and book profile is ready to be deleted form the database.

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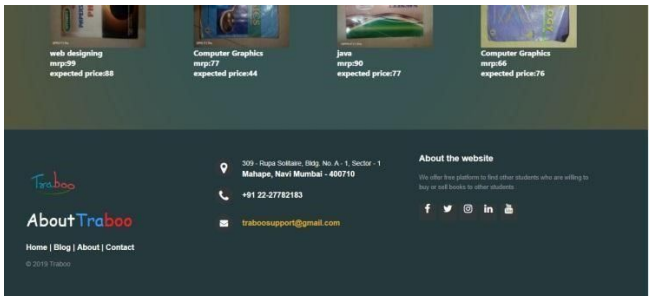

Figure 16: Footer

Above Figure 16 Screenshot are a footer of our website which contains about and help of our website, contact details address and support email, if users face any difficulty.

6.CONCLUSION

We have successfully created a platform for engineering students to trade their old semester academic books with other junior students, also can buy books of next semester from senior students. This platform has excluded the unnecessary chat allowing negotiation only on point with price tags. Traboo platform will help students to save some money by eliminating the commission third person would take like shopkeepers sharing that amount among buyer and seller which creates win-win situation for both parties.

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BRAIN MRI IMAGE SEGMENTATION AND SVM BASED CLASSIFICATION USING MATLAB, TO DETECT AND CLASSIFY BRAIN TUMOUR

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ABSTRACT
A tumour in brain is an assortment or accumulation of irregular cells in brain. It is important to detect this tumour at early stages with methods such as MRI or CT scan, because it can in turn lead to cancer. This paper addresses how our proposed system will help doctors locate and identify the threat level of the tumour by using patient's MRI image. We have used very powerful image processing software MATLAB to develop the system. The proposed system subsists of four phases. These phases are: preprocessing, feature extraction, segmentation and SVM based classification. The first phase is preprocessing which removes the noise present in the image and this method depends on type of noise present. The second phase is feature extraction, used to separate the foreground and background of an image which helps in increasing the accuracy of the system. The third phase is segmentation which partitions the image in group of pixels which separates the tumour from normal brain tissues. The last phase is SVM based classification, which provides accurate and more successful result for classification of the MRI. Proposed system is found to be successful in finding the tumour presence, location of tumour along with threat levels of tumour according to classification as Malignant and Benign.

Keywords: Brain tumour detection, Image processing, MRI, Segmentation, Support Vector Machine.

1. INTRODUCTION

Brain tumour is a mass or growth of abnormal cells in the brain; it is a life-threatening disease which should be detected quickly and accurately [1]. The tumour will start small and it enlarges as time passes. When the tumour expands, it becomes more visible starts exhibiting the symptoms. The general symptoms of brain tumour are having headache, seizures, difficulty thinking, weakness, nausea, vision and hearing problems [2]. Research shows that the number of people who developed brain tumour and passed away has been increased by 30% over past three decades [3]. Brain tumour is of two types, first is benign which is noncancerous and second is malignant which is cancerous. According to WHO, the grading system scales from grade I to IV. They are labelled as benign and malignant tumour category. Grade I and II are low grade which classifies as benign whereas grade III and IV are high grade tumour which classifies as malignant. Even if the benign tumour is non-cancerous, it can be fatal too as it can develop into malignant. The malignant type which is grade III and IV grows very promptly.

Recognition of brain tumour begins with Magnetic Resonance Imaging scan. It is complicated to process of MRI images, that's why the researchers are consistently investigating the images to give doctors the improved ability to diagnose the patients [4]. The identification of infected tumour region from Brain MRI is a primary concern because it can be a repetitive and time-consuming process which is carried out by medical experts and its accuracy depends on the doctor's experience. Proposed system easily enables doctor to observe and monitor the appearance and growth of tumour affected regions at different levels so that they can go for accurate treatment according to type of tumour.

The paper is arranged in a way that section II mentions the survey of various methods used for brain tumour detection, in section III our proposed method is explained in detail, in section IV the results are discussed, and section V addresses the conclusion.

2. LITERATURE SURVEY

Amritpal Singh et al. [5] proposed various methods for classification of MRI. These methods are: The first method enhances the image to improve the speed and accuracy, then the features from brain image are extracted, after which SVM technique is applied to classify the brain MRI images which provide accurate and more effective result for classification of brain MRI.

Animesh Hazra et al. [6] proposed a methodology to detect and locate the tumour region existing in brain using MRI. It uses of following methods: Pre-processing includes converting original image to grayscale image and remove the unwanted noise. Edge detection uses algorithms such as Sobel, Prewitt and Canny which detects the boundary of an image & other image enhancement techniques. Segmentation displays the tumour region clearly then the image is clustered by using k-means algorithm.

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Hatice Cinar Akakin et al. [7] enhanced the system for multi-image queries. Image feature is extracted in two parts; For Color extraction they have used the color spaces such as hue–saturation–value (HSV) in addition to RGB. The total 26 color and gray-scale features are extracted using three different color spaces for a given image. Texture feature is extracted using Co-occurrence histograms.

Mohan Priya S. et al. [8] proposed a robust retrieval of image features by a supervised classifier which concentrates on extracted features. Gray level co-occurrence matrix algorithm is implemented to extract the texture features from image. To train the classifier the feature optimization is done on the extracted features to select best features out of it. The classification is performed on the dataset and it is classified into three categories such as normal, benign and malignant. They have used the SVM (Support Vector machine) classifier followed by KNN (K-nearest neighbor).

Yudong Zhang et al. [9] have developed a novel hybrid classifier to distinguish normal and abnormal brain MRIs. They used a method which classifies a given MRI brain image as normal or abnormal. This method first employs wavelet transforms to extract features from images, and then applies the technique of principle component analysis to reduce the dimensions of features. The reduced features are sent to a back propagation NN, which is adopted to find the optimal weights.

3. PROPOSED METHOD

MRI image of the brain is processed for tumour detection using MATLAB. The proposed system uses four stages to find the tumour. Firstly, preprocessing is done which clears unwanted noise from the image. Then feature extraction is done which extracts the features of the image and after that segmentation is done which reveals the tumour clearly and in final stage SVM based classification is done which helps to find accurate and successful classification of results.

3.1 Algorithm for Brain Tumour Detection

1. Provide the MRI image as input.
2. Convert the input image to grayscale image.
3. Apply high pass and median filters.
4. Extract the features from the image.
5. Perform edge detection using sobel operator.
6. Perform morphological operations, K-means segmentation algorithm and then thresholding.
7. Display location and stage of tumour after classification.

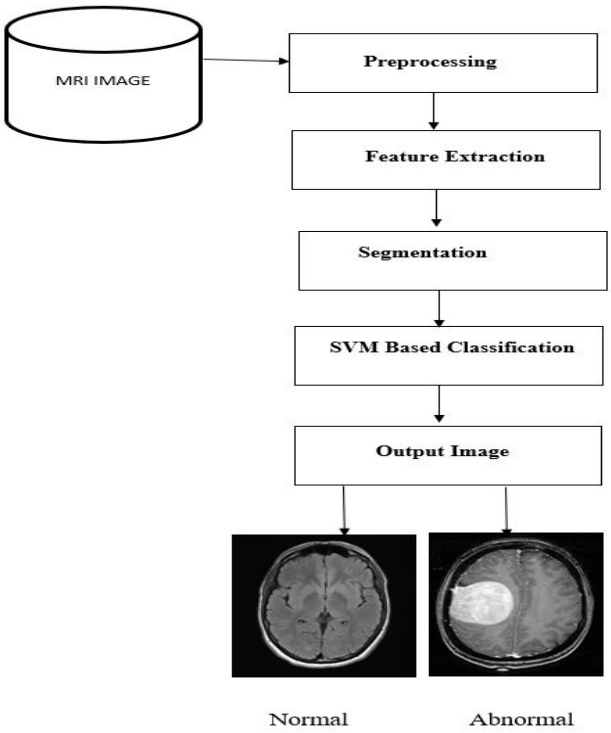

Figure 1: System Architecture

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Above figure.1 of system architecture clearly gives the idea about working of proposed system. Each and every stage of the system is explained in detail as follows:

3.1.1 Pre-processing:
Pre-processing is required to remove the artefacts/noise in the image and improve the clarity of the image by applying some filters [6]. These filters the brain MRI image depending on the type of noise present in the image. In the image processing, the grayscale image is processed using different methods such as brightness, threshold and filtering. Brightness renders the image from which white objects are separated from dark objects by the gray and light objects. Thus, by changing the brightness of the image the tumour detection in the MRI image is easier.

1. Converting to grayscale image:
Grayscale images are the images which only contain details about brightness. Pixel value corresponds to the sum or quantity or intensity of light in a grayscale image [8]. The brightness graduation can be distinguished in a grayscale image, and every pixel is represented by a byte or word, which value reflects the light intensity at that point in the image. An 8- bit image will have a brightness variation from 0 to 255 where '0' represents black and '255' represents white.

2. Applying high pass filter:
Applying High pass filter to the image eliminates the existing noise which improves image quality and minimizes miscalculation. The noise can have huge impact on the details present in the image, thus to remove this noise, high pass filter increases the contrast of image [6]. The increase in image quality and contrast increases the visualization if the MRI image.

3. Applying median filter:
A median filter is applied for smoothing and removing the unnecessary noise. It is very effective at removing noise while preserving edges, especially for removing salt and pepper type noise [6]. It moves through the image pixel by pixel for replacing its value with medial value of nearby pixels. For maintaining uniformity of the area, the median filter estimates the gray level value; by this process it removes the features which are smaller than half the size of median filter.

It's necessary to convert gray pixel value into Hounsfield unit. Hounsfield unit expresses the MRI/CT image values in standardized and convenient form. The equation is:

$$HU = (Gary\ Value * slope) + intercept \quad \text{----------} \quad (1)$$

In equation (1), Gray value is the absorption of radiation within the tissues acquired during MRI/CT scan. Slope and intercept are acquired from the image data. [7]

3.1.2 Feature Extraction:

Feature extraction describes the shape of the information contained in an image so that the classification task is made easy for the tumour detection system. Its classification helps in identifying whether the features of the image are normal or abnormal [9].

It separates the foreground and background of an image; this is necessary as it extracts the features of the MRI image [8].

The relevant features are extracted from the image and are used to recognize shape of the image which makes it easy to extract tumour region in our proposed system.

3.1.3 Segmentation
Segmentation is an important step in image processing. It involves converting an image into collection of regions of pixels that are represented using mask. By doing this it divides an image into segments so that you can process only the important part of image. Medical image segmentation technology has developed numerous applications in different areas such as patent diagnosis, medication management planning and computer aided operation [10].

In segmentation process, first Gaussian filter is used to removes the fine details that were initially found in the image. After that, unsharp masking filter is used to improve the edges. Morphological operations such as erosion and dilation are performed followed by k-means clustering algorithm is used with k=8. A median filter is applied again with a kernel of (5*5) and finally, thresholding is used to segment the tumour part in the image.

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1. Edge detection using Sobel operator
Edge detection is an image processing technique which gives importance to the edges on the image. It works by detecting brightness discontinuity; it finds the direction where there is largest increase from light to dark part of the image and the rate at which it changes [6]. This shows how abruptly or smoothly the image changes at each pixel and therefore how the pixel represents the edge.

2. Morphological operations
Morphological operations are a set of image processing techniques that process images based on attributes of an image. The value of each pixel in output image depends on corresponding pixels of input image [5].

Morphological operation involves dilation and erosion. Dilation adds pixel boundaries of objects in image while erosion removes pixels on object boundaries of the image.

Dilation makes the objects in image more visible and erosion removes small objects so that only important part of the image remains.

For MRI Images, a morphological open procedure by constant parameters is implemented after extraction of the features (length = 4, angle = 40 and length = 2, angle = 90) which were the best fit to remove the artefacts from images.

3. K-means clustering algorithm
K-means clustering algorithm is an iterative algorithm which partitions the image data into predefined clusters where the data belongs to one group. The image is divided in such a way that each part of the image shares some related features such as the intensity, color or texture [6]. In the proposed system k-means clustering algorithm is implemented to accurately predict the location of brain tumour.

4. Thresholding operation
Image thresholding is an effective way of partitioning an image. This operation is a type of image segmentation that isolates objects by converting grayscale image into binary image. Binary image is an image where a pixel can have only two values, 0 or black and 255 or white [5].

Thresholding is used to extract the objects from the background by selecting a threshold value T. Any point (x, y) in the image at which the equation

$$f(x, y) > T \quad \text{----------} \quad (2)$$

Equation (2) is called an object point; otherwise the point is called a background point [5]. When T constant is applicable over entire image, the process is known as global thresholding. When the value of T changes over an image, we use the term variable thresholding or sometimes referred to as local regional thresholding. T is a variable; if it depends on the spatial coordinates (x, y) themselves then variable thresholding is often referred to as dynamic or adaptive thresholding.

3.1.4 D. SVM based classification
Support Vector Machine is a binary classification algorithm, which analyze data used for classification and regression. It is widely used due to its high accuracy and its ability to deal with high dimensional data [11]. This method is being utilized in a wide range of pattern or image recognition.

SVM classifies based on the image, for example if the image is an animal then it will identify the type of animal. Similarly, this classification identifies the type of tumour present in the image.

4. RESULTS

4.1 The steps to execute our proposed system are:

1. Load Original Image
In order to start the processing, first run the MATLAB application. In the GUI select “Load original image” and browse and load the image for processing.

2. Pre-processed and Filtered Image
It converts the image into grayscale and enhances it using the high pass filter and the median filter removes the unwanted noise and preserves the edges.

3. Segmented Image
Segmentation segments the image so that only the important part of the image is visible.

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4. Edge Detection
Edge detection shows how abruptly or smoothly the image changes at each pixel and how the pixels represents the edge.

5. Eroded and Dilated Image
In erosion the pixels beyond the edges are assigned maximum value which is 255 or grayscale images. In dilation the pixels are assigned minimum value of 0.

6. Detected Tumour and Results
The tumour region is now clearly visible and its threat level type is revealed.

The above steps are performed in order to identify, locate and classify the brain tumour from brain MRI image. We can identify the stage at which the tumour is and if there is no tumour present then "no tumour" will be displayed.

Malignant Tumour
In figure 2 we've got the result which shows the presence of tumour which is of Malignant type. This type of tumour is of grade III and IV, it grows rapidly. Even if it is removed it can still return, hence treatment must be done quickly.

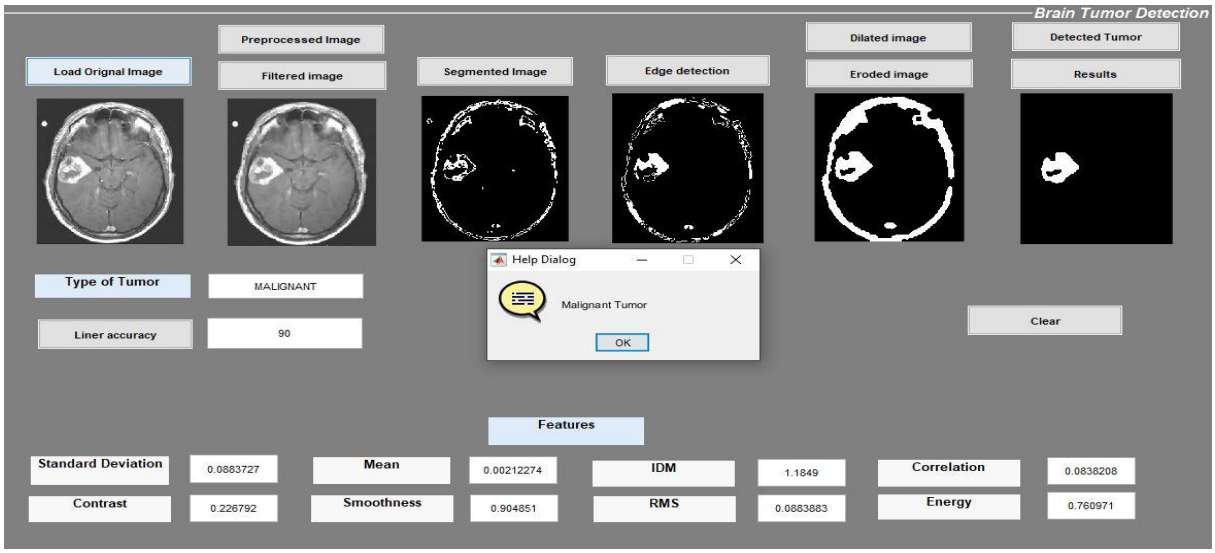

Figure 2: Malignant tumour

Benign tumour
In figure 3 we've got the result which shows the presence of tumour which is of Benign type. This type of tumour is less life threatening than malignant type. Its cells tend not to spread and grow slowly. Some benign tumour can transform into malignant so treatment must be done as soon as possible.

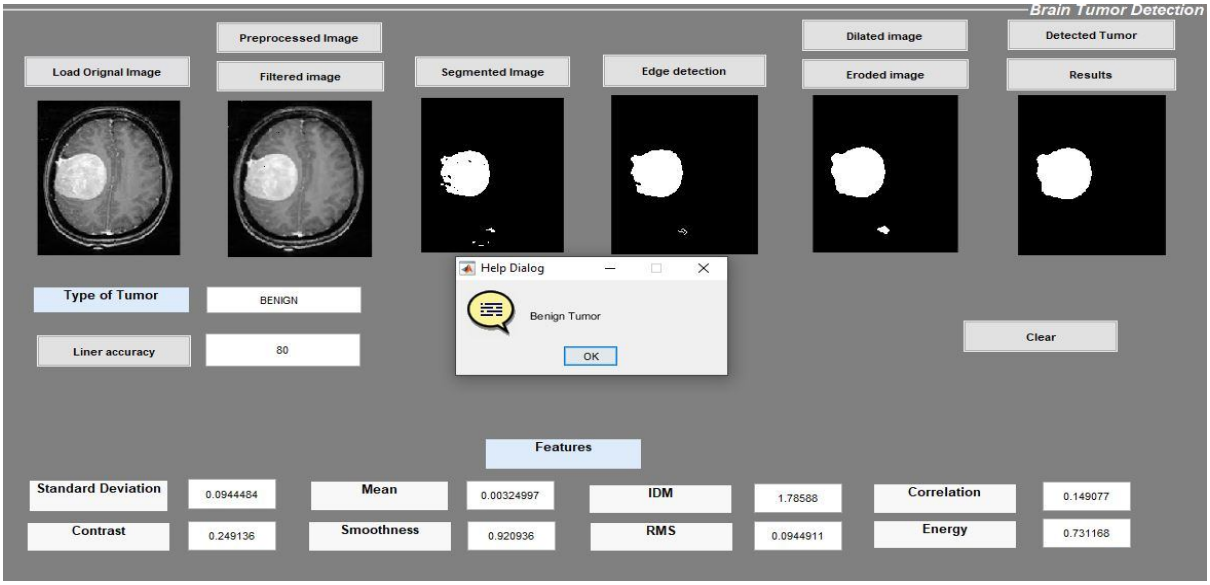

Figure 3: Benign tumour

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No tumour:
In figure 4, we've got the result which shows no presence of tumour. If the patient does not have tumour it'll be displayed as such. The patient is healthy and does not have brain tumour.

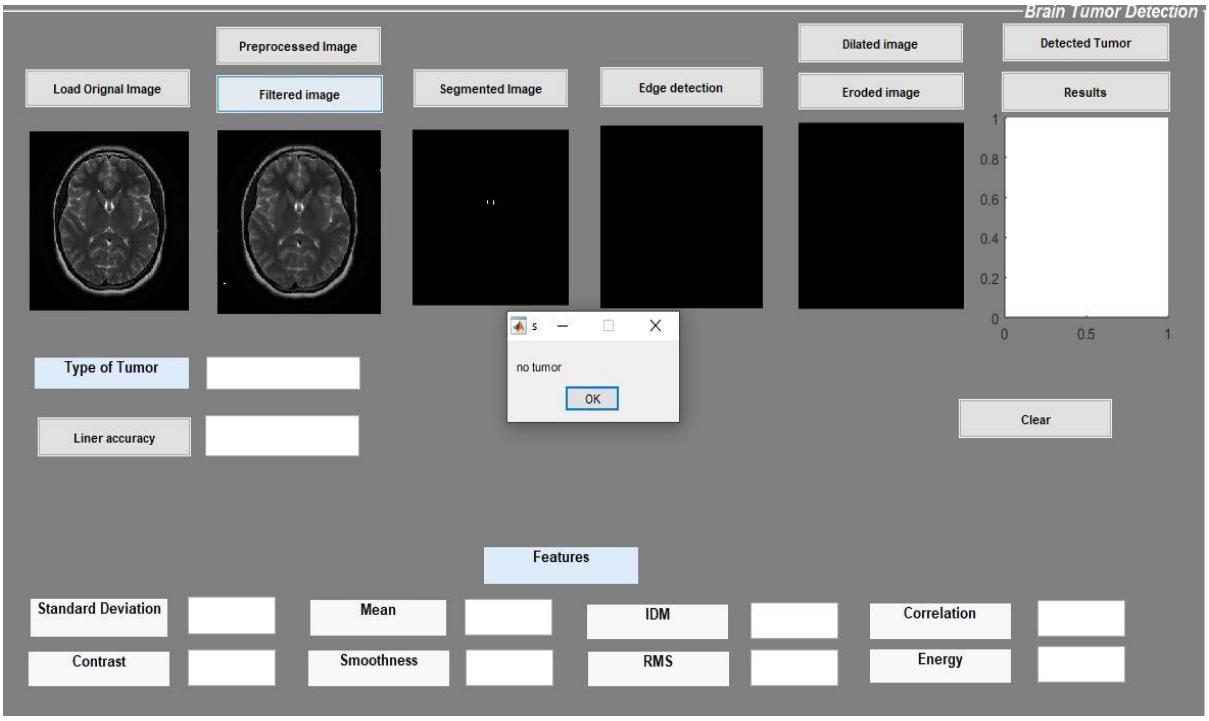

Figure 4: No tumour

5. CONCLUSION

For the detection of brain tumour MRI images are preferred. We primarily analysed various image processing techniques and their attribute in the context of brain tumour detection. The proposed system finds the location of tumour and specifies the threat level. These threat levels are classified as Benign and Malignant. If the patient has no tumour it will be indicated as such, this implies that the patient's brain is healthy and has no tumour.

Manual detection can take up to 3 hours to complete but by using the proposed system the tumour detection is performed quickly and efficiently, which will fasten the process of doctors to diagnose the patient and start with further treatment if required. In future, the accuracy in detection of tumours can be increased with the help of advance classification algorithm and this detection technique can be launched on mobile in the form of android application also to make all process easier, faster and less expensive.

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CAMPUS RECRUITMENT ANDROID APPLICATION

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ABSTRACT
Campus requirement android application in important in today technology word help the candidate to choose their right job in easy and quick way. This paper present the campus recruitment application based on android. Campus requirement android application help not only candidate to find his/her dream job but also college TPO to maintained student data as well as put new campus opening of various company. In this application different company can put their vacancy and start hiring process. This system do all work exactly like placement this application can take student data like his marks, skills, department and other detail and display various campus recruitment according to their department and eligibility. This campus requirement give proper register and login to the candidate and college placement officer also it have email support means whenever you make account you got mail also whenever you apply to campus requirement you also got mail. Placement officer can access, view information of user and also remove some candidate. Company can also upload their vacancy with help of placement officer. Placement officer can see the student data according to their criteria also it have ability to filter the student data.

Keywords: Campus recruitment application, Android studio, Firebase.

1. INTRODUCTION

College campus recruitment application it's most versatile and useful application to the candidate who look for dream job. Also this application help to placement officer to manage student data department wise also it can manage various company their detail. Also placement officer can manage organization who wants to make arrange campus drive. This campus recruitment consist the student login so student can add his information and also apply to the various job opening, also this application have faculty login this login for college placement officer who manage the student data as well as add the campus job opening. Also it can filter the student data according to their department and criteria. It is who responsible to remove to student account. Now day's student joins the college for better education and Learn new thing and technology. The today word technology is continuously change and companies want the candidate who have extra skill and knowledge. Hiring new people for organization with right skill is very difficult job to the organization HR at this case campus requirement android application help the HR to choose the right candidate with right skills. So the placement activity takes important role for student and organization HR. This application is make with security perspective. In previous placement system all work done manually it create various problems. The placement officer can suffer various issues like fake entry, also difficult to minted student data, this procedure is time consuming for updating and informing specific student. Placement officer has to collect information of various companies who want to recruit student and notify student time to time about them. Also this campus recruitment application include most crucial part called feedback. Feedback feature that help the developer to take feedback of application from user based application features, functionality, quality etc. so it make changes according to this feedback. Also user can share there suggestion or its query so that make very useful to developer to add new features in application upcoming update. In this campus requirement application, for database we used a firebase platform. Firebase is a mobile and web development that provides developers with a plethora of tools and services to help them develops high-quality application, grow their user base, and earn more profit. Firebase authentication provide backend services, easy to use SDKs, and ready UI libraries to authenticate users to your application. This paper is mainly focus on recruitment application based on android, because we all know android is a fastest growing mobile operating system. An android is a most demanding mobile operating system. The android is a Linux based operating system and support all services of google.

2. LITERATURE SURVEY

[1]Gauri kejkar, Amreen khan "An Enhancement for Candidate Recruitment System using AngularJS" This system based on AngularJS. The Paper is a review on Recruitment system which can be developed using a new idea of two-way binding with Angularjs. It gives the comparison of how Angularjs is comfortable than jsf, jQuery, java, php etc. The paper will describe how modified versions of Angularjs are being familiar now a day in many organizations.

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Measurement of Musical Talent". Preliminary results from an online experiment with the game provide basic proof that GWAP can be successfully applied to the task of measuring musical talent, and are described in this paper. . Preliminary results from an online experiment with the game provide basic proof that GWAP can be successfully applied to the task of measuring musical talent, and are described in this paper.

[3]Wentao Liu "Human Resources Recruitment System Based on XML Web Service" this paper presents a Web service-based human resource recruitment system to solve these problems well. Web service is a distributed software architecture model and uses XML, HTTP, UDDI, WSDL and SOAP standard protocols. It is the software architecture as a generic implementation model for SOA.

[4]Junalux Chalidabhongse, Nattapon Jirapokakul, Rata Chutivisarn "Facilitating Job Recruitment Process through Job Application Support System", This paper focuses mainly on the step in which the applicants have to fill out application forms and undergo an initial screening interview. This step is very important because human resource recruiters must choose qualified candidates out of many applicants to be interviewed with the supervisors responsible for the job. Recruiters of many companies face a lot of problems performing this step especially when they have to perform it manually.

3. EXISTING SYSTEM

Earlier days we were using our mobile phone for various activity like social media, gaming, and music etc. Mobile is an important member of a day to day life and that's why we are making an application to in mobile system in android. In existing recruitment system have their own advantages and disadvantages. The existing system developed using common language like HTML (hypertext mark-up language), PHP, CSS (cascade slide sheet), XML and Angular JS so basically this web based system, and it have some disadvantage. This system is based on a web browser so it not support notification feature [1] Organizations are now-days more dependent on e-recruitment has facilitated and improved human resource management. Now-a-days, via internet it has become easy for recruiters and job seeker to find the recruitments and services at higher speed with their specified criteria's. It is very tough task for recruiters now to find perfect candidate as there are many specialized and experience candidates and high job demands. Some recommender systems can help to sort out of these situations. They provided large amount of data to job seekers as well as to recruiters. Now this needs something more powerful and more secure than as mention previously. Thus application was developed in JSF (java server faces).It is a component-based java specification use for building user interfaces for web applications. Java Server Faces (JSF) is a MVC net framework that simplifies the development of user interfaces (UI) for server based totally packages by making the use of reusable UI additives in a web page. JSF gives facility to attach UI widgets with records resources and to server-aspect occasion handlers. The JSF specification defines a set of trendy UI additives and offers an Application Programming Interface (API) for developing components. JSF allows the reuse and extension of the prevailing standard UI components. In existing system most of system are based on a PHP and it have some issues to work with PHP they are following,

3.1 Issue that occurs with PHP were as follows

• Though PHP is open source, but it was limited with smaller and middle level projects.

• It was becoming difficult to maintain PHP code due to lack of constraints for structuring on developer side.

• Packaging support was not available with PHP.

• No security guarantee, not garbage collection support.

• It was also lacking in case of caching and APIs.

4. PROPOSED SYSTEM

The aim of proposed system to develop a campus requirement system is to provide better service for requirement process and improved facilities. In this proposed system we will try to overcome some existing system issues. This system have user friendly interface also it time to time notify to the user about new campus opening and his/her applied job status, using email. This application provide the feedback support to get suggestion from user and it also help to solve user issues.

4.1 The following service provided by the proposed system:

- Security data.
- Ensure data accuracy.
- Minimize time needed the various processing.

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- Minimize the human effort
- Greater efficiency.
- User friendliness and interactive.
- Minimum time required.
- Validation user input is highly essential.

This application is contain three module student module, faculty module, and admin module. The student can register by giving proper username and password, after filling all information he/she can apply for a various campus vacancy also it can receive a mail after applying some campus drive. Also it can give his/her feedback and suggestion to the developer using feedback function so developer can overcome in next update. In faculty module faculty can post the new campus drive, also manage the student application and filter according to its branch and criteria. The last module is admin module, admin have full access to the application it is responsible for do any changes in application, and it can manage both student and faculty.

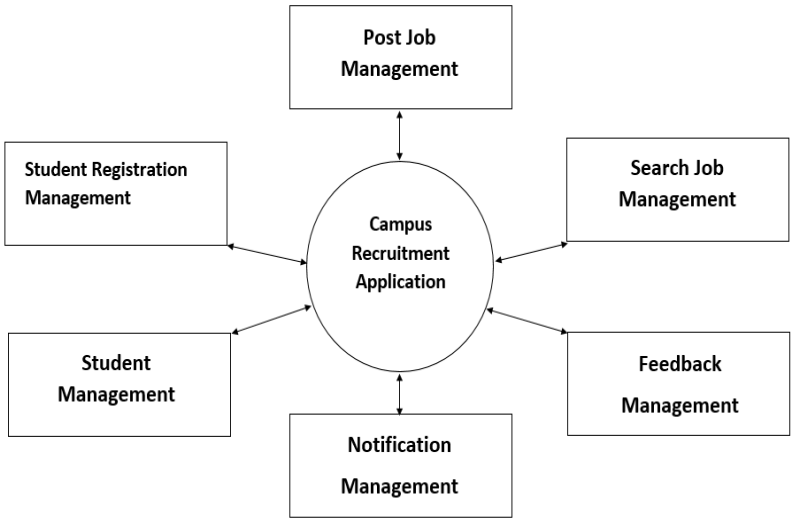

Figure.1: Data flow diagram level 0

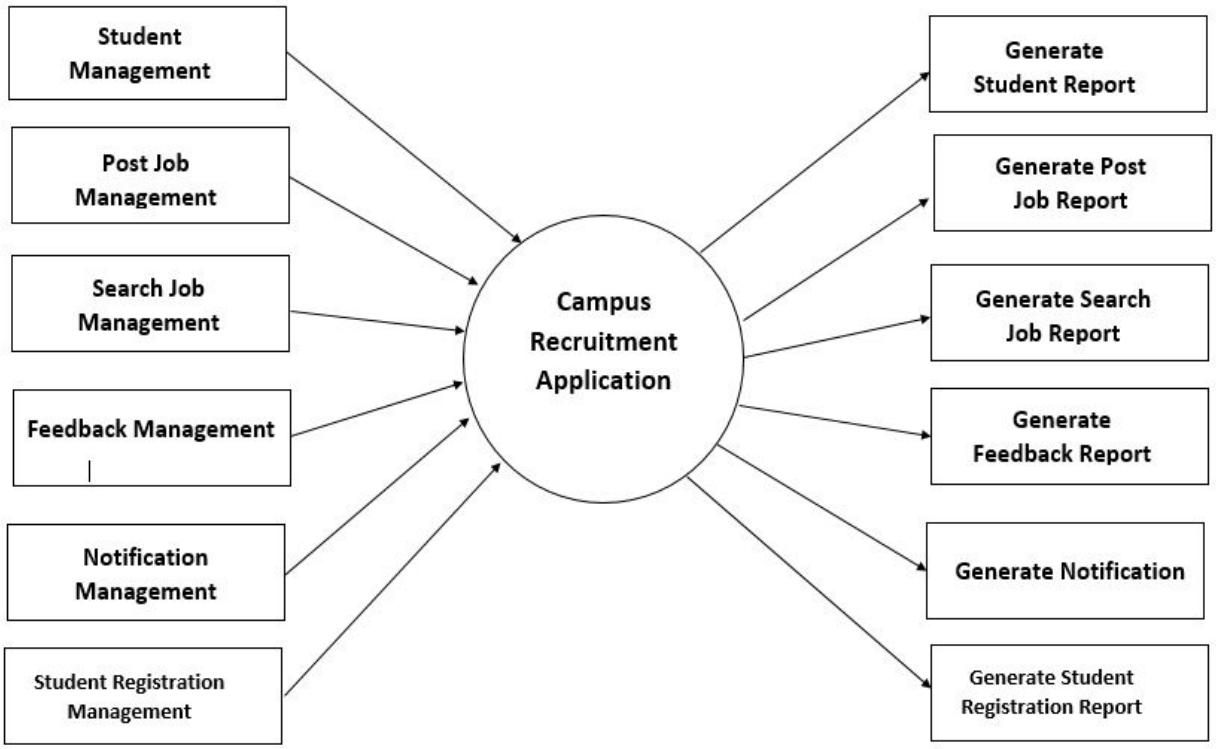

Figure.2: Data flow diagram level 1

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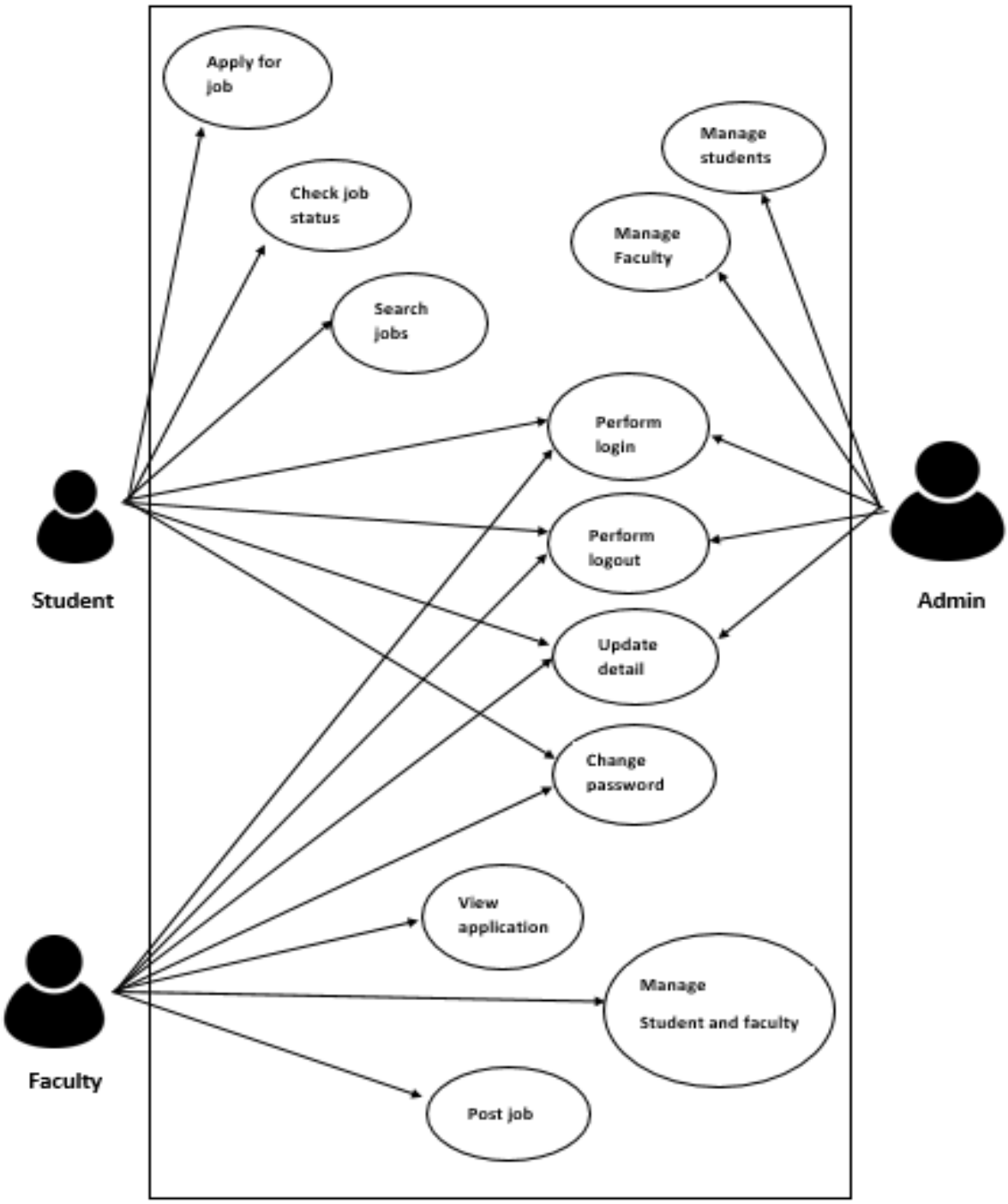

Figure.3: System architecture

4.2 Why we use android?

Android is a fastest growing operating system in smartphones market.[8] Android is a Linux based operating system it is designed primarily for touch screen mobile devices such as smart phones and tablet computers. The android is a powerful operating system and it supports large number of applications in Smartphones. These applications are more comfortable and advanced for the users. The hardware that supports android software is based on ARM architecture platform. The android is an open source operating system means that it's free and any one can use it. The android has got millions of apps available that can help you managing your life one or other way and it is available low cost in market at that reasons android is very popular. The android is an operating system and is a stack of software components which is divided into five sections and four main layers that is Linux kernel, Libraries and Android runtime. The android uses the powerful Linux kernel and it supports wide range of hardware drivers. The kernel is the heart of the operating system that manages input and output requests from software. This provides basic system functionalities like process management, memory management, device management like camera, keypad, display etc.

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5. RESULTS

Figure.4: Register Page

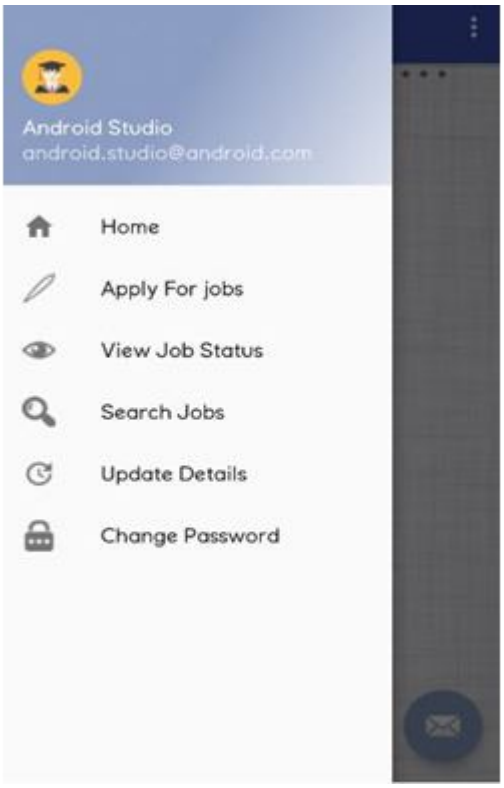

Figure.5: Student Module

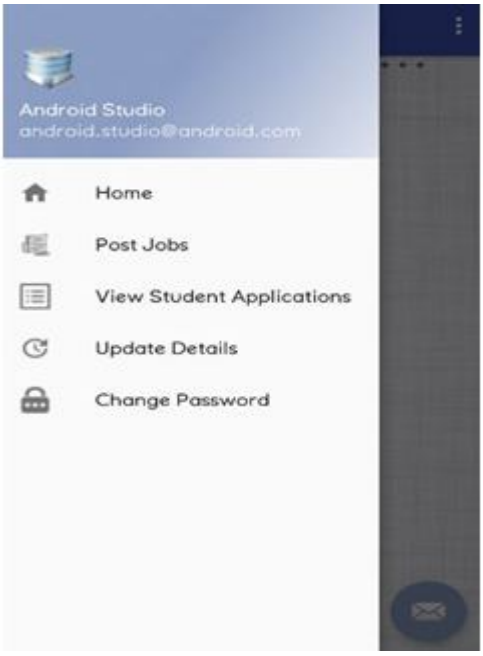

Figure.6: Faculty Module

Figure.7: Admin Module

6. CONCLUSION

In the existing placement system, is based on web so maximum work goes on internet and also it not support the notification features, to notify the user to its job related detail and other important detail. This big issues is the search, sort and update of the student data and no any notification method available for giving information to student except the notice board. Proposed system is fully automatic in this application candidate can make fill his/her personal detail, educational detail and other information to make it job ready. The faculty can also monitor the student data and organization data, also it can alter the data. The admin can full access the all application and it can make full access the student and faculty. The admin is responsible to make change in application and adding new feature to the application. Also this application include feedback feature that help the developer to take feedback from application user and its suggestion or its query so that make very useful to developer to add new features in application.

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CLOUD COMPUTING BASED TELEMEDICINE SERVICE

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ABSTRACT
"Health is the greatest possession". Various techniques are drawn for the better treatment of the health of society. As the technology is reaching its peak, it's rising in medical treatments quickly associate degreed productively biological process to "telemedicine" – an invention of technology in drugs. These techniques permit time period knowledge accessibility with correct authentication. The idea is used on cloud –computing and real-time streaming of videos. Computing has a revolutionary effect on telemedicine. Many medical professionals are already exploiting advance telehealth applications of cloud computing.The system we are developing is an android application that provides the solution for the treatment/medical issues faced by rural people. It will minimize the travelling expenditure and efforts by connecting them to a specialist doctor's of urban areas online through a rural doctor. This will further be carried out via online prescription and video conferencing technologies that we used to develop project are android studio, Firebase real time database and SQLite database.

Keywords: Cloud computing,Distributed database.

1. INTRODUCTION

Internet may be a dynamic and speedily evolving mechanism that it appears not possible for ancient human system like libraries, prints media to stay pace. Today's scenario, cloud computing service is very much necessary for web users to access computing resources over internet. Cloud computing refers to each the applications delivered because the services over net and hardware and computer code in knowledge centers that give services.

Cloud computing is those customers solely use what they wantand pay for what they truly use. Resources as a service are available over the cloud at any time and from any location via the internet. Among the popular cloud service providers are Amazon, Google, Microsoft, etc. Telemedicine is the use of medical data modified from one site to a distinctive via electronic communications to boost up patient's clinical status.

Telemedicine isn't a separate medicine. Product and services associated with telemedicine area unit typically a part of a bigger investment by health-care establishments in either info technology or the delivery of clinical care. Even within the compensation fee structure, there's sometimes no distinction created between services provided on-site and people provided through telemedicine and sometimes no separate cryptography needed for asking for remote services. Patient consultations through video conferencing, the transmission of still pictures, e-health in conjunction with patient portals, remote observation of great signs, continuing medical education, consumer-focused wireless applications, and nursing decision centers,among totally different applications, area unit all thought of a part of telemedicine and telehealth.

Sometimes telemedicine is well understood with regards to the services provided and additionally the mechanism used to give those services. Here are some examples:

A. Primary care and specialist referral services could involve a medical care or allied health care provider providing a consultation with a patient or a specialist helping the first care medical practitioner in rendering a diagnosis. This might involve the employment of live interactive video or the employment of store-and-forward transmission of diagnostic pictures, important signs, and/or video clips with patient knowledge.

B. Remote patient monitoring, together with home telehealth, uses devices to remotely collect and send information to a home-health agency or an overseas diagnostic testing facility for interpretation. Such applications would possibly embrace a particular sign, like blood sugar or heart cardiogram, or a range of indicators for homebound patients. Such services could supplement the employment of visiting nurses.

C. Consumer medical and health data includes the employment of the web and wireless devices for patients to get specialized health data and access on-line discussion teams that give peer-to-peer support.

D. Medical education provides continuing medical education credits for health professionals and special medical education seminars for targeted groups in remote locations.

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1.1 BENEFITS OF TELEMEDICINE

Telemedicine has been shown to beat barriers to health services caused by distance between patient and supplier, access to reliable transportation, fragmentation of care because of gaps in time appointments, and lack of accessible suppliers.

1. Telemedicine increases access to care.
2. Telemedicine improves quality of care delivery.
3. Telemedicine reduces healthcare costs.
4. Telemedicine enhances traditional face-to-face medicine.

Telemedicine improves patient engagement and satisfaction.

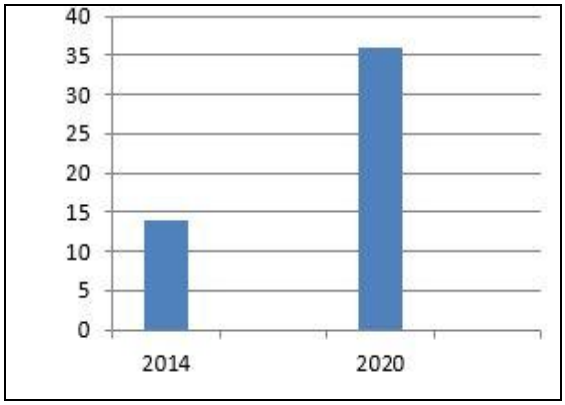

Chart -1: Global Market Value for Telemedicine

1.2 BARRIERS TO TELEMEDICINE

1. There is no public policy related to telemedicine for the end users, which can ensure privacy, confidentiality, and security of patient's health information during teleconsultation.
2. Lack of formal organizational structure to deliver telemedicine services is the biggest barrier for the development of telemedicine services in any country.

Technology itself is becoming a barrier in development of telemedicine in developing countries.

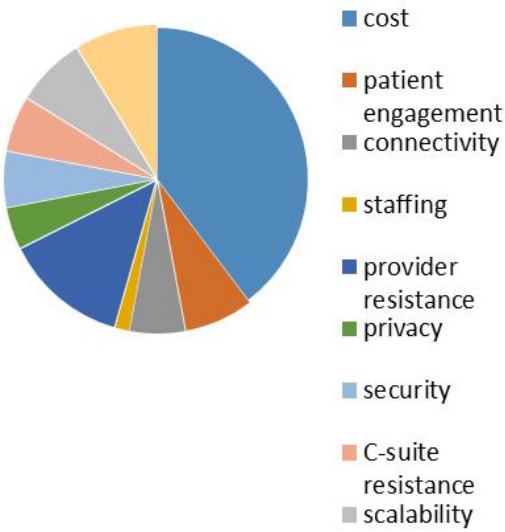

Chart -2: Barriers to Telemedicine

2. PROBLEM DEFINITION

Quality of health care services in rural and urban areas is not in proportion. Due to insufficient physician in rural areas health care services are poor which has a direct effect on health of people living rural areas. So telemedicine is a method of providing health care services based individual patient's information that can be viewed from images transmitted from distant areas.

So in this case cloud computing has revolutionary effect on telemedicine.

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3. LITERATURE SURVEY

1] Neha Bhisnoi and Anupama Sehrawat[2013] proposes "cloud computing architecture to aid telemedicine" which uses cloud architecture that is based on distributed data centers which will support application in hospital network(virtualization technology).

2] Hamid Mcheick, N. Jeyanthai, R. Thandeeswaran [2014] proposes "SCT: Secured Cloud Based Telemedicine" which highlights on the term security of the data in cloud without compromising quality of service by using cloud technology and living techniques stored data.

3] Xiaoliang Wang, QiongGui, Bingwei Liu Chen and ZhanpengJin [2013] proposes "Leveraging mobile cloud for telemedicine: A performance study in medical monitoring" which shows the development of Mobile cloud Telemedicine framework by using fuzzy logic and SVM (Support Vector Machine) algorithm.

4. PROPOSED WORK

The telemedicine based on cloud computing is an android application that is designed to connect the rural area people with the specialized doctor's of urban areas through the help of a rural doctor.

4.1 FLOW OF THE SYSTEM

There is a login for rural doctor. It verifies the user is authenticated or not. After login rural doctor is asked to add the patient details via forms which gets stored in the SQLite database.

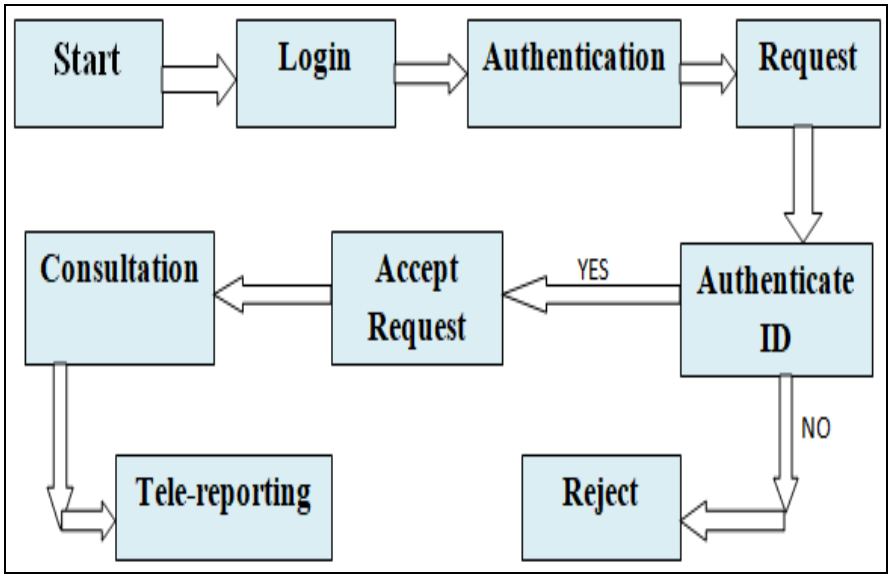

Figure 1: Flow Diagram for telemedicine service system

5. METHODOLOGY

In this project we have use the firebase system as a cloud system like real-time database, authentication, storage etc. Firebase is a Backend-as-a-service. Baas started as YC11 startup and grew up into a next generation app-development platform on Google Cloud Platform. Firebase frees developers to focus crafting remarkable user experiences. You don't need to manage servers. You don't need to write APIs. Firebase is your API, your data store and your server. Generally that you can modify it to suit most needs. As we know firebase mostly work as android, IOS, web etc.

5.1 ARCHITECTURE

Cloud Computing architecture consists of numerous components, which are loosely coupled. We can divide cloud architecture into two parts:

1. Front End: It refers to the consumer a part of cloud automatic data processing system. It contains of interfaces and applications that are ought to access the cloud computing platforms, Example – Web Browser.

2. Back End: It refers to cloud itself. It consists of all resources needed to produce cloud computing services. It contains big information storage, virtual machines, security mechanism, services, preparation models, servers, etc.

Each of the ends is connected through a network, sometimes web. The subsequent diagram shows the graphical views of cloud computing architecture.

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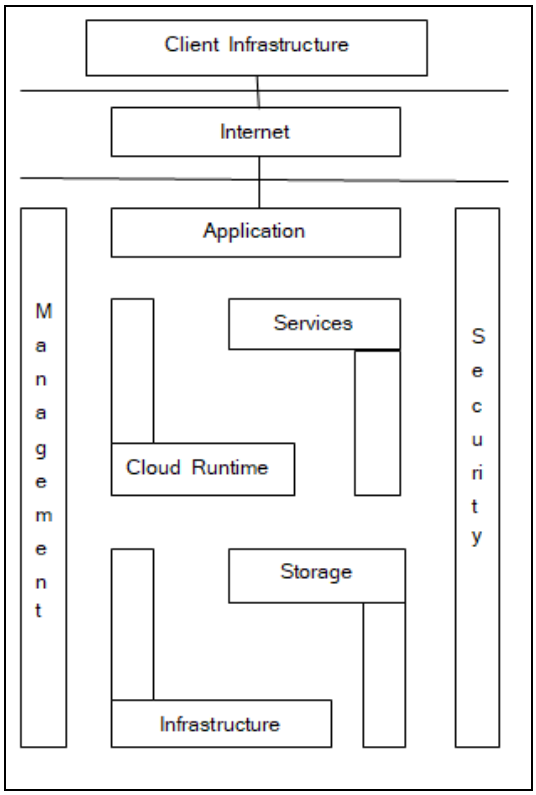

Figure 2: Graphical View of Cloud Computing

5.2 WORKING

So our project is on app development as "Cloud Computing Based Telemedicine Service".

In this project there will be rural doctor and urban doctor who's going to be consult through chat and video conferencing in a simple process as shown in fig below. Through chatting and video conferencing rural doctor able to solve the problem of the patient even he/she can send the report to urban doctor and urban doctor can also download report anytime anywhere from firebase storage system through this app. According to the consultation of urban doctor, rural doctor can advice the treatment to his patient.

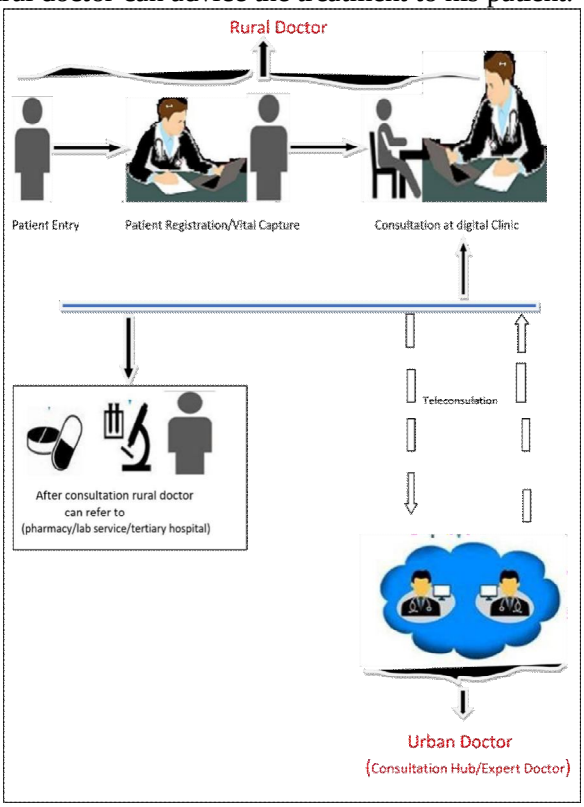

Figure 3: Working of telemedicine service

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6. CONCLUSION

We have implemented telemedicine using cloud computing system for the betterment of hospitality services in rural areas by connecting the rural area people to urban doctor with the help of rural doctors. Telemedicine is on the verge of a considerable transformation which will strengthen the effectiveness and potency of care delivery.

Through cloud computing system, telemedicine services helps rural doctor and patient get to interact with urban doctor or expert doctor by live consultation process. System will not make the people to wait long time. By using cloud computing telemedicine services get best facilities and services by naked eye. Rural doctor also get the knowledge of new technology just by consulting with each other and interacting with each other.

By using system, it reduces human efforts, to do hard work etc. So cloud computing is beneficial in this cases and solve the problem from anywhere. Hence we implemented our system.

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TOUCH TO SPEECH: AN ANDROID APP FOR BLIND PERSON

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ABSTRACT
The recent development in text to speech has been switched to concatenative synthesis, either using original speech segments. The former Touch to Speech system provides a better quality output since they use the original speech segment for concatenation. There are various techniques for speech generation like PSOLA, TDPSOLA, and EMBROLA etc. This paper describes the development and implementation of concatenative based system based on Epoch Synchronous Non Overlap and Add (ESNOLA) technique. The TTS uses di-phone like segments (part name) as the basic units for concatenation. The database contain 1500 part names, which are used for generating speech for unlimited domain text. This paper also describes about the implementation of TTS. TTS provides total nine different most useful features like calling, navigation, SMS reading etc. The App support android latest versions up to android 4.2. TTS gives a Mean Opinion Score (MOS) of 3.2 in the perceptual test.

Keywords :- Application Program Interface (API), Data Flow Diagram (DFD), Epoch Synchronous Non Overlap and Add (ESNOLA), Giga Byte (GB), Global Positioning System (GPS), Java Virtual Machine (JVM), Micro Controller (MCU),Software Development Kit (SDK) Text To Speech (TTS), Visually Impaired People (VIP).

1. INTRODUCTION

The wide spread incidence of lost vision is of major concern in present day due to age, accident, and health issue. Such people are unable to make use of different technologies available in the world. Android based cell phones are one of them. Cell phones have become a essential in today's life. Android cell phones have taken the concept of cellular phones to next level. One can use it not only for calling, messaging but also for entertainment and educational purposes. With a touch on the screen one can avail many features. But blind people are not fortunate enough to use such technology. Efforts are been made worldwide to make Android Apps usable for blind people. But systems which are available in the market have their drawbacks. Voice clarity is not achieved properly, the systems are not light weighted and hence it makes the mobile slow and consume much energy as well. [1]

Accessible Android App for Blind uses a multi-modal interface that uses touch sensor inputs to generate voice. Blind people can touch the screen of the mobile which will give voice as output. A person will come to know which App he has opened and hence can use the Touch base mobile phones. This paper defines the development and implementation of concatenative based system based on ESNOLA technique for text in android platform.

The TTS (Touch to Speech) uses di-phone like segments (part name) as the basic units for concatenation. The database contains many part names, which are used for generating speech for various domain text. The paper also briefs about the database generation, the modification done for android platform, the data base access and handling character display in android platform. The app support android latest versions up to android 4.2.[3]

2. WORKING OF SYSTEM

Touch to speech is a advanced technology powered by android which enables blind persons to be able to use an Android Smart phone without needing to see anything, This is implemented with the help of sound, the user is able to navigate throughout the phone hearing various messages which controls the GUI of the phone. This is achieved by touching on different corners of the screen of the phone, each corner holds a specific feature which can be opened by touching on it.

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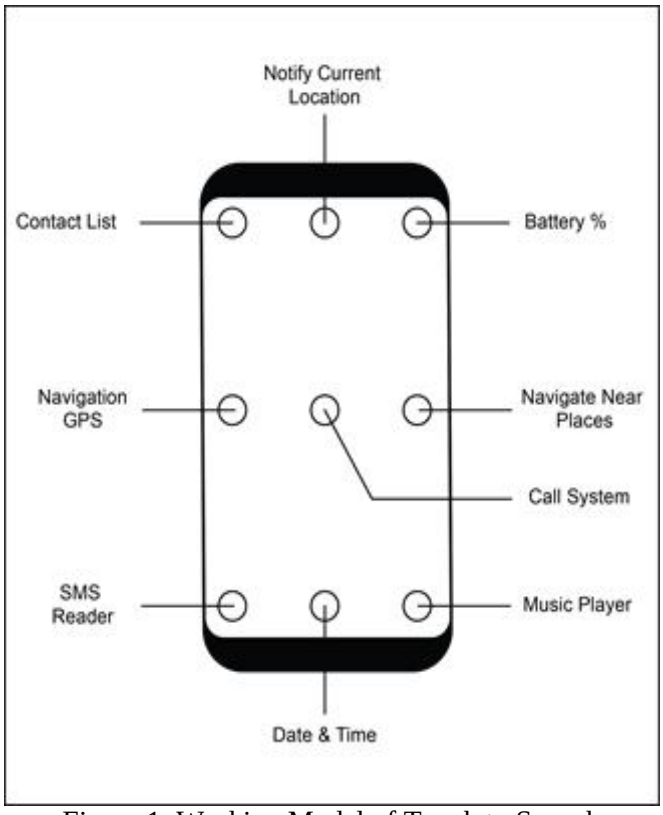

Figure 1: Working Model of Touch to Speech

2.1 These are as follows:

1. Top Left: Left Top is for the contacts section. When the user touches this corner the contact list is spoken by the touch to speech agent of the application.
2. Top Center: Top Center notify current location.
3. Top Right: Top Right notify the current Battery information such as percentage, charging status and temperature are shown as well as spoken by the TTS agent.
4. Center Left: Center Left for Navigation purpose. On touch it will ask for GPS location and starts navigation according.
5. Center: Center is for Calling Purpose.
6. Center Right: Center Right for navigate near places.
7. Bottom Left: Bottom Left for SMS section. When the user touches this corner, all of the recently received messages are spoken by the TTS.
8. Bottom Center: Bottom Left shows current Date and Time and spoken by the TTS agent of the application.
9. Bottom Right: Bottom Right for Music Player. This corner opens the Music Player which is, Google Play Music and the user can carry on listening to music.

TTS is developed with the help of Android Software Development Kit and Turn-By-Navigation libraries. SDK which includes a comprehensive set of development tools. These contains a libraries, debugger, emulator based on QEMU, documentation, sample code, and tutorials.

HERE Technologies (trading as HERE) is a firm that offers mapping, location data and related services to individuals and for companies. HERE captures location content such as street networks, buildings, parks and even traffic patterns also. It then licenses that mapping content, alongside with map related navigation and location services to other businesses such as Alpine, BMW and Amazon.com etc. HERE also provides platform services to smartphones. HERE provides location services through its own HERE applications, and also for government clients and other providers, such as Bing, Facebook map. HERE has Maps for nearly 200 nations, voice guided navigation in 94 nations, provides live traffic information in 33 nations and has indoor maps available for about 49,000 unique buildings in 45 nations.[4]

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SDK for Android supports navigation on truck, pedestrian and car routes. Using this feature, App can check the live device position against a calculated route and get just-in-time navigational instructions. Both visual and audio instructions are supported. SDK 13 for Android can also track the live position and display it on the map.[4]

HERE provides different packages like Turn-By-Navigation. TTS uses Turn-By-Navigation package which contains different classes like Navigation Manager, Background Navigation, and Headless Navigation etc.

3. RESULTS

Figure. 2 Home

Figure. 3 Contact List

3.1 Home Screen: This is the front screen which appears as soon as the app is opened.

3.2 Contact List: User touches on left top of the screen Contact List feature gets open, which is spoken by the touch to speech agent (TTS) of the application.

Figure. 4 Battery Information

Figure. 5 Current Location

3.3 Battery Information: User touches on Top Right of the screen notify the current Battery information such as percentage, charging status and temperature are shown as well as spoken by the TTS agent.

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3.4 Current Location: User touches on Top Center of the screen it will notify current location, which is spoken by TTS of the application.

Figure. 6 GPS Tracking

Figure 7 Near Places

3.5 GPS Tracking: User touches on Center Top of the screen it will ask for GPS location and starts navigation according.

3.6 Navigation of Near Places: User touches on Center Right of the screen the option called navigate near places opens which is spoken by TTS of the application.

Figure. 8 Calling System

Figure. 9 SMS

3.7 Calling System: User touches the center of the screen, the option called Calling opens up and is spoken by TTS agent which is like an alert to the user.

3.8 SMS: User touches the Bottom Left of the screen, the option called SMS opens up and is spoken by TTS agent which is like an alert to the user.

Figure. 10 Date&Time

Figure.11 Music Player

3.9 Date Time: User touches the Bottom center of the screen, the option called Date Time opens up and is spoken by TTS agent which is like an alert to the user.

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3.10 Music Player: User touches the Bottom Right of the screen, the option called Music Player opens up and is spoken by TTS agent which is like an alert to the user.

4. CONCLUSION AND FUTURE SCOPE

Touch to Speech system has been proposed based on Epoch Synchronous Non Overlap and Add (ESNOLA) technique. In this system we implemented total 9 different most common feature used in day to day life which helpful for blind people. We included feature like calling system, GPS navigation, music player etc. This application will be freely available for any blind person on play store /IOS store in future and also can we add more function in this application in the future.

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DESIGN MULTIPLE VEHICLE DETECTION AND TRACKING OF PARKING SYSTEM

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ABSTRACT
The number of non-public vehicle usage is ever increasing; so is that the number of individuals visiting shop in malls. Finding a car parking zone in most shopping complexes, especially during the frenzy hours, is difficult for drivers. Thus, there's a desire to supply sufficient car parking zone in addition to lots of slots to assist the user park his vehicle safely, also to confirm that the driving force doesn't find yourself parking during a non-parking area. Managing huge parking lots is difficult for the parking authorities too, who must make sure that all the parking lots are being employed efficiently and cause no problem to the visitors. The motive of a parking management system is to assist both the parking authorities and its users. the aim of this paper is that it reflects the working of various parking management system supported computer technologies. Then, we compare a number of the prevailing parking management systems

Keywords: Parking management system, Sensor system, Web Camera, Computer system, Database system;

1. INTRODUCTION

With the change of the worldwide economy and modern life, the knowledge and Communication Technologies sector has experienced a crucial acceleration in its process, to adapt at such change. Today, people spend most of their time outside of their home environments, they travel daily to work, which they regularly window shop centres and attractions, without forgetting the displacements to the centre of the town. This certainly caused an imbalance within the daily mobility that led to the event of parking services to avoid unnecessary driving around the eye to simply seek for a automobile parking zone. This, on the one hand, causes additional dioxide emissions and damages the environment of the city's ecosystem. On the other hand, it increases drivers' frustration and hindrance within the town, which is in a position to certainly cause traffic accidents. All of this degrades the experience of the fashionable city's ecosystem and has become a heavy challenge within the event of future smart parking systems.

Parking systems area unit systems that manage the issue of parking within the town publicly or personal areas, exploitation many recent technologies, together with WSNs (wireless detector networks) and RFID (radio frequency identification) .These systems acquire data on the out there parking areas in a very park exploitation time period information assortment by the detector nodes scattered within the park, that permits users to use the extra services enforced by these systems, like the automatic payment service compatible with mobile phones, so

Individuals will reserve their car parking zone before .Illustrates the final design of a wise parking system. Our system conjointly offers alternative terribly helpful options, like the management of parking areas by characteristic and checking vehicles lay in acceptable locations.

2. LITERATURE SURVEY

The development of security against stealing, identification of accessible parking areas close to the destination of the drivers, and the management of the payment per the length of parking, This technique implements an online application and a mobile application to facilitate the task for drivers to quickly notice a car parking zone at their destination on the one hand, and, on the opposite hand, for understand the payment of the length of parking and result on-line reservations within the case of personal parking to create the system convenient the foremost obvious is that the intensity of the traffic, that has become associate virtually in table drawback and that cause deal of harm, like the rise within the range of accidents that cause serious bodily damage to the road users, the pollution caused by the massive quantity of greenhouse gas discharged by the vehicles, and therefore the continuous stress of drivers United Nations agency should drive in usually slim and really busy road and United Nations agency should seek for on time to seek out a space.

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3. PROPOSED METHOD

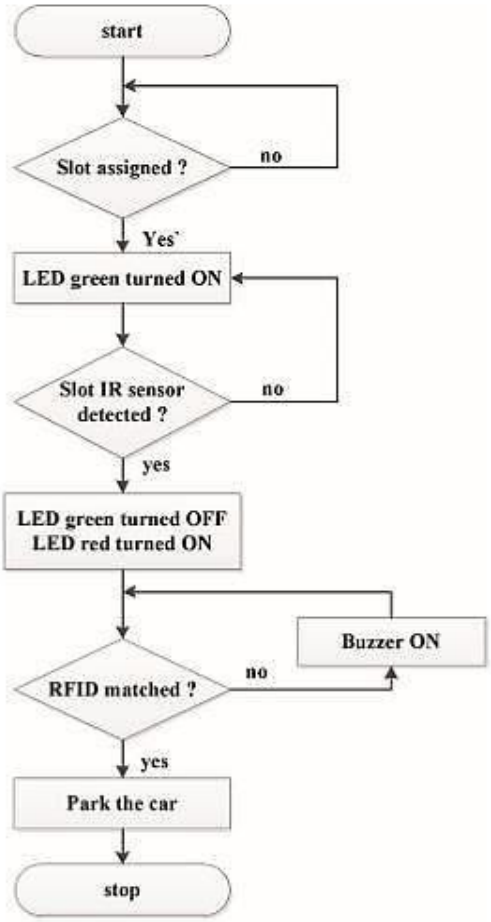

Figure 1: Flow chart for parking system.

The algorithmic program that is employed during this project includes following steps:

- Pre-processing.
- Segmentation
- Recognition

4. RESULTS

4.1. WEB CAMERA

In this project we've to use high image capturing photographic camera to urge the clear pictures of vehicles. For sensible purpose, we tend to used following camera only for demonstration.

4.2. INPUT IMAGE

Figure 2: Web Camera

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The first stage of image process for variety plate is that the image captured by Electronic devices like optical (digital/video) camera, webcam etc. For this project, vehicle pictures are going to be crazy a photographic camera. the photographs are going to be keep as color JPEG format on the camera. The space between image and camera ought to be 5-6 meters afterward the captured image is reborn into grey scale image.

Figure 3: Original image for recognition.

4.3 PROCESS

The RGB image is then regenerate into a gray scale image for easy analysis as a result of it consists of only two color channels. Medium filtering is used to induce obviate salt and pepper noise. The aim of this technique is to reinforce the image quality of the image. Image improvement techniques consists technique of sharpening the edges of image, distinction manipulation, reducing noise, color image method and image segmentation likewise. The gray image is then cropped whereby it will extract the tiniest quadrangle which may contain the sting of the license plate and license plate itself. This cropping technique will extraordinarily increase the speed of image method.

Figure 4: The binarised image.

4.4. CHARACTER SEGMENTATION

Our planned technique applies basic mathematical morphology operations like 'opening' and 'closing' alongwith terribly easy heuristics for the localization of the registration number plates and character recognition technology to extract it's a topological and geometrical based mostly approach for image analysis that provides powerful tools for extracting geometrical structures and representing shapes in several applications.

In mathematical morphology these are diagrammatical as matrices. Structuring component could be a characteristic of bound structure and options to live the form of a picture and is employed to hold out different image process operations.

Figure 5: Segmented numbers

4.5. CHARACTER RECOGNITION

It is utilized for the aim of conversion of pictures of text into characters. The method of OC involves many steps together with segmentation, feature extraction and classification. every steps could be a field onto itself and is represented shortly here within the context of a Matlab implementation of Optical Character Recognition (OCR). Standardisation provides an amazing reduction in information size of the characters. For good match, input pictures should be equal sized with the info characters. The extracted characters cut from plate and therefore the characters on info square measure currently equal sized. In this, character image is compared with the info and therefore the best similarity is measured. This methodology measures the coefficient of correlation between variety of famed pictures with an equivalent size unknown pictures or components of a picture with the best coefficient of correlation.

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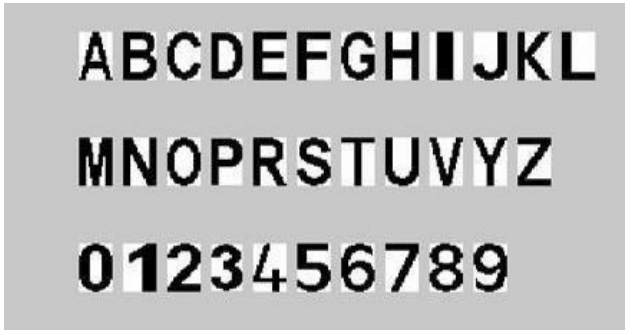

Figure 6: Text into characters

4.6. DATABASE

Database could also be a set of knowledge or data which it's being orderly organized thus it are often accessed easily and updated. Database are often within the type of text, contents and pictures .

Database is required to make sure that the image space can contain enough characters which are extracted and thus the vehicle plated number stored within the notepad for the aim of comparison. The database would be enlarged so on enhance the accuracy and better chances of obtaining the proper result. the category recognition will check if the computed ratio is correct. it'll ignore the category if the image thresholding is simply too low. If the category has match correctly, it'll be compare with data set within the database and provide an output if the image is recognized correctly. Characters are compared to figure out whether the input image is authenticated or not.

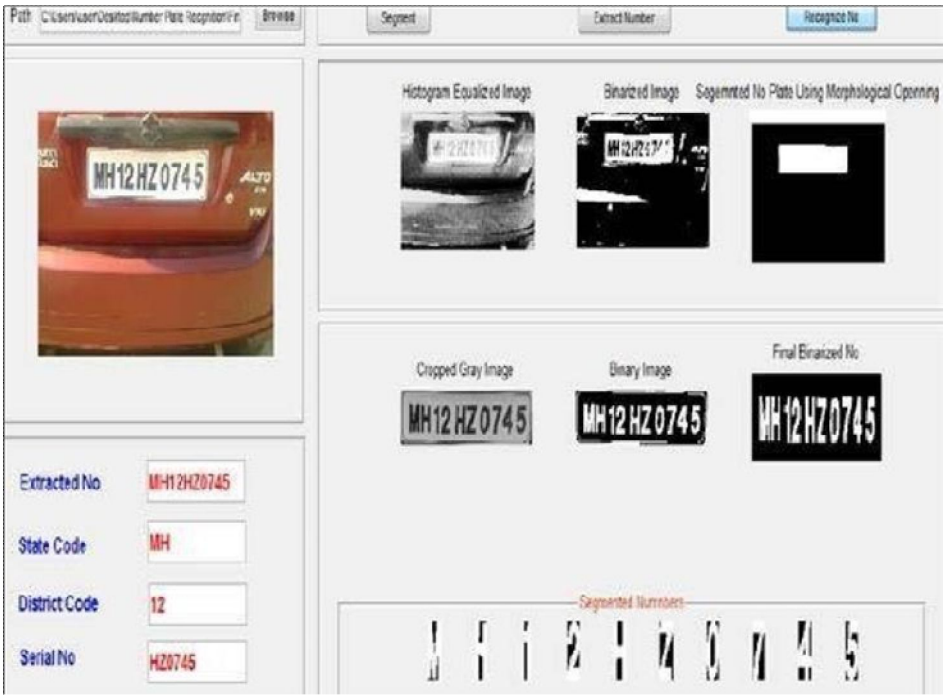

Figure 7: Graphical User Interface

4.7. SENSER NODE

The sensor nodes send data packets that notify the entry or exit of a vehicle into or out of the monitored parking zone. These packets include the amount of the network and of the node to identify the parking zone in question. Each sensor node interprets the messages received from the info centre. These packets contain the same fields as those sent by the node, but the identification fields of the network and node will correspond during this case to the terminal or terminals to which the message is directed, and thus the data field will contain the order sent by the info centre to the sensor nodes. The parking monitoring centre is responsible for identifying and checking the cars that have just parked during a reserved or available space. This centre uses the RFID technology to manage and monitor the one hand the parked cars, and thus the opposite hand, for identify and manage the payment of parking time.

During this manner, drivers will have all the knowledge on the available spaces altogether the car parks of the town, to consult these spaces according to their destination, and to pay the parking fees.

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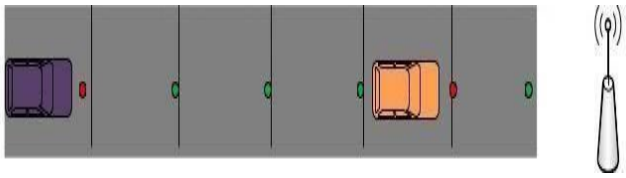

Figure 8: Sensor Nodes of parking area.

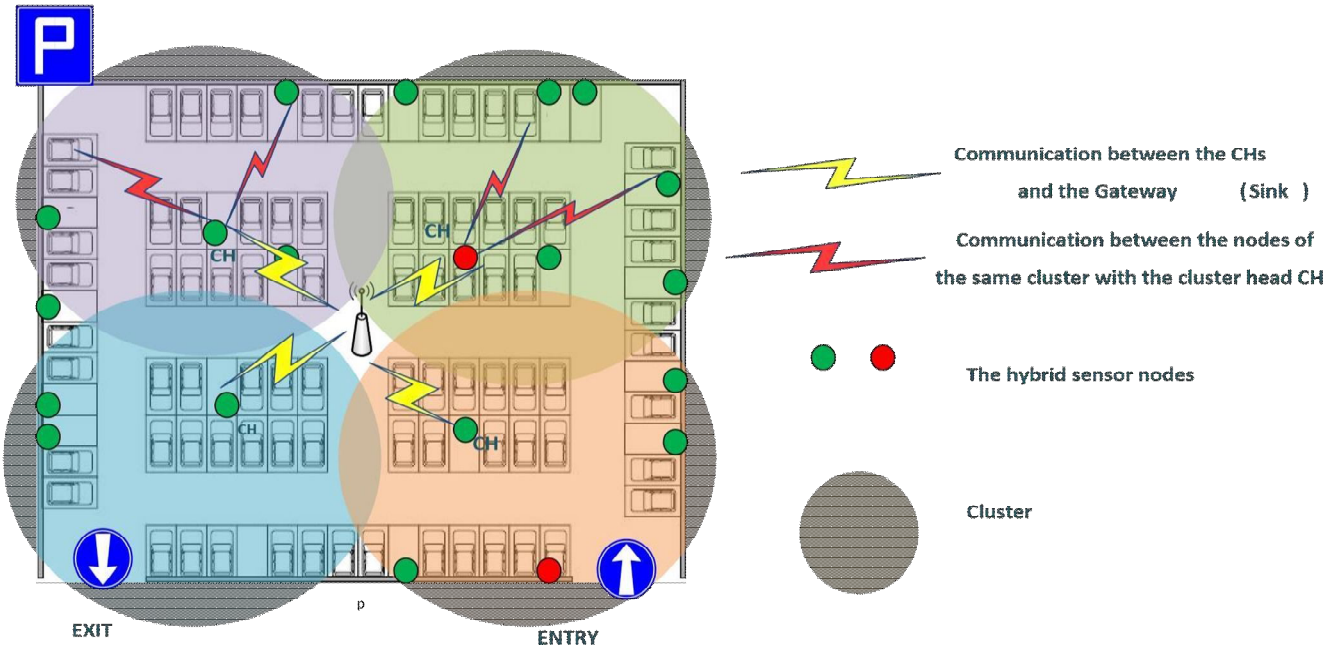

Figure 9: Parking System

The system's accuracy in locating the number plate, the matter encountered inside the earlier systems in locating the plate once vehicle bodies and their number plates have similar colours was overcome. There by achieving higher accuracy in variety plate extraction step. As a result of the fonts vary from one variety plate to the opposite, ambiguous 'I' and '1', '7' and 'T' and alike since OCR templet was developed however forms of them were overcome by "character categorization" approach. Our system conjointly offers alternative terribly helpful options, a small amount just like the management of parking areas by distinguishg and checking vehicles put in acceptable locations, the event of security against larceny, the identification of available parking areas close to the destination of the drivers, parking. The system design and so the before the weather that and so the management of the payment consistent with the period of configure it facilitate readying in parking zones situated on public roads. The number of detection observation units is low, and so the system will, therefore, be scaled up to a city-wide level, observation entire areas, as long as all the Human errors are the foremost supply of traffic accidents, so building in-car technologies for checking the automobile parking space, avoiding accidents associate degreed steering to the parking facility is pop bent be an integral space for analysis. The target of such technologies is that the reduction of the burden on driver, improvement of the traffic capability, and provision of reliable and secure automobile functions. Parking system has been generated in such however that it's filled with several secure devices like barricades, swing gates, slide gates, parking management gates, toll gates, time and group. These options are herewith terribly necessary today to secure your automobile and conjointly to fee structure for each vehicles entry and exit.

5. FUTURE SCOPE

Parking management systems facilitate folks notice parking spots quickly and supply necessary tips to form the complete method swish, reducing frustration and enhancing the visitant expertise. Parking management systems comprise person data systems, period vehicle tally, period parking steerage show, video police work, and straightforward payment choices. Some advanced parking management systems enable users to order and get a parking zone via phone or the net.

6. CONCLUSION

The parking management provided resolution to the proper parking and reduces man power. This method used in airports, multiplexes and company offices. Still it's consequences, if variety of slots will increase controller cannot handle for that wireless detector networks have to be compelled to be replace so as to form this method a lot of convenient, and that we will develop associate robot application and collect all different parking areas

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data in urban areas we will embrace that into the applying. .All of this degrades the expertise of the fashionable city's scheme and has become a serious challenge within the development of future good parking systems. Parking systems are a necessary attribute in numerous walks of our lives. Parking help is sensible enough to control traffic at any purpose of your time in residencies, offices, looking malls, hospitals and different public places. With the transformation of parking technologies, there are integrated parking equipments and software's that provides best solutions to the parking connected complications. It's utterly acceptable, snug and adjustable to control the entry and exit of vehicles within the parking facility. The authorities will swimmingly enhance their parking system and manage free flowing vehicles, all throughout the day. The fashionable parking heaps use well makeshift technologies and equipments, for swish regulation and operation. Overall, it needs lower maintenance and services and ensures economical functioning and coordination among the parking zone.

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DOCUMENTATION WITH HAND GESTURE RECOGNITION

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ABSTRACT
Documentation with Hand Gesture Recognition provides a simple interface for maintenance of student information. It can be used by educational institutes or colleges to maintain the records of students easily in more efficient way. The creation and management of accurate, up-to-date information regarding a student's academic career is important. In the university as well as colleges as it deals with all kind of student details, academic related reports, documents, course details, batch details which can be excess by student, verifier and college administration. Using hand gesture finger sign language student's required document is displayed on the screen, which saves time and can easily interact with device robustly. As it is useful for disable person too. It will help to make the work much easier and help the education sector grow much better. The technologies used are HTML, SQL, TensorFlow.js and Neural Networks.

Keywords: Hand Gesture, Neural Networks, Student Information System, SQL.

1. INTRODUCTION

The design and implementation of centralize documentation with hand gesture recognition is to replace the current paper records. This section of education sector is still under papers and files. People are constantly in the fight to save their time and human efforts. To solve such issues we came with the concept named Documentation with Hand Gesture Recognition in which we can store, manage and track documents and images of paper along with the hand gesture. Hand gesture concept is added which provide the natural and effective mode of non-verbal communication with the computer interface. Hands gestures are the meaningful body motion that are movement of fingers. The fingers are directly used as the input to the machine, forth excommunication purpose of gesture identification; there is no need of an intermediate medium. Gesture recognition is the process of identifying the gestures by the computer which is made by the user.

In these web application student's documents are uploaded by the admin and the documents is verified by the verifier, documents are even accessed by the authorized student whenever needed, with the hand gesture concept, student can access the documents with the finger gestures whereas number of fingers are assigned to number of different documents. These web application stores the entire uploaded documents of student. Here student is able to view his entire document under a personal profile and disenable to download it once it is been verified by the admin. Admin and the Authorized Student can only upload and view the document. Sofocusing on all the problems related to the educational system in this application can solve most of the problem and can make the system much more efficient.

2. LITERATURE SURVEY

In "Study on Hand Gesture Recognition".Samata Mutha, Dr.K.S.Kinage.January(2015) ,various methods are discussed such as coloured glove, data glove, Kinect for acquiring input image data. Recognition system methodology includes preprocessing, segmentation. Various application of gesture recognition from robot control to daily information retrieve we're also presented.It is robust method for hand gesture recognition.asily affected by complex background.Kinetic device costs more than any other devices.Robust than any other approach because it can measure the depth.

Referring "Web Based Student Information Management system".S.R. Bharamagoudar1, Geeta R.B,S.Totad.June (2013) we got an idea that Document Management is the field of management responsible for the efficient and systematic control of the creation, maintenance, use and disposition of records".It provides accurate information always. Man power can be reduced. All years to gathered information can be saved and can be accessed at any time. This work presents identifies that technology is a product that is created and changed for multiple reasons.The data stored in the repository helps in taking intelligent decisions by the management.

"A Review on HandGesture Recognition System." JayeshS. Sonkusare, Nilkanth.B. Chopade, RavindraSor, Sunil.L.Tade. (2015) gives idea that designing the system are: data acquisition, various segmentation and Tracking, feature extraction. A Review on Hand Gesture Recognition System. and recognition techniques are studied and analyzed. Along with the gesture recognition the simultaneous process of speech recognition is also

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another area of research. Applicable to general and physical challenged person.3D gaming.Improve time rate.Aims to implement a system that converts sign language gestures into speech.

3. PROPOSED WORK

The purpose is to design a system which contains up to date information of the student, that should improve efficiency of the college record management. With the help of this application students does not require to carry their documents always. Every Department is benefits with faster decision-making and Admin, verifier and the Authorized Student can only upload and view the document.

Documentation with hand gesture recognition is very convenient to implement, less keyboard and mouse work direct interaction between human and computer as it easy to understand and also very easy to implement. The need of designing such software for school and colleges is a better way for handling documents balancing work load maintaining by the students as it makes the system more secure, Decrease time spent on non-value added tasks, It reduces the human efforts of managing the document manually and maintaining in folders and files.

3.1 Flow of the system:

Figure.1 shows the flow of the project. In homepage there are three login student, admin and verifier. Where admin has to login with unique email id and password. The admin can store the student data in to the student folder, verifier will login and verify the documents added by the admin and students, finally student login will be created by admin and give student id and password through which student can download their required documents which has been added and verified, Even student can upload the documents which as to be verified by admin or verifier.

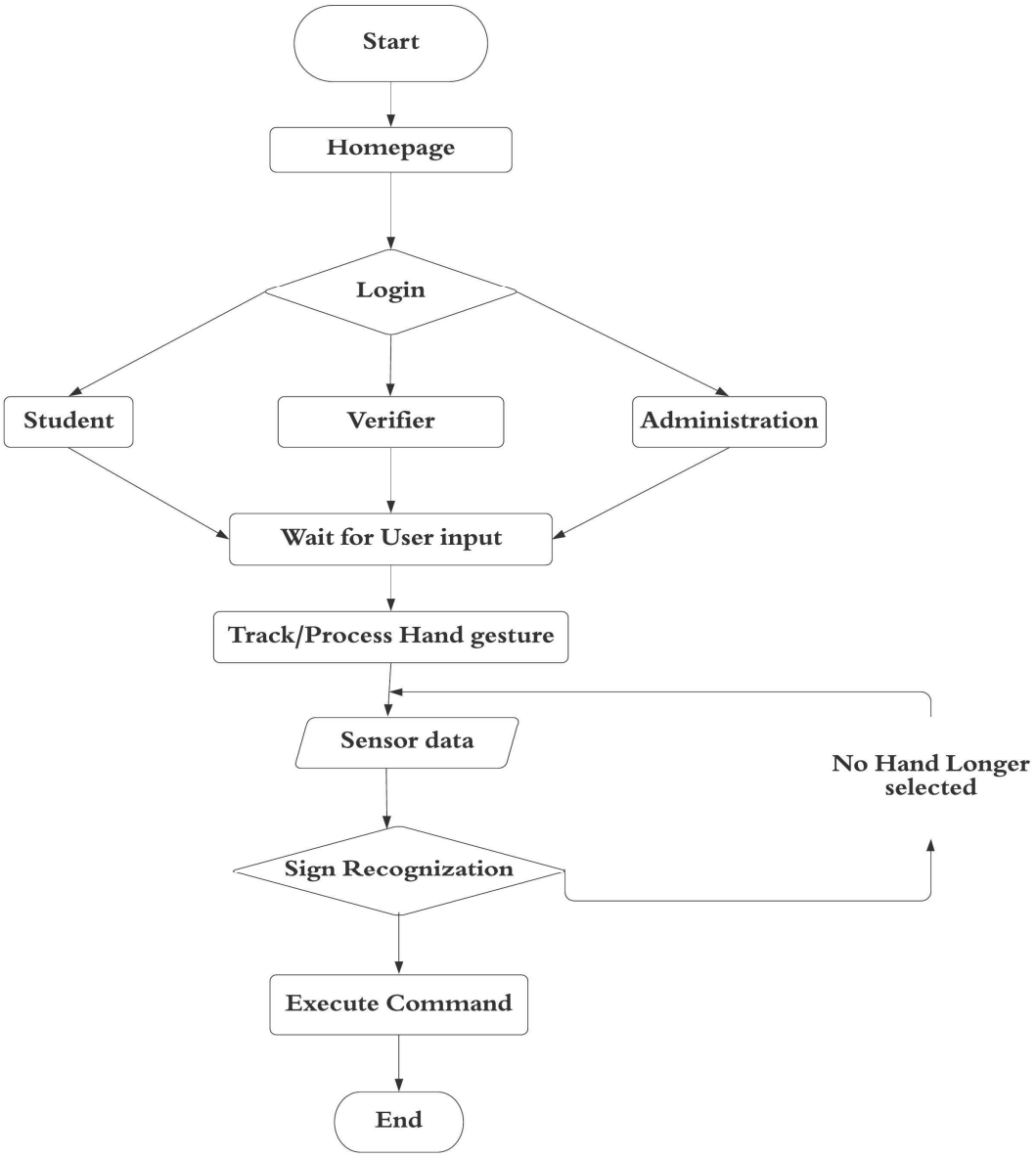

Fig.1 Flow of the project

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Along with hand gesture concept student can able to display their respective documents with the help of finger gesture, Student will give input finger gesture then webcam will track the finger gesture and the finger sign will recognized it will display the required document. If gesture is not recognizing it will go back to student input and waits for student command finger gesture input. For execution process.

3.2 Functional Requirements

1] Admin: Admin login by Admin user Id and password which opens the admin dashboard which contains departments. Admin adds department of student and Manage student department. Student class adds student department name, class name and section. Class list includes student semesters, shifts and section. Admin adds information of students and documents.

2] Verifier: Verify login with verifier Id and password. List of unverified documents are uploaded by the admin and student. Verifier has to verify those documents.

3] Student: Student has to login with student Id and password, they can upload the document, view document which has been verified by the verifier and can download the document once it is been verified, as with the finger gesture recognition document is display on the screen and Student can view and download the document.

4. RESULTS

Fig 2 shows the home page. The system starts with Home page where admin, verifier and student will login to access the system.

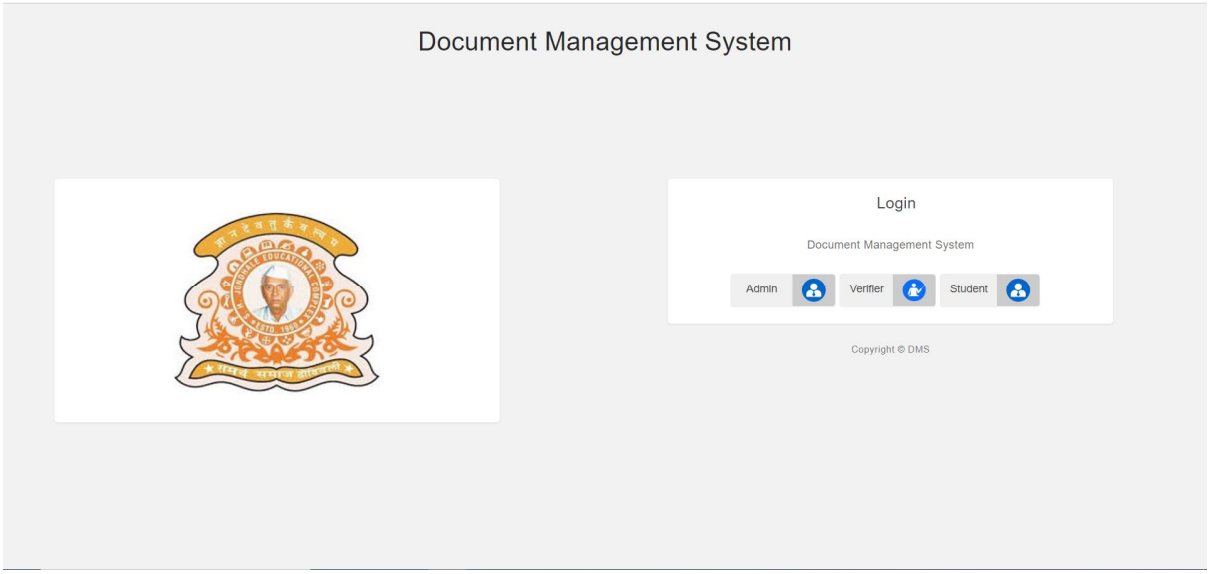

Fig. 2 Home page

Fig 3 shows the login page. Particular user like admin, student and verifier needs to enter Id and password to sign in.

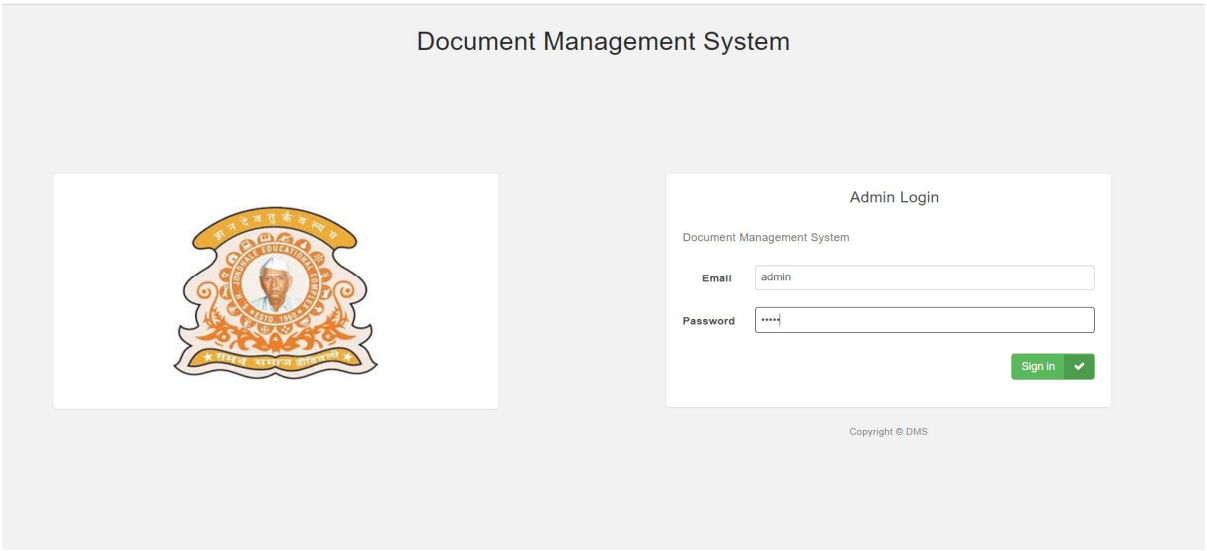

Fig 3 Login page

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Fig 4 shows admin login where admin can add departments, class, documents and manage student, create department, manage department, create class, department name, section,classlist, add user details and manage students.

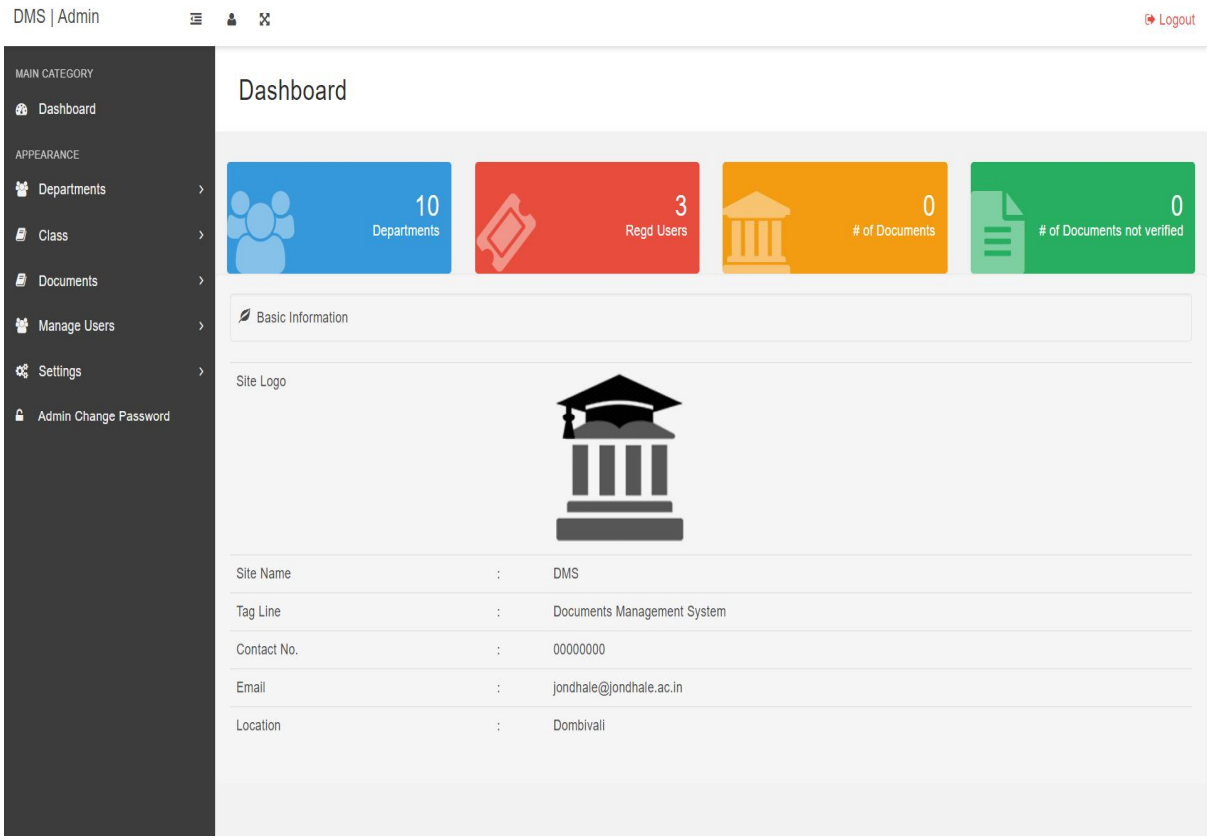

Fig 4 Admin Dashboard

Fig 5 shows the page to add the details of the the students and create student account. R

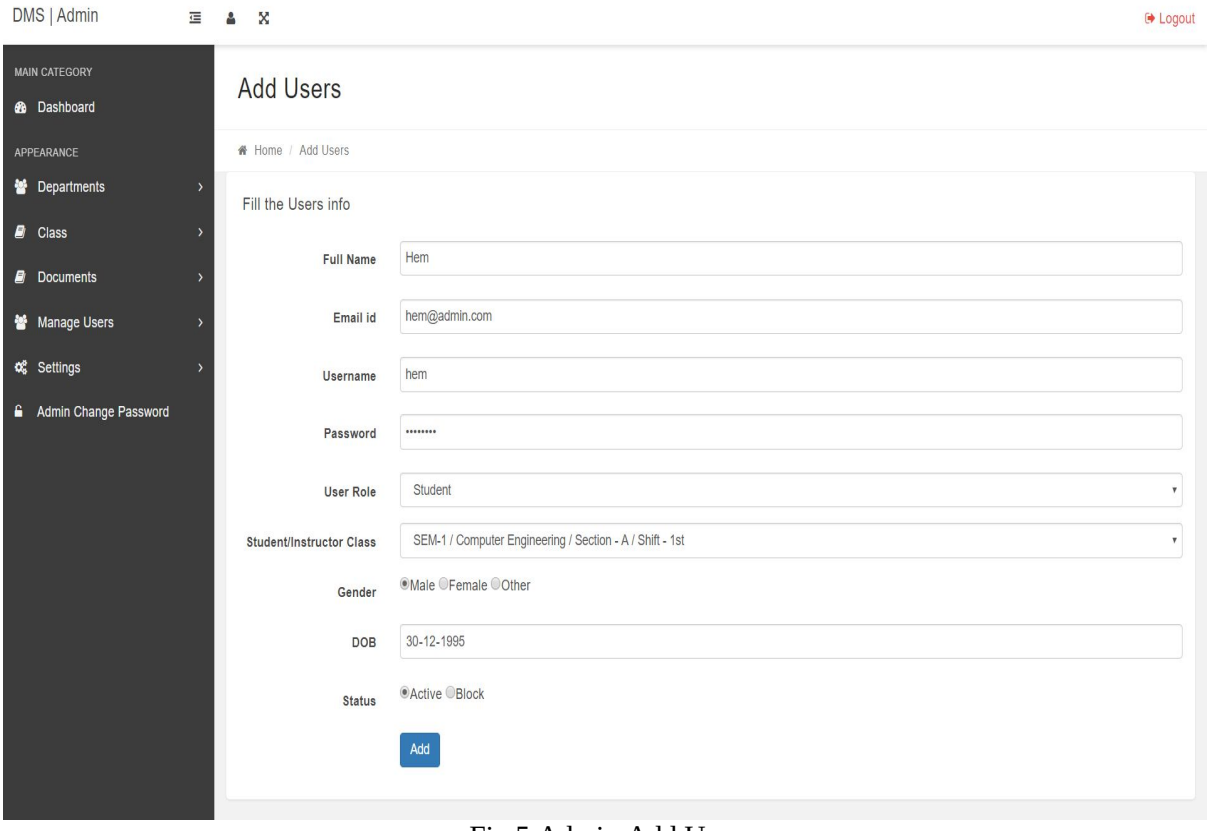

Fig 5 Admin Add User

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Fig 6 shows how to add documents by student.After login in to student, The student can add the documents which they want.

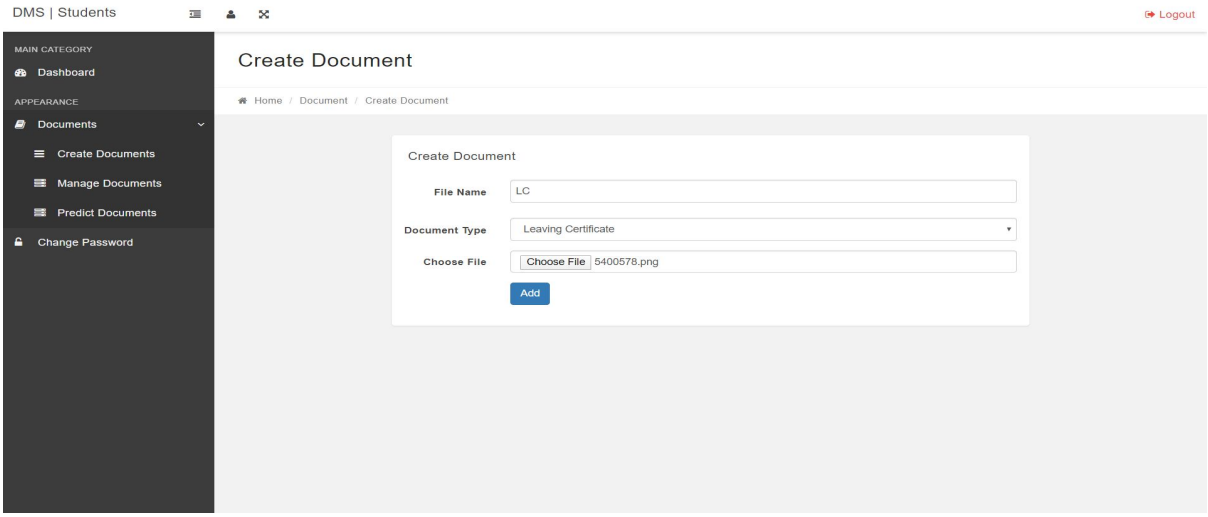

Fig 6 Student Add Document.

Fig 7 shows View Document manually ,where student view their uploaded document manually.

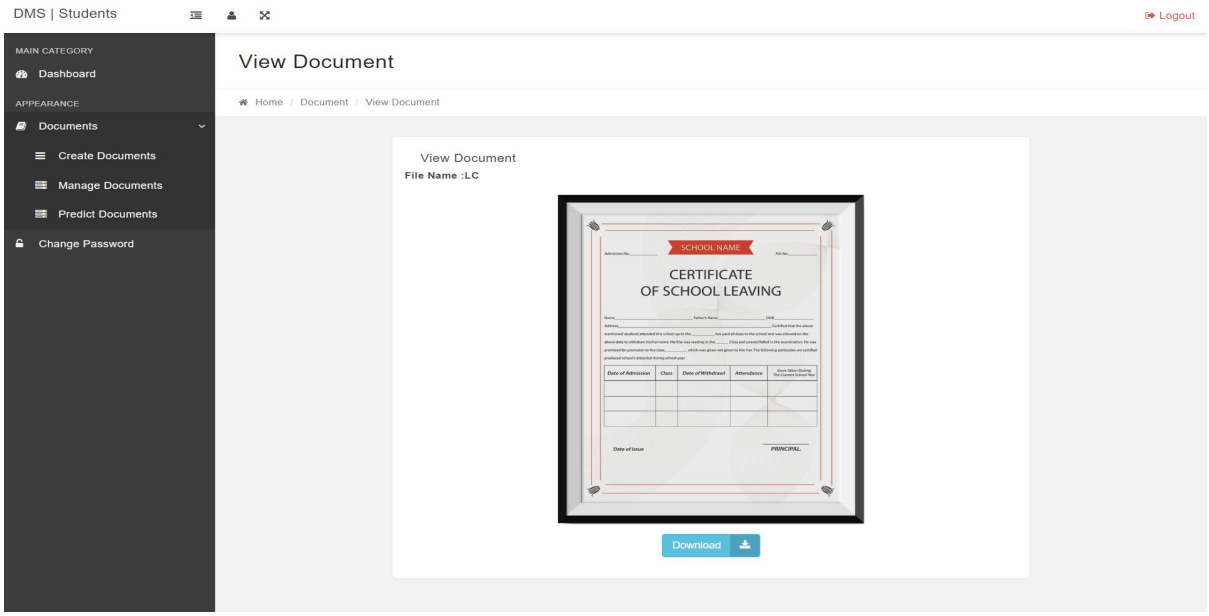

Fig 7 Student View Document manually

Fig 8 shows how student can view their documents with the help of hand gesture.

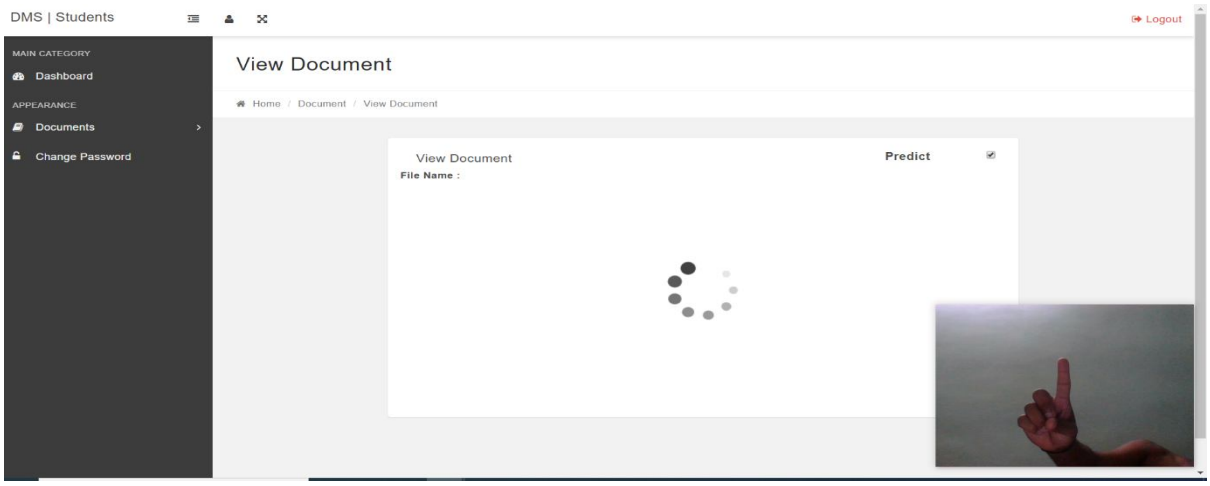

Fig 8 Loading Document Using Gesture.

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Fig 9 shows that Student document is loaded successfully with the hand gesture recoginition.

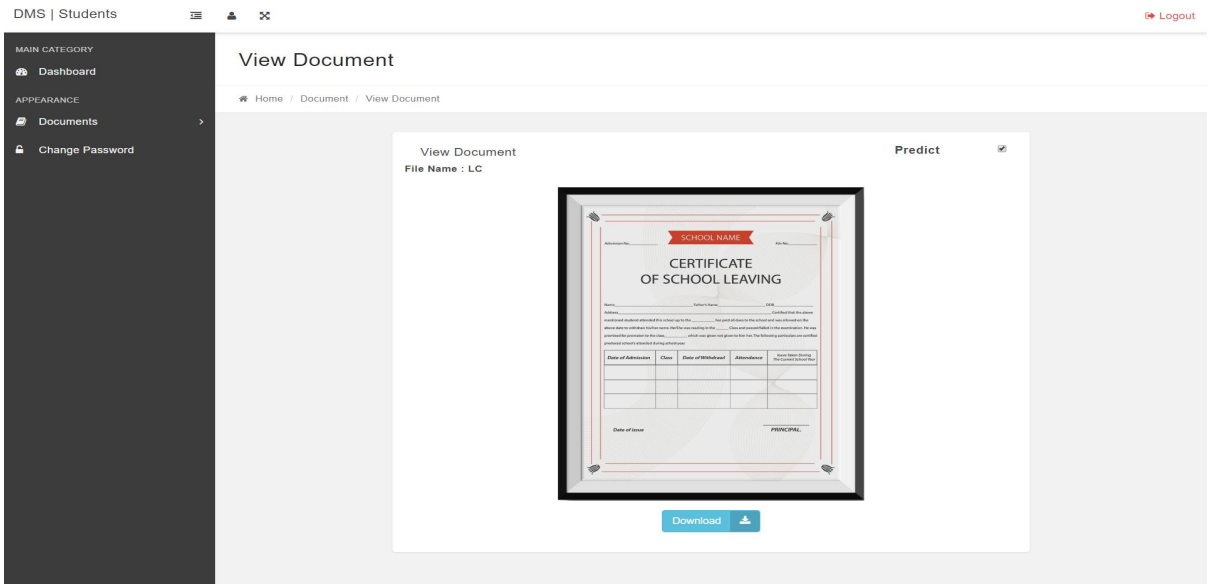

Fig 9 Document Loaded on successful Gesture Recognition.

Fig 10 shows list Of unverified documents .These are the list of unverified documents which has to verified by the verifier.

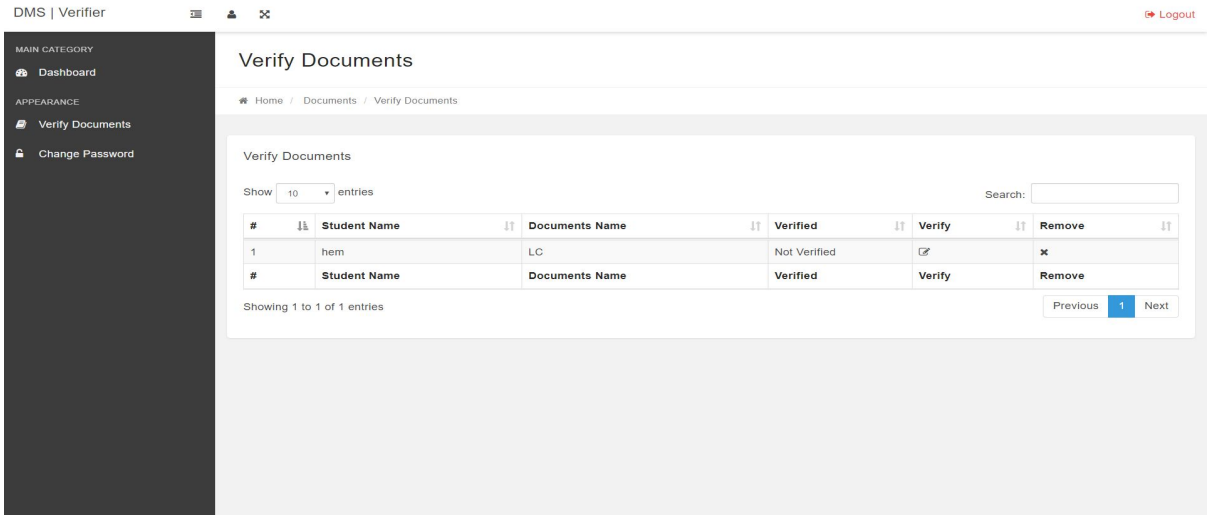

Fig 10 List Of Unverified Documents.

Fig 11 shows verified documents. These are the verified student documents by verifier.

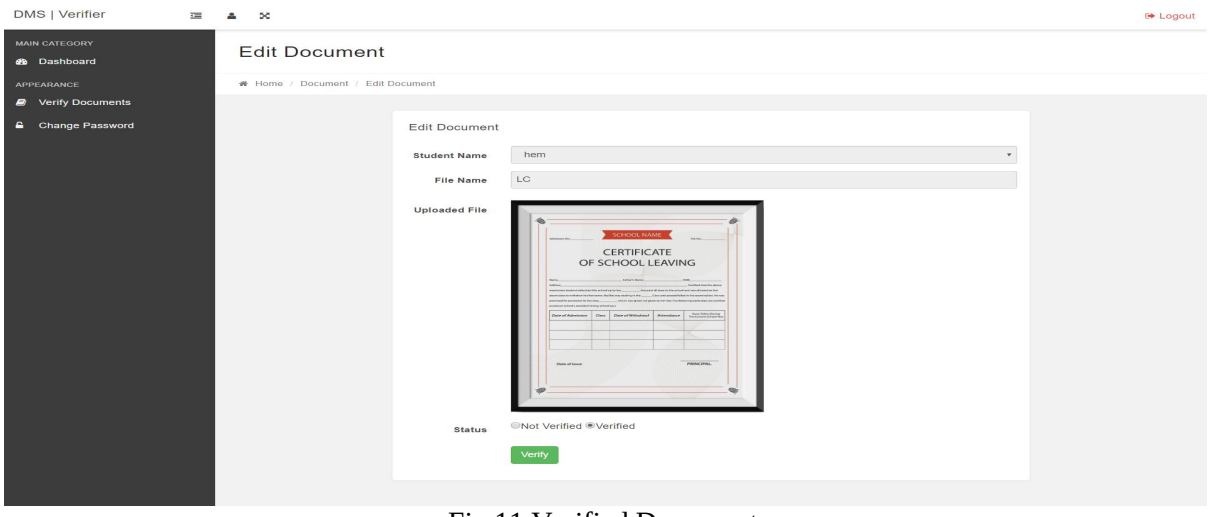

Fig 11 Verified Document.

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5. CONCLUSIONS

The system architecture that has been proposed changes the way people would use the computer system along with the hand gesture for document management.

Hand gesture can be recognized easily, and actions performed depend on gesture movement which replaces keyboard. It is more effective, save the human efforts and useful for disable person.

Presently, the paper document store is done manually. This project completely eliminates the necessity of xerox of documents. This system decreases the paper copies of document to handle. All years oh gathered information can be saved and can be accessed at any time. All the stake holders, faculty and management can get the required information without delay.

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FITNESS PLAN RECOMMENDATION SYSTEM

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ABSTRACT
The motive of this project was to make a "Fitness Plan Recommendation System" for the Android users those don't realize which are the fitness plans that are suitable for them for workout. And supported age, height, weight this technique can generate number of fitness plans that are Appropriate for the individuals. This android application also accumulates all the information relevant to a user's workout. the general intent of this application to enables all users to become conscious of incompleteness in their everyday habits and can hopefully boost the user to self regulates towards betterment. Most of the user don't skills to try to exercise consistent with the fitness plan. For that, this application also contain "Exercise Library" which comprise the knowledge about the foremost of the fitness plans that helps users to know the fitness plans. Using this application users can create their personal workout. If users finds any exercise too difficult to perform in their generated workout, then users can perform any of the exercises that precede it within the same category, and slowly make their thanks to the recommended exercise as their fitness improves. This document will totally describe the general design, testing, development of the application.

Key Words: Fitness Plan Recommendation System, Android studio, SQLITE.

1. INTRODUCTION

A fitness app is an application which can be downloaded on any mobile device and used anywhere to urge fit. As of 2015, the amount of health-related apps released on the 2 leading platforms, iPhone OS & iOS and Android, had reached quite 165,000. Apps can perform various functions like allowing users to line fitness goals, tracking caloric intake, gathering workout ideas, and sharing progress on social media to facilitate healthy behaviour change. they will be used as a platform to market healthy behaviour change with personalized workouts, fitness advice and nutrition plans. Fitness apps can add conjunction with wearable devices to synchronize their health data to third-party devices for easier accessibility. Through using gamification elements and creating competition among friends and family, fitness apps can help incentive users to be more motivated. Running and workout apps like RockMyRun allow users to run or compute to music within the type of DJ mixes which can be personalized supported the user's steps per minute, pulse or ideal cadence thus boosting and enhancing performance during exercise.

2. TECHNOLOGY CHOICE

2.1 SQLITE

SQLite is a process library that implements a self-contained, serverless, zero configuration, transactional SQL database engine. The code for SQLite is within the ownership and is thus liberal to be used for any purpose, commercial or private. SQLite is that the foremost generally deployed database within the planet with more applications than we'll count, including several high-profile projects. SQLite is an embedded SQL database engine. Unlike most other SQL databases, SQLite doesn't have a separate server process. SQLite reads and writes on to ordinary disk files. an entire SQL database with multiple tables, indices, triggers, and views, is contained during one file . The database file format is cross-platform - you'll freely copy a database between 32-bit and 64-bit systems or between big-endian and little-endian architectures. These features make SQLite a popular choice as an Application File Format. SQLite database files are a recommended storage format by the US Library of Congress. consider SQLite not as a replacement for Oracle but as a replacement for open SQLite may be a compact library. With all features enabled, the library size are often but 600KiB, relying on the target platform and compiler optimization settings. (64-bit code is larger. and a few compiler optimizations like aggressive function inlining and loop unrolling can cause the thing code to be much larger.) there's a tradeoff between memory usage and speed. SQLite generally runs faster the more memory you provides it . Nevertheless, performance is usually quite good even in low-memory environments. counting on how it's used, SQLite are often faster than direct filesystem I/O. SQLite is extremely carefully tested before every release and features a reputation for being very reliable. Most of the SQLite ASCII document is devoted purely to testing and verification. an

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automatic test suite runs millions and lots of test cases involving many individual SQL statements and achieves 100% branch test coverage. SQLite responds gracefully to memory allocation failures and disk I/O errors. Transactions are ACID albeit interrupted by system crashes or power failures. All of this is often verified by the automated tests using special test harnesses which simulate system failures. Of course, even with all this testing, there are still bugs. But unlike some similar projects (especially commercial competitors) SQLite is open and honest about all bugs and provides bugs lists and minute-by-minute chronologies of code changes. The SQLite code base is supported by a world team of developers who work on SQLite full-time. The developers still expand the capabilities of SQLite and enhance its reliability and performance while maintaining backwards compatibility with the published interface spec, SQL syntax, and database file format. The ASCII document is totally free to anybody who wants it, but professional support is additionally available. The SQLite project was started on 2000-05-09. the longer term is typically hard to predict, but the intent of the developers is to support SQLite through the year 2050. Design decisions are made thereupon objective in mind. We the developers hope that you simply find SQLite useful which we entreat you to use it well: to make good and pleasant products that are fast, reliable, and easy to use. Seek forgiveness for yourself as you forgive others. And whilst you've received SQLite for free of charge of charge , so also freely give, paying the debt forward.

2.2 ANDROID

Android could also be a mobile OS supported a modified version of the Linux kernel and other open source software, designed primarily for touch screen mobile devices like smart phones and tablets. Android is developed by a consortium of developers mentioned because the Open Handset Alliance, with the foremost contributor and commercial marketer being Google.

Initially developed by Android Inc., which Google bought in 2005, Android was unveiled in 2007, with the first commercial Android device launched in September 2008. this stable version is Android 10, released on September 3, 2019. The core Android ASCII document is known as Android Open Source Project (AOSP), which is primarily licensed under the Apache License. This has allowed variants of Android to be developed on a spread of other electronics, like game consoles, digital cameras, PCs et al. each with a specialized interface . Some documented derivatives include Android TV for televisions and Wear OS for wearables, both developed by Google.

Android's ASCII document has been used because the idea of varied ecosystems, most notably that of Google which is said to a group of proprietary software called Google Mobile Services (GMS), that often comes pre-installed on said devices. This includes core apps like Gmail, the digital distribution platform Google Play and associated Google Play Services development platform, and typically apps just like the Google Chrome browser . These apps are licensed by manufacturers of Android devices certified under standards imposed by Google. Other competing Android ecosystems include Amazon.com's Fire OS, or Lineage OS. Software distribution is typically offered through proprietary application stores like Google Play Store or Samsung Galaxy Store, or open source platforms like Aptoide or F-Droid, which use software packages within the APK format

Android has been the best-selling OS worldwide on smart phones since 2011 and on tablets since 2013. As of May 2017, it's over two billion monthly active users, the foremost important installed base of any OS , and as of January 2020, the Google Play Store features over 2.9 million apps

2.3 WHY WE ARE USING ANDROID

Android could also be a fastest growing OS in smart phones market.[20] Android could also be a Linux based OS it's designed primarily for touch screen mobile devices like smart phones and tablet computers. The android could also be a strong OS and it supports sizable amount of applications in Smartphone’s. These applications are easier and advanced for the users. The hardware that supports android software is based on ARM architecture platform. The android is an open source OS means it’s free and anybody can use it. The android possesses many apps available which can assist you managing your life one or other way and it's available low cost in market at that reasons android is extremely popular. The android could also be an OS and may be a stack of software components which is split into five sections and 4 main layers that's Linux kernel, Libraries and Android runtime. The android uses the powerful Linux kernel and it supports big choice of hardware drivers. The kernel is that the guts of the OS that manages input and output requests from software. This provides basic system functionalities like process management, memory management, device management like camera, keypad, display etc. the kernel handles all the things . The Linux is

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essentially good at networking and it isn't necessary to interface it to the peripheral hardware. The kernel itself doesn't interact directly with the user but rather interacts with the shell and other programs also just like the hard ware devices on the system. The android has some advantages the are following:

- Android is Linux based open source OS, it are often developed by anybody .
- Easy access to the android apps.
- You can replace the battery and mass storage, disc drive and UDB option.
- Its supports all Google services.
- The OS is in a position to tell you of a replacement SMS and Emails or latest updates.
- It supports Multitasking.
- Android phone also can function as a router to share internet.
- Its liberal to customize.
- Can install a modified ROM.
- Its supports 2D and 3D graphics

3. SYSTEM WORKING FLOW:

The criteria of the recommending system that we propose include: user profiles (personal information and nutrition), similar users and their recommendations, the evolution in time of each user, accomplishments of workout exercises and diet for a particular day.

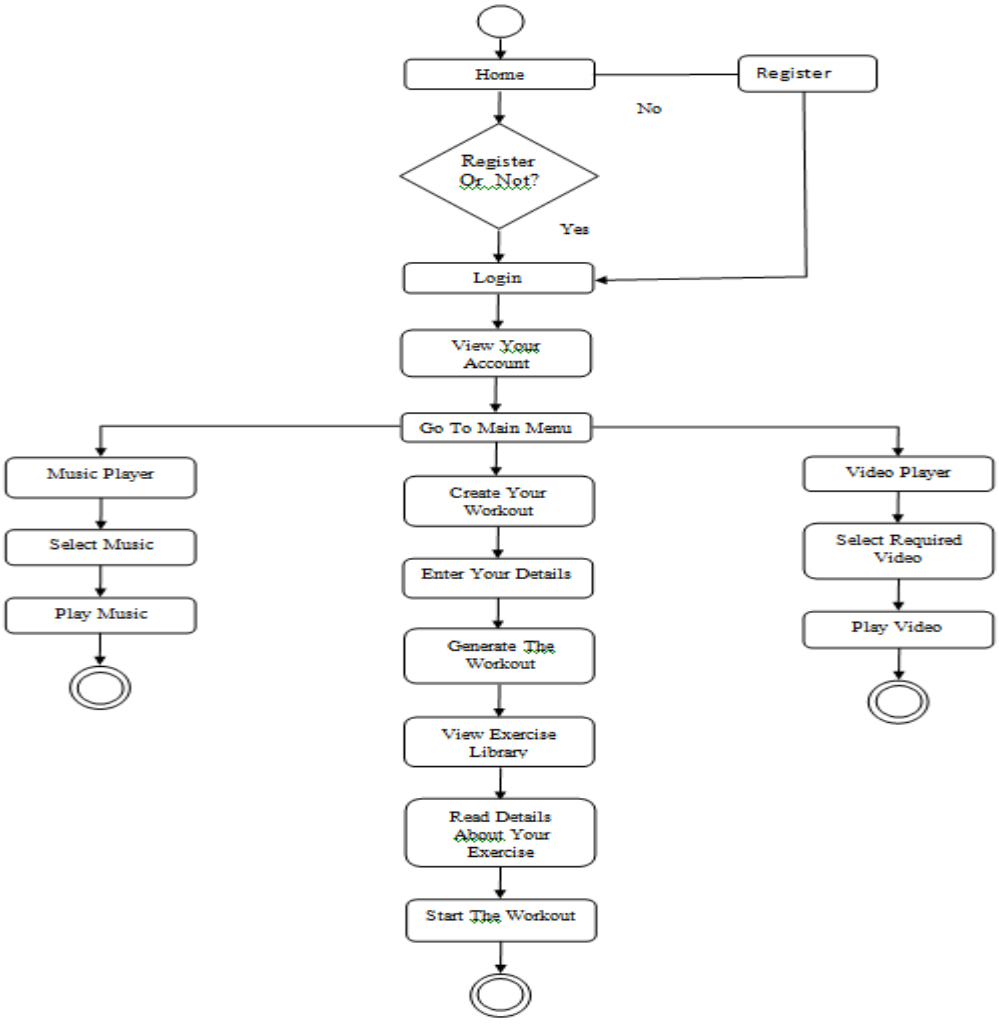

Figure 1. System Flowchart

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The system also considers the unforeseen changes possibly inflicted by injuries, illness or other impediments or changes that can affect one's performance.

With reference to Figure 1. Firstly users have to visit our application which is based on android platform. If the user have an account then user can directly login in our application if user don't have an account the firstly user has to create an account. Once the user creates an account then user can enter her/him Email id and Password and enter into application.

After user successfully login into application user face a main menu of our application. User can create a own workout. While user can do the exercise user can play the music. After creating a workout prescribe the details which is mandatory which is helps to starting workout. Information like age, height, weight etc. If the information provide by the user is correct then our system is generate workout for the user. Workout is generate based on the information which is prescribed by the user .Once the workout is generate our system prescribe exercise which is suitable for user.

After suitable workout is generate user have to visit exercise library. In the exercise library there is a lots of workout plans are given user has to start exercise which is prescribe by our system. Read the details of prescribe workout and start the exercise.

In our system there is a video player option is available which is helps to user to see some workout. In this user require some video's related to there exercise the they are watch the video.

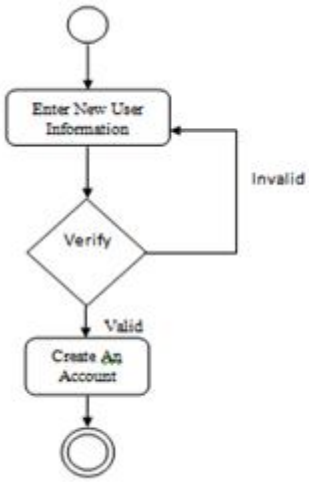

Figure 2. Activity Diagram for User Registration

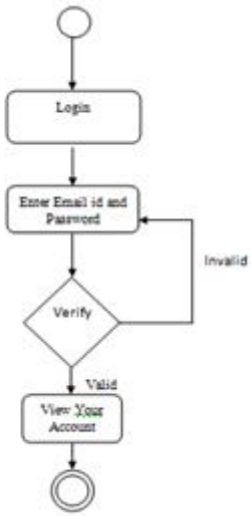

Figure 3. Activity Diagram for User Login

4 RESULTS

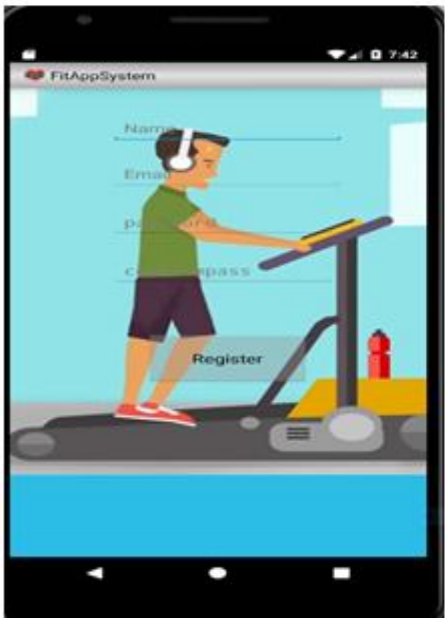

Figure 4 Register page

Figure .5 Login page.

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Figure 6 Main men

Figure 7 Workout generator.

5. CONCLUSIONS

The project titled Fitness Plan Recommendation System is an android based application that enables the user to keep an eye on their fitness regime. The project has been completed successfully with maximum satisfaction. The constraints are met and overcome successfully. The system is designed like it was decided in the design phase. The project gives a good idea on developing a user-friendly application satisfying the user. The system is very flexible and versatile. This application has a user-friendly screen that enables the user to use it without any inconvenience.

This project is more informative and more helpful for understanding the concept of android app development. This project automatically generates the user's workout based on the age, height, weight. And according to the generated workout user can easily do the exercise to stay fit and healthy. Some users don't have any ideas about how to do exercises. So for them we provide exercise library to understand about the generated exercises.

Hence we have developed android application for giving the various ideas about daily fitness to the users.

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GOING BEYOND RANKINGS: A NEW PERSPECTIVE ON UNIVERSITIES THROUGH SENTIMENT ANALYSIS

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ABSTRACT
In today's digital era, social media has become a great resource to gather user's sentiments on a variety of issues. We make use of one such social media, Twitter, to analyze the sentiments regarding multiple universities. The tweets are classified as positive, negative, or neutral for each university. The results of this sentiment analysis can be used hand in hand with the widely used online university rankings to get a broader perspective on the universities as a whole. This paper provides a glimpse into the largely unexplored territory of using social media as another valuable resource to evaluate universities.

Keywords: Sentiment analysis, Opinion mining, Natural Language Processing (NLP), Machine Learning (ML), Higher education, Universities, Social media, Twitter

1. INTRODUCTION

Social media has become increasingly popular over the past decade. It is an online communication medium which fosters the sharing of opinions in a public avenue efficiently. Due to this, it is already being widely used for opinion mining by businesses [6] as well as for political reasons [3], all around the world. In this paper, we would like to introduce another avenue where sentiment analysis of social media can prove to be useful - higher education.

We have developed a system for analyzing social media content of the selected universities and expressing the overall sentiment for each university in a visual format. Twitter was chosen for this purpose as it is one of the most opinion-rich social media. Five universities were selected based on the volume of social media content, as a larger number of tweets resulted in more data for the classifier, thus increasing its accuracy. They are University of Michigan - Ann Arbor, University of California - Berkeley, University of California - Los Angeles, University of Illinois at Urbana-Champaign, and University of Wisconsin - Madison.

The reason behind developing this system is that online rankings do not often provide a complete picture of the university as they fail to account for factors such as teaching ability, social atmosphere, and arguably most importantly opinions of current students and faculty about the university. Our paper helps to overcome these challenges by providing the opinions of students, professors, and other persons related to the university. Since it is not practically feasible for any person to read all the social media posts related to all the universities they may be potentially interested in, we develop a system to analyze the sentiments of each selected university. The results of this system can be used in conjunction with the available rankings to provide a clearer picture of the universities.

2. EXISTING SYSTEM

Our paper is built upon the work done in [1]. Abdelrazeq et al. analyzed nine universities in Germany that are part of the TU91 German Institutes of Technology. These universities were then classified into 'Positive' and 'Not Positive' sentiments. The Naive Bayes classifier was used for this purpose, which achieved an accuracy of 73.6%. One major drawback of this system was that there was no classification for the neutral sentiment, which we attempt to do. Also the extracted tweets were from a 6 month period. Our system allows one to extract any number of tweets from any time period with ease. We chose to extract top tweets from a 5-year period to provide a better insight into user sentiments over a larger period of time.

3. PROPOSED SYSTEM

The below flowchart shows the complete roadmap of the steps involved in the sentiment analysis process.

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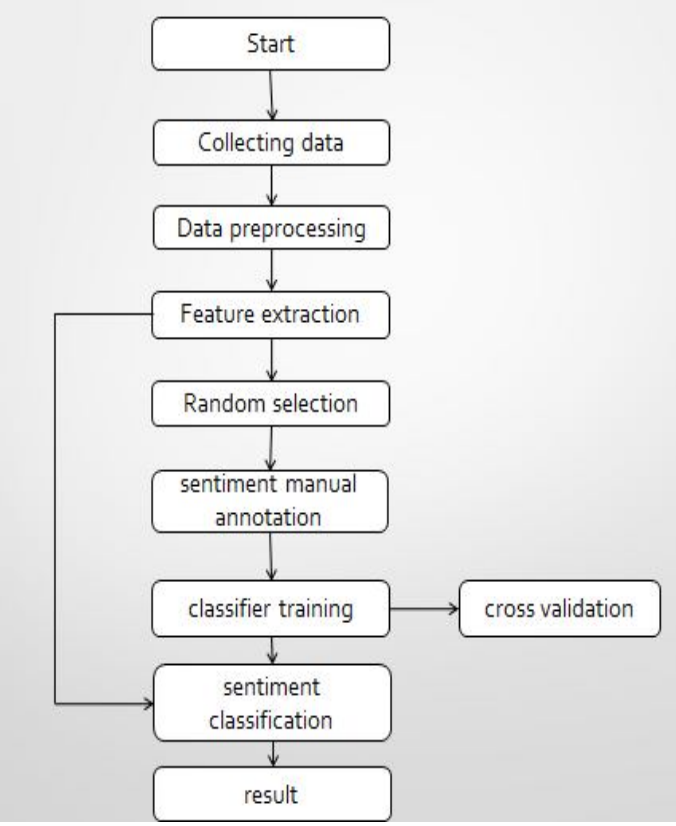

Figure 1: Complete flowchart of our system

3.1. DATA EXTRACTION

To extract required tweets for each university, we used an open source codebase called OrgneatUI. We used this instead of the Twitter API for the following reasons:

- Twitter API only allows to extract tweets from the past 7 days. We used the data from past 5 years of tweets.
- There is a manual process to approve a developer account which is required to use the Twitter API, which is quite time consuming, thus restricting further work on this project.

We extracted the top tweets from the past 5 years for each of the selected universities in csv format. Each extracted tweet contained the following fields:

- ID
- ConvID
- Context
- Disclosure
- Has Parent
- Has Cards
- Date
- Language
- Permalink
- is part of conversation?
- Author ID
- Author Name
- is Author verified?
- Text
- Replies
- Retweets
- Favorites
- Mentions
- is Reply?
- is Retweet?
- Reply to User ID
- Reply to User Name
- Quoted Tweet ID
- Quoted Tweet Conv. ID
- Quoted Tweet Type
- Quoted Tweets User ID
- Quoted Tweet User

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Out of these, the most relevant field for us currently was the Text field, as it contains the actual tweet. The other fields can be utilized effectively as future work in this area, some of which will be briefly explained in the relevant section.

3.2. PREPROCESSING AND FEATURE EXTRACTION

Data preprocessing is required to transform raw data into a meaningful format for the classifier. The importance of data preprocessing is explained in [5] and [4]. The following steps are performed in the data preprocessing phase.

1. Combine the train file and test file and make a new combined file (Data integration)
2. Find out words that have '@' and remove those words.
3. Convert all tweets into lowercase. Remove all special symbols and punctuation. (Data cleaning)
4. Remove short words.
5. Perform tokenization (breaking down of words) and stemming (data transformation).

We use feature extraction to reduce the number of resources needed for processing without losing important or relevant information. Feature extraction also reduces the amount of redundant data for a given analysis. Also, the reduction of the data and the machine's efforts in building variable combinations (features) facilitate the speed of learning and generalization steps in the machine learning process. There are a number of methods for feature extraction [2].

In our project we used following steps of feature extraction:

1. Count the number of words.
2. Spelling correction.
3. By using N-grams, take 2 words at a time (bigrams). Through experimentation, we found out that increasing the size of the N-grams further did not improve accuracy.
4. Finally, the only words retained are those having useful features.

3.3. SENTIMENT ANALYSIS

The process of sentiment classification is as shown in the flowchart below.

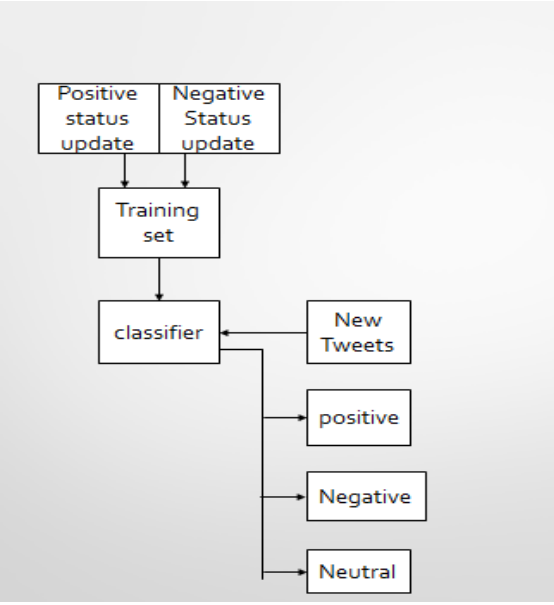

Figure 2: Sentiment classification

For the actual task of sentiment analysis, we first manually annotated a sample of random tweets from each university. This served as the train and test data for our algorithm. A total of 26,169 extracted tweets were used for the sentiment analysis, out of which 990 tweets were manually annotated. We made sure to use an almost equal number of tweets from each university for both the manual annotation as well as for the classifier. We then experimented with a number of different classifier algorithms and evaluated the accuracy for each using cross validation. This is shown in the table below.

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Table 1: Comparison of classifiers

Algorithm	Accuracy (%)
Multinomial Naive Bayes	65.66
Bernoulli Naive Bayes	50.43
Logistic Regression	53.33
SGD Classifier	59.22
Linear SVC	58.21
Random Forest Classifier	56.59
MLP Classifier	60.76
OneVsRestClassifier (SVM)	72.73

As we can see, the SVM classifier provided the highest accuracy score of all, so we used it as our sentiment analysis algorithm.

A Support Vector Machine (SVM) is a classifier defined by a separating hyperplane. In other words, given labeled training data (annotated tweets), the algorithm outputs an optimal hyperplane which categorizes new unseen data.

The SVM algorithm tries to maximize the margin between the data points and the hyperplane. The loss function that helps maximize this margin is hinge loss.

$$c(x, y, f(x)) = \begin{cases} 0, & \text{if } y * f(x) \geq 1 \\ 1 - y * f(x), & \text{else} \end{cases}$$

This hinge loss function can also be represented as below.

$$c(x, y, f(x)) = (1 - y * f(x))_+$$

We also add a regularization parameter. The objective of this regularization parameter is to balance the margin maximization and loss. After adding the regularization parameter, the loss function looks as below.

$$min_w \lambda \parallel w \parallel^2 + \sum_{i=1}^{n} (1 - y_i \langle x_i, w \rangle)_+$$

Using the loss function, we take partial derivatives with respect to the weights to find the gradients. Using the gradients, we can update our weights.

$$\frac{\delta}{\delta w_k} \lambda \parallel w \parallel^2 = 2\lambda w_k$$

$$\frac{\delta}{\delta w_k} \left(1 - y_i \langle x_i, w \rangle\right)_+ = \begin{cases} 0, & \text{if } y_i \langle x_i, w \rangle \geq 1 \\ -y_i x_{ik}, & \text{else} \end{cases}$$

When there is no misclassification, we only have to update the gradient from the regularization parameter.

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$$w = w - \alpha \cdot (2\lambda w)$$

When there is a misclassification, i.e our model makes a mistake on the prediction of the class of our data point, we include the loss along with the regularization parameter to perform gradient update.

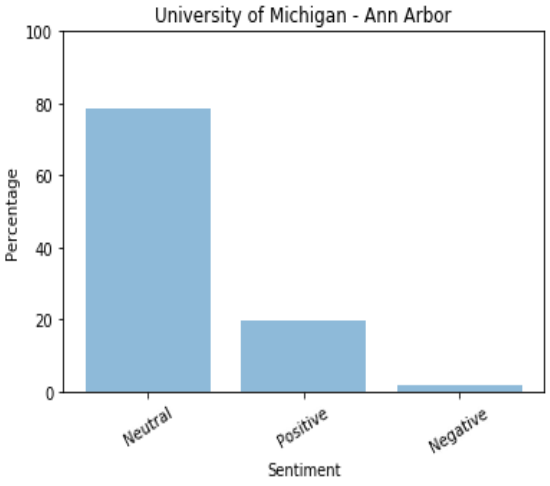
$$w = w + \alpha \cdot (y_i \cdot x_i - 2\lambda w)$$

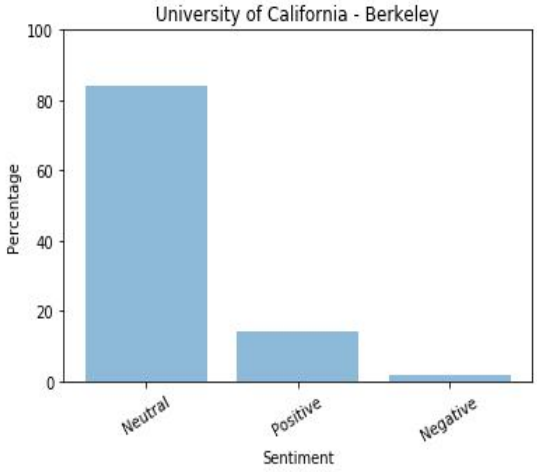
One of the biggest challenges we faced was the inclusion of the neutral sentiment in our classification. Most algorithms gave a much higher accuracy for simple binary classification, but it was harder to perform multi-class sentiment analysis accurately. But this was necessary because most of the tweets were of neutral sentiment. This is because neutral is an all-encompassing sentiment which includes, but is not limited to, announcements, statements, tweets containing both positive and negative sentiments etc.

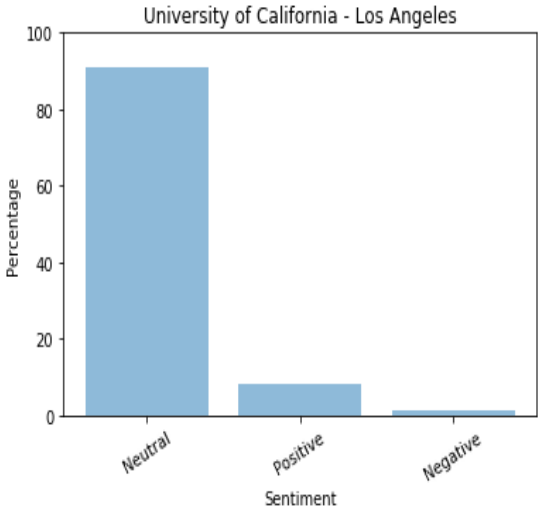
Although SVM is inherently a binary classifier, we adopted it for multiclass classification using the OneVsRestClassifier. This allowed us to get the probability distribution over all three classes. Behind the scenes we actually created three classifiers. Each of these classifiers determines the probability that the data point belongs to its corresponding class, or any of the other classes.

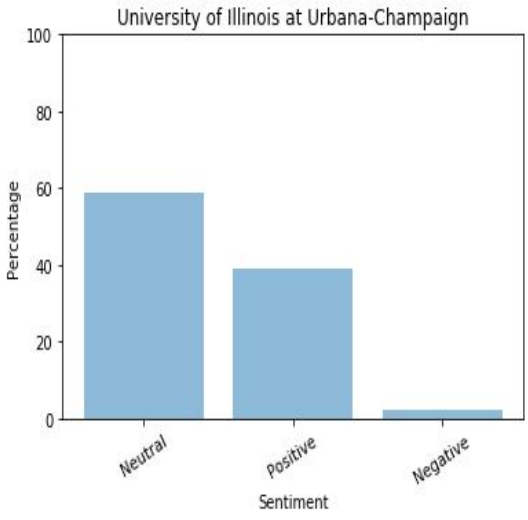
4. RESULTS

The results for each university are shown below in graphical format.









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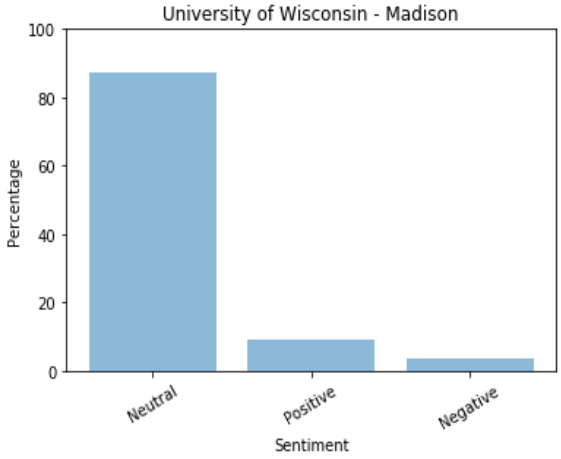

Figure 3. Results for each university are shown below in graphical format

The results for each university are also shown below in tabular format.

Table 2: Sentiment analysis results

		Sentiment	
University	Positive(%)	Negative(%)	Neutral(%)
University of Michigan - Ann Arbor	19.44	1.88	78.68
University of California - Berkeley	14.19	1.77	84.04
University of California - Los Angeles	8.01	1.13	90.86
University of Illinois at Urbana-Champaign	38.92	2.13	58.94
University of Wisconsin - Madison	9.17	3.48	87.34

As we can see above, a high percentage of tweets for each university fall in the neutral category. This is expected, as explained in the previous section.

5. CONCLUSION

Thus, our developed system can be used in conjunction with online university rankings to select the most appropriate university. This has been accomplished by analysing the tweets related to selected universities during a particular time frame, classifying them as positive, negative, or neutral, and finally displaying the result of each university in a visual format.

6. FUTURE SCOPE

It is important to note that our work only attempts to provide an avenue into further research on the sentiment analysis of social media for evaluating universities. A few possible future steps in that direction are given below.

- The tweets can be further classified into different domains such as academics, politics, sports etc., and the sentiment analysis process can be done for each domain. This would allow users to get an idea about the university's overall atmosphere with respect to a particular domain.
- Our system can be modified to add new universities and include dynamic changes in opinion of the universities. This means that if the opinion of Twitter users towards a particular university in the future is different from that in the past, the results can incorporate such changes and allow viewers to view the result according to selected time frame. This would allow them to understand in what factors the overall sentiment about a university has changed over time.

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- More data about the tweets can be used, such as the profile of the author, the number of retweets etc., to decide which tweets to give a higher weightage while performing sentiment analysis.
- Other social media platforms such as facebook and reddit can also be used for sentiment analysis.

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HAND GESTURE CONTROLLED ARDUINO SMART ROBOT FOR DISASTER MANAGEMENT

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ABSTRACT
Gesture Controlled car is a Robot which is controlled by User's Gestures. The user needs to wear gesture device which includes sensors, which will record the movement of user's hand in the respective direction which will result in the movement of the car in the respective direction. The robot car and gesture sensors are connected wirelessly through transceiver. The sensor is used to replace the remote control which is used to run the car. The gesture will allow the user to control the forward, backward, leftward and rightward directions. The advantage of this robot car is it can take sharp edged turns without any problem. Also, the robot car will record the real-time video footage and capture images and can also store it. User can interact with the outside environment through camera mounted on the car which can give clear view of surroundings. Throughout the project, we learn Arduino coding, the functionality, and the in-depth working of an accelerometer sensors and features.

Keywords: Accelerometer, Gesture Recognition, Transceiver, Video Streaming, RF Modules.

1. INTRODUCTION

In this modern world robotics is a rapidly growing and interesting field. Humans interact in the physical world by using five senses. However, gestures have been an important means of communication in the world from ancient era's, even before invention of languages. In this era machines are doing every complex works, interactions with machines have become more crucial than ever before. This robot car comes under remote-controlled robot-like gesture-controlled robot. Since it works using gestures, the main focus will be on the remote-controlled robots. A gesture-controlled robot car is a kind of robot car which can be controlled by the user's hand gestures and not by any type of any other controls like button or joystick, etc. And this project can transmit real-time footage and capture images through the wi-fi network to any display devices such as smartphones, pc's, laptops by using ESP32 cam module. The objective of this project is to build wireless communication between robot car and user. The project is divided into two main parts the transmitting one and receiving one. This is done with the help of Arduino Nano which is a microcontroller, a MPU6050 gyro with accelerometer sensor, and a RF transmitter and a RF receiver set. The Arduino analyses and reads the analog output values received to the transmitter end one i.e., x-axis, y-axis, z-axis (the hand gestures to control the car) values from the accelerometer and converts the analog value to digital value. This digital value is processed by Arduino and according to the motion detected by the accelerometer sensor mounted on the hand, it sends the signal to RF transmitter which sends the signal to the receiver which drives the motor forward, backward, right, left respectively and stops when our palm is parallel to ground.

2. PROBLEM DEFINITION

There is a need to create much more suitable means of communication with machines that would feel more natural to users. The tradition methods involve use of mouse, keyboards and other controller devices to control machines. This method had some tailback which contains the complexity of the controller device and the generic unnaturalness of interaction, and the series of wired connections which restricts the range of operation of the machine by the user. This project aims to demonstrate and easier and efficient way of interacting with machines. Need for a machine robot that can perform trajectory planning effectively. Need for a system which can be controlled through gestures and move in desired path. Need for the detection of obstacles that appears suddenly in the front. Need to assist the address the need for upgrade from inaccurate sensors like ultrasonic, laser light, and so on. Need for further advance mapping devices during exploration of unknown environments.

3. RELATED WORKS

The arising of robots can be traced back to the 90's with helpmate robots and robot-caddy [2]. Since, then there is vast development in the field of robotics, and controlling the machines with human gestures have been the topic of research for a long time. Some of the related works are described in this section:

1) Light-based Gesture Recognition [3]

Light or fluorescence tracking and controlling robots with light sensors are being done in a lot of occasions. Such robots are independent in nature. The sensor sends rays of light and track them as they get absorbed in the

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surface or reflected back to it. According to this, the robot can be line-sensing where it is made to follow a black or white path independently.

2) Motion-based Gesture Recognition

Motions can be used to control a machine or a robot. This generally done by using an accelerometer to control the machine or robot wirelessly. This can be also done using different motion sensors. This method has its advantages over other methods it can interact with machines naturally [1].

4. TECHNICAL REQUIREMENTS

1) Arduino Nano

The Arduino uno is very much similar to the Arduino nano. They use the same processor (Atmega328p). One big difference is the size of uno is twice as big as nano and hence occupies more space. Also, nano is breadboard friendly. Arduino nano is programmed using USB cable.

2) Accelerometer

MPU6050 has both 3-axis accelerometer and 3-axis gyroscope built on a single chip. It has 8 pins. VCC for power supply which operates at +3V to +5V. The axis pins are connected to the analog pins of the Arduino microcontroller.

3) Motor Shield

Motor shield works on the idea of H-bridge. It is a circuit which allows the voltage to flow in either of the directions. As voltage need to change to rotate the motor in clockwise or anti-clockwise direction. It is perfect for driving a DC motor. This motor can rotate two DC motors independently.

4) Transceiver

The nRF24L01 is a wireless transceiver and is the latest in RF modules. This module works with 2.5 GHz transceiver from Nordic semiconductor. The transceiver IC operates at 2.5 GHz band and has many unique features. For data rates of 250kbps and 1 Mbps, the bandwidth of the channel is approx. 1Mhz.

5) ESP32-cam

The ESP32cam has a very small-size camera module that can operate independently. ESP32- cam can we widely used in various IoT applications. It can be used for smart home devices, industrial wireless control, wireless monitoring and tracking, QR wireless checking, etc.

5. SYSTEM DESIGN

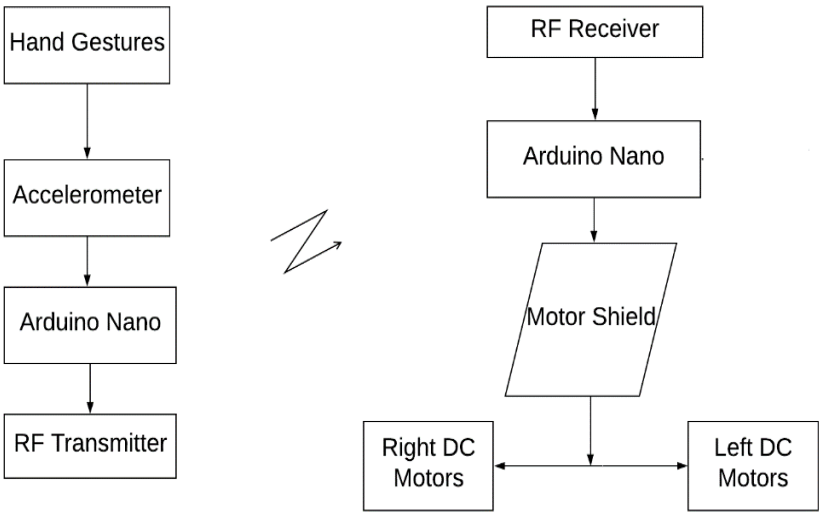

Figure 1. Block Diagram

Gesture Recognition is the main aim of this project. Control system for this robot car works using Arduino microcontroller, transceiver with its adapter, ESP32cam, motor shield, and an accelerometer. The user uses hand gestures using accelerometer mounted on the glove. The accelerometer generates maximum and minimum value for the movement of the hand gesture in three-dimensional axis. Depending upon the values, it sends a determinant value to the Arduino using transceiver. The receiver sends this to Arduino at receiving end where it checks the value and moves accordingly. The complete process is under infinite loop, so it works as long as the

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power is supplied. The output depends on the accelerometer inputs directly that can be used to control the robot car. The accelerometer input depends on the user's hand gestures.

The control unit consist of four separate sections:

1) The Transmitting End

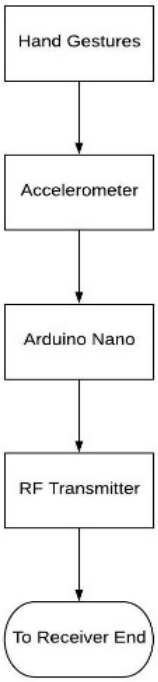

Figure 2. Block Diagram of Transmitter

Accelerometer module MPU6050 transmits the commands to the microcontroller by detecting the motion of the hand or the hand gesture. The Arduino receives input from accelerometer and provide output to the transmitter module. The RF transmitter module gets the data from microcontroller and transfers data to the receiver with the help of antenna.

2) The Receiving End

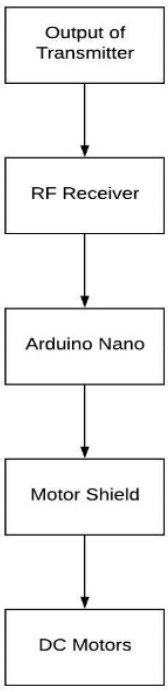

Figure 3. Block diagram of Receiver

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RF receiver module receives the data from the transmitter with the help of the antenna. The data is received on digital pins of Arduino. With the help of Arduino, the Arduino the data is processed at the receiver end. Then this processed data is received by the Adafruit motor shield. Based on the data the motor shield drives the motors.

3) Gesture Recognition

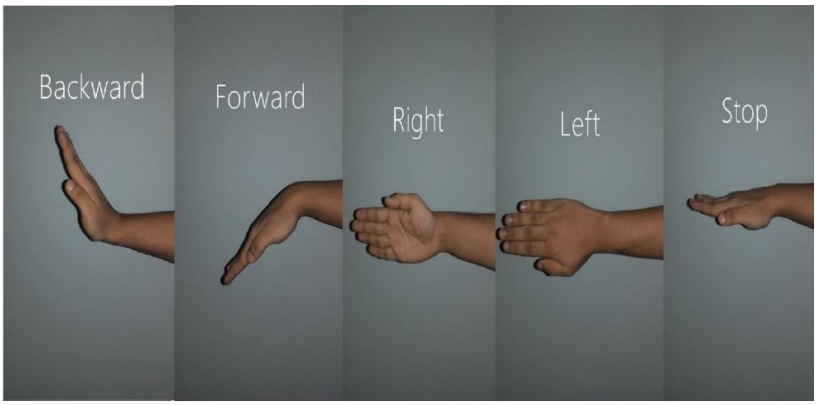

Figure 4. Hand Gestures

Fig 1.4. Shows when the user tilts his hands or performs some gestures the robot starts moving. When user puts his/her hand in backward the robot starts moving backwards, when the user puts his/her hand in forward direction the robot starts moving forward. When the hand is bent to right or left the robot moves in respected direction. To stop the robot, the hand should be parallel to the ground. All these gestures are computed by the MPU6050 accelerometer and further this data is processed by Arduino.

4) Functioning of camera

This module doesn't come with USB connector, this module is programmed with the help of FTDI or Arduino microcontroller. As soon as the module is programmed it gets connected to the wi-fi hotspot and sends IP address to connect with modules video streaming interface. It transmits real-time video and captures images through the server which is connected over the wi-fi.

6. FUTURE SCOPE

The gesture-controlled robot designed in this project has many future scopes. This robot can play a crucial role for surveillance purpose. This concept can be applied on a wheel chair where the wheel chair can be driven by the user's hand gestures. Wi-fi can be used for communication from a greater distance rather than transceiver. Edge sensors can be used, to prevent robot falling from any surface. This robot car can be used in the military surveillance where it can be sent to enemy camps and track their activities via internet. Modern Arduino chips support internet as well as intranet connections which can be used to a greater extend.

7. RESULTS

The outcome of the result is, robot moves according to the hand gestures and thus moves to the appropriate direction. Robot sends real-time footage. Obstacles in front of the robot are easily avoided as they are visible with the help of the camera and are easily avoided by changing the direction by desired gestures. The data transmission from transmitter end to receiver end is carried out perfectly with the help of transceiver.

8. CONCLUSION

The purpose of the project is to control a robot car using accelerometer sensor attached to a hand glove. The sensors are used to replace the remote-control mechanism to run the car. The design and implementation of gesture-controlled robot is presented and developed using Arduino and accelerometer. The build is cost efficient, and it is portable. Due to additional sensors like camera, makes it more productive.

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HAND GESTURE CONTROLLED COMPUTER USING ARDUINO

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ABSTRACT
In the physical world we humans interact by means of the five senses. However, gestures have been salient means of communication in the physical world from primitive times, even before the conception or formulation of any language. Hand gesture is one of the innovative and very efficient technique which helps us to interact with computer. There are numerous ways and mathematical algorithms which can be used to implement communication with digital world. To track a gesture there are many ways like hand movements, distance measurement, camera, Bluetooth, etc. When we compare existing techniques with this one i.e. gestures recognition, we can notice that it is easy to use. As well as it will reduce the use of mouse, keyboard, joystick and such input devices. Our paper deals with outline/model and accomplishment of an Arduino based gesture-controlled computer which use Arduino Uno, Ultrasonic sensor and a laptop having Windows 10 as operating system along with low cost hardware requirements and our primary focus will be to control specific application with the help of hand gestures.

Keywords: Arduino Uno, Hand gesture, Laptop, Operating system, Ultrasonic sensor

1. INTRODUCTION

Today we are always surrounded by widgets. We use mobile phones, computers, tablets, smart watches all day long and the essential part of using these devices is HMI. Human Machine Interface or HMI is a system including hardware and software that helps in communication and exchange of information between the user (human operator) and the machine. Generally, we usually use LED Indicators, Switches, Touch Screens and LCD Displays as a part of HMI devices. Similarly, another method to communicate with machines like Robots or Computers is with the help of Hand Gestures. Hand gesture is an advanced/modern procedure of communication between human and computer. As we know today's world is era of machines, where to complete any complex task we need them at some or other stage. So, interaction with machines is clearly important than ever. Since our paper deals with gesture-controlled laptop, the primary focus will be on the use of hand gestures for specific applications like PowerPoint, VLC Media Player, Google Chrome only.

The essence behind the paper is fairly simple by using two Ultrasonic Sensors with Arduino. All we have to do is to place the two Sensors on the top of a laptop screen and compute the distance between the hand and the sensor. According to computed distance the code loaded in Arduino finds the specific keyword and send it to Windows OS. Python code running in background identifies the keywords and cause the corresponding virtual keystrokes for Windows. The hotkeys then manage specific function of the application of intend to run. Basically, hand gesture is used as an input which replaces functionality of mouse and keyboard shortcut keys.

1.1 PROBLEM DEFINITION

There are various drawbacks in traditional method of human-computer interaction. Some of the considerable issues faced by traditional human-computer interaction methods are as follows:

1. Handicapped people and amputees find it hard to interact using traditional human-computer interaction method.
2. There is single point of input for users using traditional method.
3. It increases the complexity of human communication with computer.
4. Some input devices like mouse requires an unhampered and flat/clear surface to successfully monitor and manage user movements. If these conditions are not fulfilled, they might create problems in human-computer interaction.

These problems can be overcome by controlling the computer by our hand gesture.

Using gesture technique user can have multiple points of input and even we can define several parameters at once. They are, therefore, a more reasonable form of communication. Compared to many existing interfaces, hand gestures have the advantages of being easy to use, natural, and spontaneous. It reduces the complexity of interaction.

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2. LITERATURE SURVEY

The IEEE paper titled "Real Time Hand Gesture Recognition For Human Computer Interaction" [1] is proposed by Rishabh Agrawal and Nikita Gupta. Most of the human computer interaction interfaces that are designed today require explicit instructions from the user in the form of keyboard taps or mouse clicks A novel method to recognize hand gestures for human computer interaction, using computer vision and image processing techniques, is proposed in this paper. On the user's side, these problems are to learn, to remember and to accurately execute gestures.

The IEEE paper titled "Controlling Computer Application Using Hand Gestures Using Arduino" [2] is proposed by Andrea Attwenger. With the increasing prevalence of smartphones, gesture-based interaction has arrived in our everyday life, but we still do not exploit its full potential. Gestures provide the user with a new form of interaction that mirrors their experience in the real world. They feel natural and require neither interruption nor an additional device. However, gestures also raise issues that are not relevant with traditional methods of input. Another aspect is the design of the gestures itself, which should make them memorable, easy and comfortable to execute.

3. DESIGN

The concept behind the Arduino based Hand Gesture Controlled Computer is actually very simple. All we have to do is to use two Ultrasonic Sensors with Arduino. Basically, two ultrasonic sensors will be connected to Arduino Uno board and the board will be connected to Laptop through USB. After arranging the components place your hand in front of the Ultrasonic Sensor and compute the distance between the hand and the sensor. Using this information, appropriate actions in the computer can be performed.

Here, the orientation of the Ultrasonic Sensors is very important. Keep the two Ultrasonic Sensors on the highest of the laptop screen at either end. The Python Program will collect the distance information from Arduino and a special library called PyAutoGUI will convert the data into keyboard click actions.

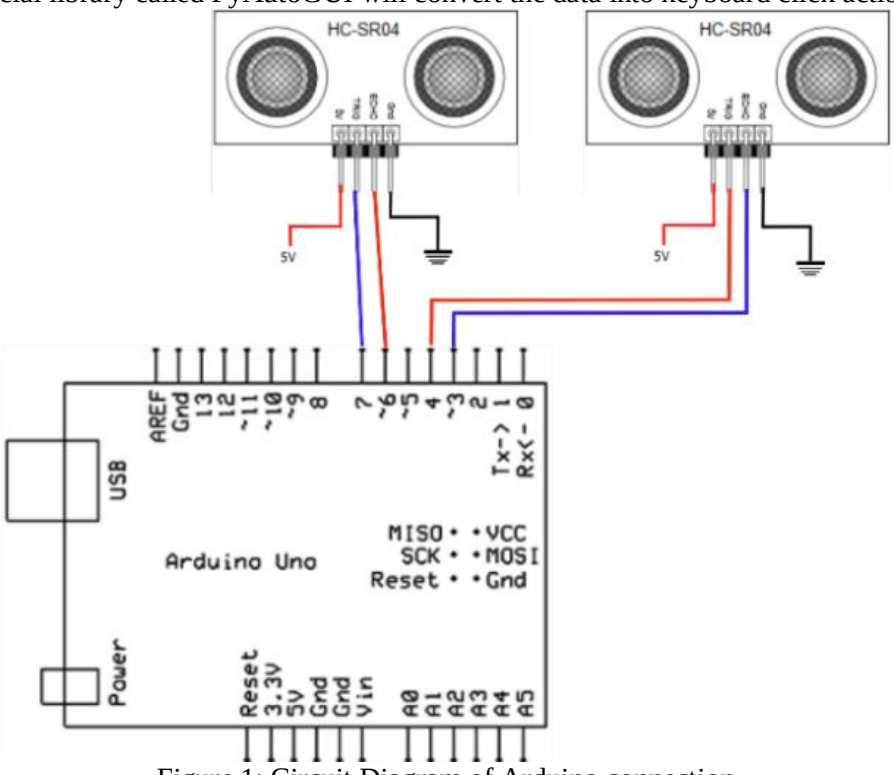

Figure 1: Circuit Diagram of Arduino connection

The above figure represents the circuit layout of the Arduino part of the project paper. It consists of an Arduino UNO board and two Ultrasonic Sensors and we can power up all these units from the laptop's USB port.

4. WORKING

Gesture controlling technique is based on specifying hand position from the ultrasonic sensor. A micro-controller is necessary for processing the raw data; for that purpose, we use Arduino UNO board. The sensor provides the processed and calculated distance and then the micro-controller transfers this distance via USB connection. The data which is directed by the sensor is processed in the software in PC where all the computations are performed and the data is matched with the pre-built conditions (gesture resolution). In this

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model two ultrasonic sensors are used to identify hand position and are connected to the Arduino board. The ultrasonic sensors consist of a transmitter and a receiver where the transmitter emits ultrasonic waves. These ultrasonic waves hit a surface in front of the sensor and because of that waves gets reflected. Then the transmitter picks up these reflected waves and based on the intensity the distance of the object is determined. According to computed distance the code loaded in Arduino finds the specific keyword and send it to Windows OS. Python code running in background identifies the keywords and cause the corresponding virtual keystrokes for Windows. The hotkeys then manage specific function of the application of intend to run.

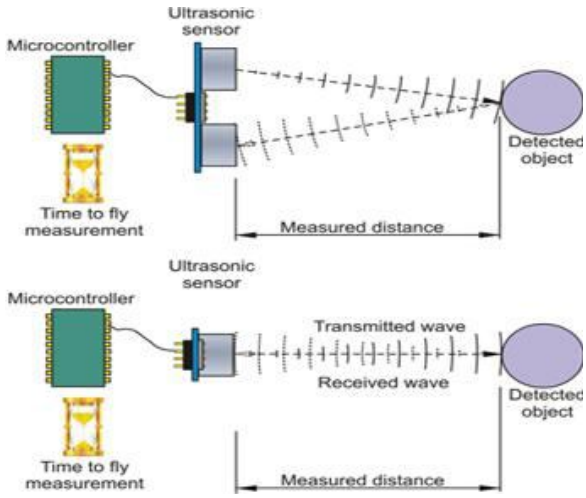

Figure 2: Ultrasonic sensor working diagram

Stage 1:

Design of the Project:

The design of the circuit is quite simple, but the arrangement of the components is essential. The Trigger and Echo Pins of the first Ultrasonic Sensor i.e. placed on the left of the screen are connected to Pins 11 and 10 of the Arduino respectively and that of the second Ultrasonic Sensor are connected to Pins 6 and 5 of the Arduino. Now, coming to the emplacement of the Sensors, place the Ultrasonic Sensors on top of the Laptop screen at either end, one at the left end and the other at right. We can use double sided tape to hold the sensors onto the screen.

Stage 2:

Programming Your Arduino to Detect Gestures:

We need to program an Arduino to read hand gestures. This is the important part of this project. Arduino will convert the distances measured by both the sensors into the appropriate commands for controlling certain actions. Let’s see the tasks that we can accomplish.

- Switches the tab
- Scroll up and down
- Increase Volume
- Decrease Volume
- Play/Pause video

Stage 3:

Python Programming for the Project:

As we know that Windows does not recognize commands given by Arduino, so we need to design Python code. Python will establish serial connection and turn the data received into virtual keystrokes. Python Program for Arduino based Hand Gesture Control is quite simple. In order to achieve this, we have to install a special Python Module called PyAutoGUI.

The following are the different hand gestures: -

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Gesture 1: This gesture allows us to 'Scroll down or Decrease the Volume' by placing the hand in front of the Right Ultrasonic Sensor at a distance (between 15CM to 35CM) for a small duration and move the hand away from the sensor.

Gesture 2: This gesture allows us to 'Scroll up or Increase the Volume' by placing the hand in front of the Right Ultrasonic Sensor at a distance (between 15CM to 35CM) for a small duration and move the hand towards the sensor.

Gesture 3: This gesture allows us to move to the 'Next Tab'. Swipe the hand in front of the Right Ultrasonic Sensor.

Gesture 4: This gesture allows us to move to the 'Previous Tab or Play/Pause the Video'. Swipe the hand in front of the Left Ultrasonic Sensor.

Gesture 5: This action allows us to 'Switches the tabs.' Swipe the hand across both the sensors.

5.RESULT

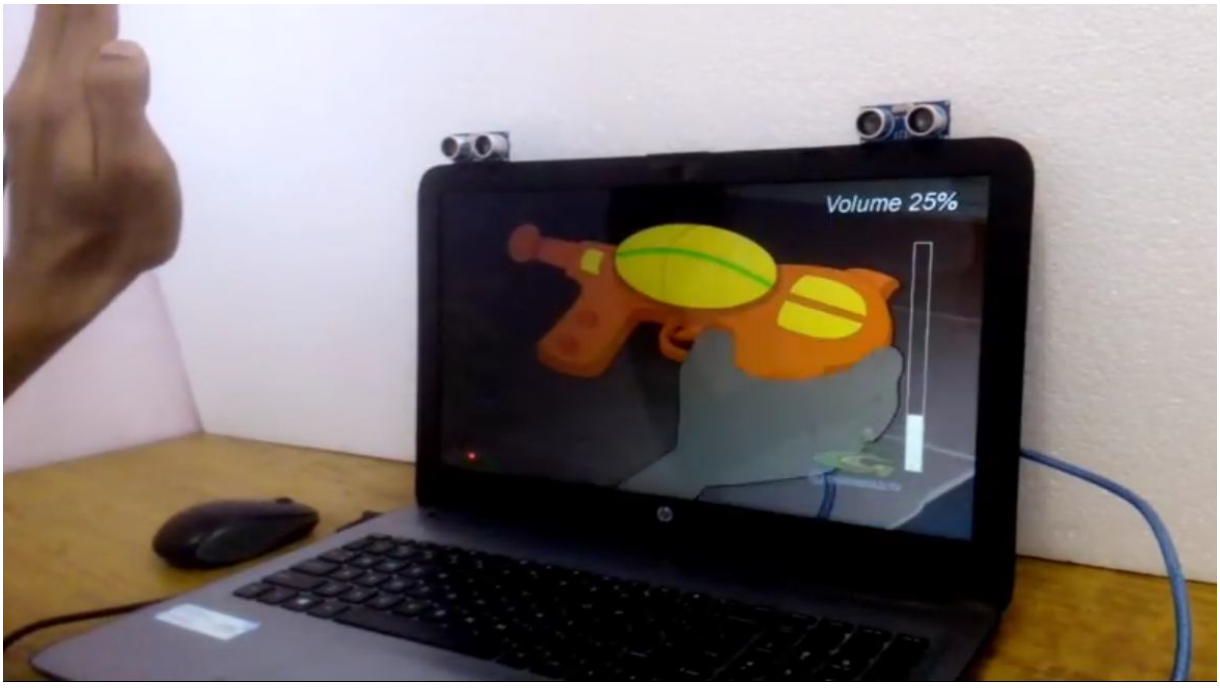

Figure 3: Increasing value

Table No. 1 : - Hand Gesture

Hand Gesture	Output produced	by system
	Google chrome	Audio/video
Move the hand away from right ultrasonic sensor	Scroll down	Decrease the volume
Move the hand towards the right ultrasonic sensor	Scroll up	Increase the volume
Swipe the hand in front of right ultrasonic sensor	Next tab	-
Swipe the hand in front of left ultrasonic sensor	Previous tab	Play/Pause
Swipe the hand across both the sensor	Switches the tab	-

6. CONCLUSION

Our paper presents one of the solutions for operating a computer using hand gestures among various others. It is one of the easiest and simplest way of interaction between human and computer. It is a cost-effective model.

By applying our methodology, we conclude the following: -

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We always have to be near a machine and in physical contact with it in some means to interact with it, no matter how powerful and complex the machine is. But this technology could change all that. If we used correctly and perfectly, it could reduce the use of traditional input devices like keyboard, mouse and touch screens. This technology makes our life easier as well as it also has a wide array of applications in almost all fields. This technique is very useful for those who does not know functionality of computer. Also, there is no language barrier if we use this technology.

7. FUTURE SCOPE

- Hand gesture approach is not only limited to gaming or home appliance control, using salient function of computer it can be useful for medical applications.
- In medical applications where, for health and safety reasons, a nurse or doctor may not be able to touch a display or track-pad but still needs to control/manage a system.
- In some cases, the medical professional cannot reach the display yet still needs to operate the content being shown on the display.
- Using this technique, we can also operate each and every functions of computer.
- Gesture recognition can also be used in automobiles for user control, safety capability.
- This technique may be useful in Robotic field. If robots trained to recognize some gestures so they can be used in situations of social needs, like rehabilitation or catastrophe, more independently.

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HUMAN SKIN DISEASE DETECTION USING DEEP LEARNING

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ABSTRACT
Dermatological disorders are one of the most widespread diseases in the world. It becomes extremely difficult to detect the disease sue to skin colors, hairs on the skins. This paper provides the system which automates the process of skin disease detection. The System uses Mobile net algorithm which is most widely used image recognition algorithm for image classification. The system consists of phases like collection of data of images, splitting of data into training and validation set and then we train the model using training data and test the metrics of the model using validation data set. Our aim is to achieve maximum accuracy. With the detection of disease, we will provide suggestion and remedies with respect to diseases.

Keywords: Machine learning, Mobile Net, Supervised learning, deep learning, skin disease, Semi Supervised, Unsupervised learning;

1. INTRODUCTION

Skin is the largest organ of human body, containing different vessels, nerves and muscles, which can perceive the external temperature, and protect the body. The skin protects different tissues and organs of body from external invasions which are artificial skin damage, chemical damage, adventitious viruses and individuals' immune system. Skin helps avoid loss of lipids together with water within epidermis and dermis which stabilizes the skin barrier function [1]. Dermatological disorders are the most wide spread disease in the world. Our aim is to use computer vision and deep learning techniques to predict various kinds of skin disease using different machine learning models and deep learning models. The skin disease diagnosis includes series of pathological laboratory tests for the identification of the correct skin disease. For the past ten years these diseases have been matter of concern as their sudden arrival and their complexities have increased the life risks. These Skin abnormalities are very infectious and need to be treated at earlier stages to avoid it from spreading. Many of these skin abnormalities are very fatal particularly if not treated at the initial stages .The available diagnosis procedure consists of long laboratory procedures but this project proposes a system which will enable users to predict the skin disease using computer vision .The system will include deep Learning algorithm like Mobile Net..

2. LITERATURE SURVEY

2.1 MACHINE LEARNING

Machine Learning is a branch of computer studies that gives the computer the potential to grasp the environment without hard coding the whole system. It is employed in a wide range of computing functions where building and designing specific algorithms with better performance is difficult or impractical. Machine Learning is firmly attached to computational Statistics which makes prediction through computer easier and feasible. In commercial terms predictive analysis is machine learning used to design multiple algorithms and models that greatly helps the process of prediction. Here the machine learn itself and divide data provided into levels of prediction and in a very short period of time gives the accurate results [7].

2.2 DEEP LEARNING

Deep Learning is a part of broader family of machine learning wherein the learning can be supervised, unsupervised or semi supervised. Deep learning unlike machine learning uses a large dataset for the learning process and the number of classifier used gets reduce substantially [6]. The training time for the deep learning algorithm increases because of the usage of the large dataset. Deep learning algorithm chooses its own feature making the prediction process easier for the end user unlike machine learning which pre-processing [7].

2.3 SUPERVISED LEARNING

Supervised learning is a data mining chore which concludes a function from a characterized training data which contain series of training instances. Each example, in supervised learning is a combination comprising of an input object, which usually is a vector, and desired output response value, also known as supervisory signal [8].

2.4 UNSUPERVISED LEARNING

The problem that arises in both data science world and data mining in an unsupervised learning task is locating the hidden structure in an uncharacterized or unlabelled data. Therefore, when the learner is given an unlabelled example, no rewarding or no error signal is present for evaluation of an impending solution [8].

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2.5 SEMI SUPERVISED LEARNING

There is a class of supervised learning techniques and tasks which employs unlabelled data for training known as Semi-Supervised learning. This unlabelled data is usually an undersized quantity of labeled data and a huge quantity of unlabelled data .This type of learning falls between supervised and unsupervised called as Semi-Supervised. Defining such models which determines disease must have high percentage of metrics such aclassification accuracy, f1-score, Area under curve for classifier. We are working to create such models, whichgive high accuracy above 80-85 percent and detects various types of skin disease.

Method: The Process involves development of a widespread plan to test the special features and general functionality on a range of platform combination is first initiated by the test process. The procedures used here are strictly quality controlled. The method involved use of pre-trained image recognizers with modifications to identify skin images.

3. PROPOSED SYSTEM

3.1 MODULE DESIGN ARE

1. Feature extraction module.
2. Training module.
3. Validation/ Testing phase.

Mobile Net is considered to have light weight architecture and fast model which are more preferred for mobiles and embedded application. The architecture of MobileNet is based on a streamlined architecture that uses depth-wise separable convolutions to build light weight deep neural networks.

3.2 PROCESS INVOLVES TWO FRAGMENTS

1. Feature extraction part with a convolutional neural network
2. Classification part with fully-connected layer.

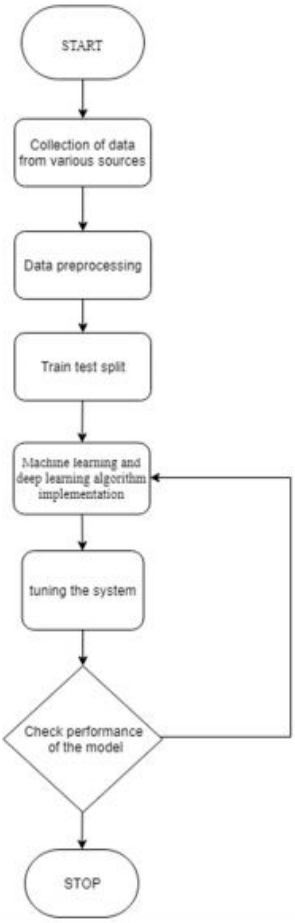

Figure 1: Flow diagram of the System

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Proposed System: This includes steps given as follow Collection of dataset, extracting feature and training model, testing and optimization of model. Our proposed System will be using a dataset which will have images of skin disease and classified labels. Scrapping of data from various resources can be available.

Collection of data – images of various types of skin disease is used for the detection purpose. Such huge data can be gathered from the internet through various technique like web scrapping and other useful resources such as kaggle etc.

Data pre-processing –pre-processing of images is needed for model to perform better. The pre-processing of images data consists of various steps as resizing the images, scaling of pixel values, removing noises etc. Image segmentation is the process in which image data is divided into 128*128-bit array.

Train Test Split – In machine learning for any model validation we need to train the model validation is performed using test data. So, in this step we split the entire data into training set and testing set.

ML and DL algorithm implementation – The proposed algorithm used here is Mobile Net.

Tuning the System – It is the process to select the best hyper parameter from set of hyper parameters such that performance of model is increased.

Checking the performance- In this step we will check the performance metrics such as Accuracy, F1_Score, etc.

3.3 SYSTEM MODEL

This model takes an image as input and next step is performed is Data pre-processing. In this step data is resized, rescaled and noise is removed from the input image. After the data pre-processing the Mobile net model is trained for detection of human skin disease.

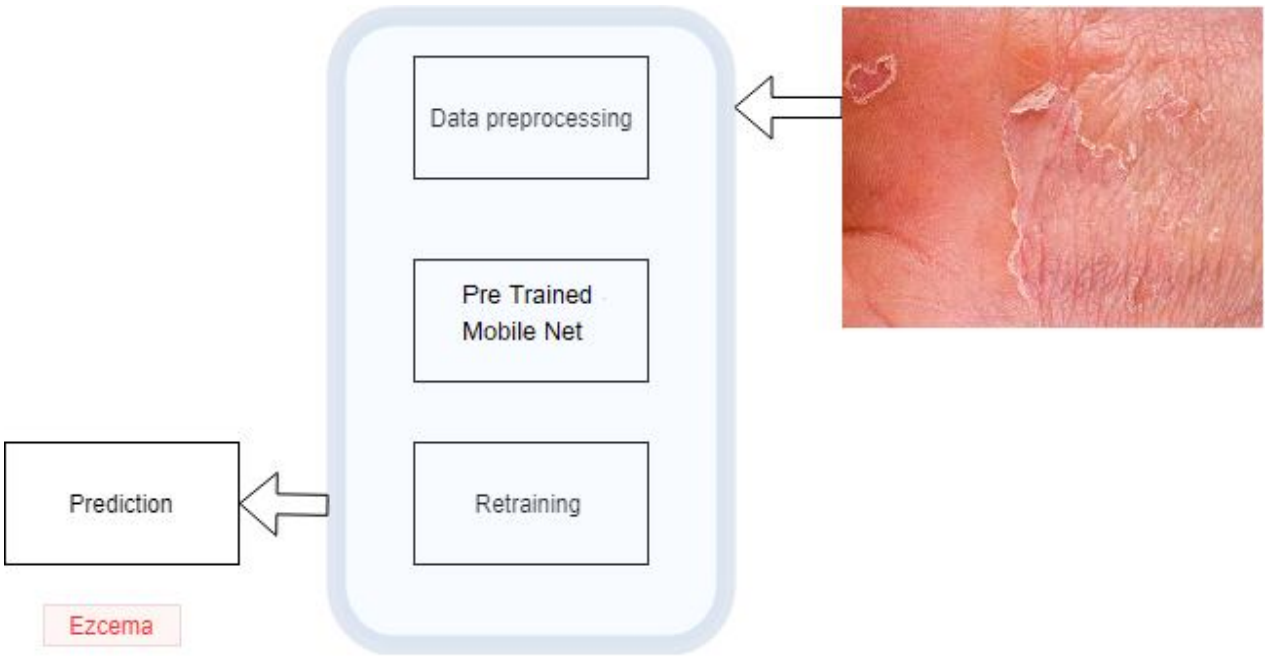

Figure 2: Diagram of System Model

Basic CNN image classification task:

- Convolutional layers apply a convolution operation to the input which passes the information onto the next layer
- Pooling combines the outputs of cluster of neurons into a single neuron in the next layer.
- Fully connected layers connect every neuron in one layer to every neuron to next layer.

Equations: Accuracy: Classification Accuracy is the ratio of number of correct predictions to the total number of input samples. It is same as to term accuracy.

Accuracy = # (Number of correct predictions)/Total # (Observations)

Precision – It is the ratio of corrected predicted positive observations to the total predicted positive observations.

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Precision = TP/TP+FP.

F1 score – It is the weighted average of precision and Recall. Therefore, this score takes both false positive and false negative into account.

F1 Score = 2*(Recall * Precision)/ (Recall + Precession).

3.4 MOBILE NET MODEL

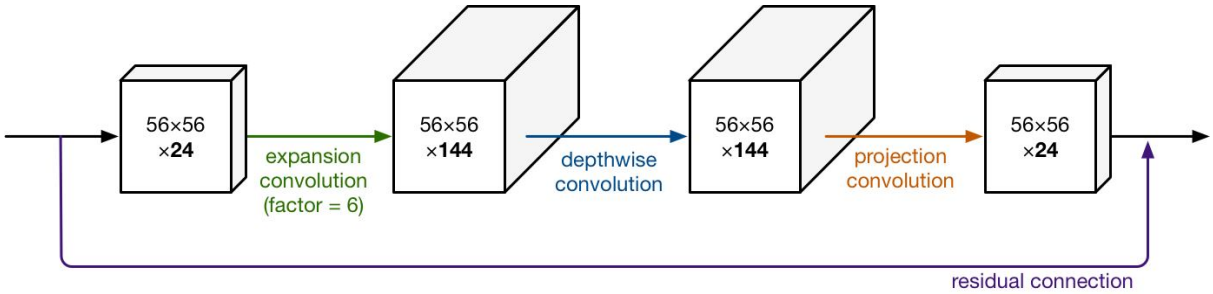

Figure 3: Mobile net neural network model

Mobile net is a light weight architecture it includes a depth wise separable convolutions which performs single convolutions on each colour channel. Inception V3 is another most commonly used neural network in transfer learning. The main difference between inception v3 and mobile net is inception v3 is a standard convolution which does both filter and combines input into a new set of output in step one and whereas mobile net is a depth wise separable convolution splits into two layers one for filtering and one for combining. This technique reduces the computation and model size. As the result the mobile net is better and efficient to use in mobile phone application as it requires low computational power and is less in size. Mobile net is high performance model available for using in mobile applications. Mobile net is very effective when applied to wide varieties of task in mobile applications such as object detection and image classification [11]. Mobile Net achieves an accuracy of above 75 % in successful applications like object detection in images and image classification in images [11].

4. RESULTS

Figure 4: Result

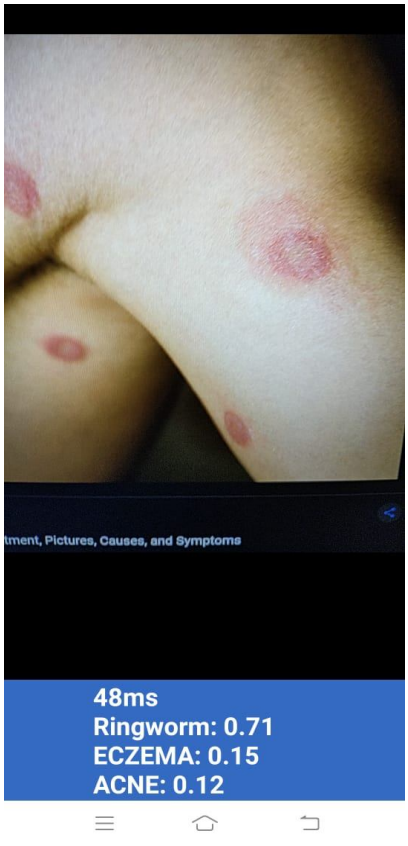

Figure 5: Result

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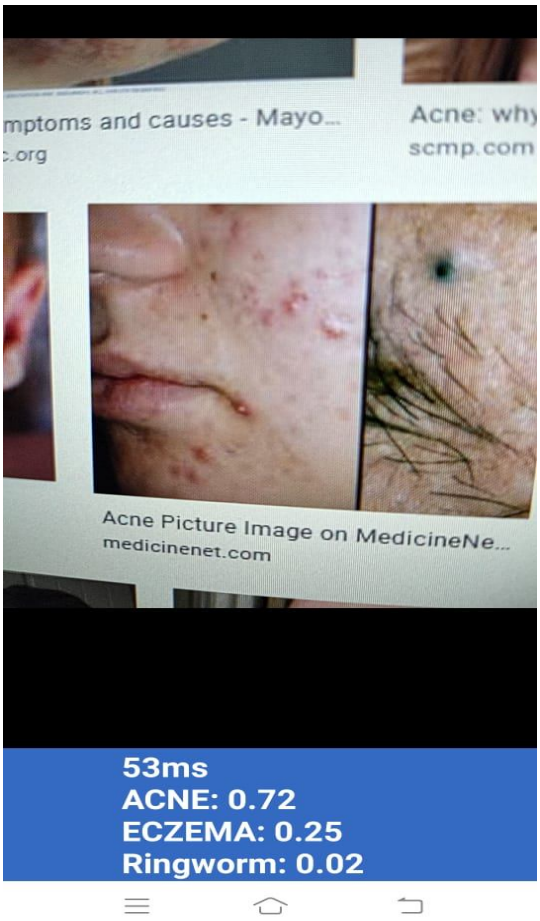

Figure 6: Result

The main advantage of this project is that it gives the real time data and provides the immediate output such that users can get to know the disease related to the skin. Since disease related to the skin are often neglected due to which it causes further complications at the same time there are some dermatological disorders are often neglected. This will give them a view about their skin health and directly provides the feedback whether to consult doctor or not, even what prescriptions to follow. Thus in future it will prove beneficial to not only the Users of this application at the same time for the Doctors to. Further informing the users the health of the skin and what precautions to be taken, consult a doctor etc. We have also provided a GUI for more user friendly which can run on the most common platforms such as Android Smart phones, Windows etc.

5. CONCLUSION

This system uses mobile net deep learning algorithm to achieve accuracy over 80% in classification of various types of skin disease. This android app classifies or detects common skin diseases and achieves accuracy of more than 80%.

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SELF BALANCING ROBOT

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ABSTRACT
This project will undertake the construction and implementation of a two-wheeled robot that is capable of balancing itself. The structural, mechanical, and electronic components of the bot will be assembled in a manner that produces an inherently unstable platform that is highly susceptible to tipping in one axis. The wheels of the robot are capable of independent rotation in two directions, each driven by a servo motor. Information about the angle of the device relative to the ground (i.e. tilt) will be obtained from sensors on the device. The precise type of sensor that will be used is yet to be specified. The tilt sensor may be an accelerometer, gyroscopic sensor, or IR sensor (to measure distance to the ground). Information from the sensors will be fed back to the Z8, which will process the feedback using a crude proportional, integral, derivative (PID) algorithm to generate compensating position control signals to the servo motors in order to balance the device.

Keywords: Balancing Object on two wheel, Recognize Obstacle, Steady on Slope Surface

1. INTRODUCTION

A robot that is capable of balancing upright on its two wheels is known, as a two wheeled balancing Robot .This project will undertake the construction and implementation of a two-wheeled Robot that is capable of balancing itself. Robotics has been advancing in the recent years with the development of systems bearing more and more complicated designs and handling complicated tasks. Self Balancing Robot is one such step which promotes that a robot should be able to have locomotion using the balancing capabilities just as the humans also possess. This opens for the robots a plethora of task types which they can perform in the way humans do .

The objective of this project is to design a two wheeled self-balancing robot. There are two parts to the system: motor controller and geographic controller. Each control system is implemented into different boards. The motor control board is responsible for calibrating each motor to perform self-balancing and directional movements. In order for the robot to perform self-balancing, the motor control must implement a self-balancing algorithm which uses the input of an accelerometer and gyroscope module. The geographic control board provides directional movement the robot must execute such as turn left, go forward, stop, etc. The direction is mostly indicated by the user using an android phone via Bluetooth communication. The sensors are used to override user control for obstacle avoidance

Two-wheeled self-balancing robot has two characters, dynamic stability and static unstable. On the premise of to ensure its own balance, it can run at a certain speed and angle. Through the two wheels' differential input, it can achieve zero return radius and U-shaped returning. And the robot use two-wheeled balancing device as platform has a high ability to adapt to the changes in terrain, so it can work flexible in various environments

Figure 1. Robot

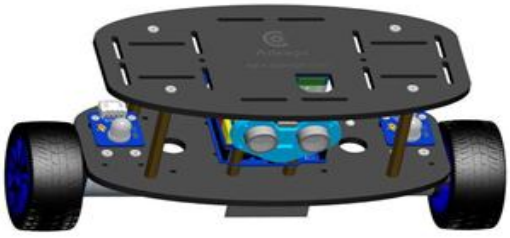

Figure 2. Overview Look

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2. PROBLEM DEFINITION

Self Balancing Robots are one type of robot having ability to follow a black line very accurately even the black line is a straight line or a curve line. The line-following robot has great importance in industrial manufacturing process, automation, carrying cartage in a specific direction etc. Practical applications of line-following robots include automated cars running on road that is capable of sensing its environment and navigating without human input

Two-wheeled self-balancing robot has two characters, dynamic stability and static unstable. On the premise of to ensure its own balance, it can run at a certain speed and angle. Through the two wheels' differential input, it can achieve zero return radius and U-shaped returning. And the robot use two-wheeled balancing device as platform has a high ability to adapt to the changes in terrain, so it can work flexible in various environments.

3. LITERATURE SURVEY

A two-wheeled self-balancing robot based on the inverted pendulum model which is built as a platform to look into the use of a sensor fusion. As the robot is inherently unstable, it is necessary to implement a control system to keep the system in balanced. This eventually lessens the indoctrination by requiring lower learning rates and careful parameter initialization, and makes it notoriously hard to teach and train models with saturating nonlinearities. Batch normalization permits and authorizes us to use much higher literature and the alpha learning rates and be less cautious and less aware about initialization. It also acts as a regularizer, in several cases.

This paper presents a vision-based two-wheel self- balancing robot to follow a black line using visual feedback. We use software connect to the URL ofIP camera and use image processing toolbox to process the image from the IP camera. After image processing, this paper sets 10 coordinates to detect if the black line is straight or the black line is in different kind of situation. Although enlarged model size and computational cost tend to render immediate quality gains for many tasks, computational efficiency and low parameter requirement are nevertheless enabling the factors for various use cases like mobile vision and big-data scenarios. Here in this outline, we traversed and surveyed the ways and techniques to scale up as well as escalate networks in several techniques such that the aim is to utilize the added computation as efficiently as possible by suitably estimated convolutions and aggressive regularizations.

Wheeled mobile Robot is a typical nonlinear system constraint by nonholonomic, and the two-wheeled self-balancing robot is the special one. Since the first commercial two-wheeled self-balancing vehicle emerged, people are deeply interest in the controlling of two-wheeled self-balancing motion, and work more in its research.

4. MODEL

The open source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS, and Linux. The environment is written in Java and based on Processing and other open-source software. This software can be used with any Arduino board. The Arduino language is merely a set of C/C++ functions that can be called from our code. Our sketch undergoes minor changes (e.g. automatic generation of function prototypes) .

A common agreement in literature is that using either a gyroscope or an accelerometer on their own to obtain the tilt angle is not very reliable. This primarily arises from the fact that both of these devices have a bias in the measurements, are affected by white noise and the bias is affected by temperature. Attempting to account for all the errors, could be a dissertation in itself . In this project, as only the tilt angle is measured and not relative displacement, it is assumed that the gyroscope is mainly affected by a bias and the accelerometer by white noise. This chapter begins by presenting the fundamentals of gyroscopes and accelerometers to highlight the need for sensor fusion.

1] ACCELOMETER

From the diagram, the following equation can be obtained:

$$Axr = \theta_x = \cos^{-1}\left(\frac{x}{\sqrt{x^2 + y^2 + z^2}}\right) = \cos^{-1}\left(\frac{x}{R}\right)$$

Alternatively, the following equation is more useful as it calculates the angle relative to the z-axis (Roll):

$$Roll = \phi_{xyz} = \tan^{-1}\left(\frac{y}{z}\right)$$

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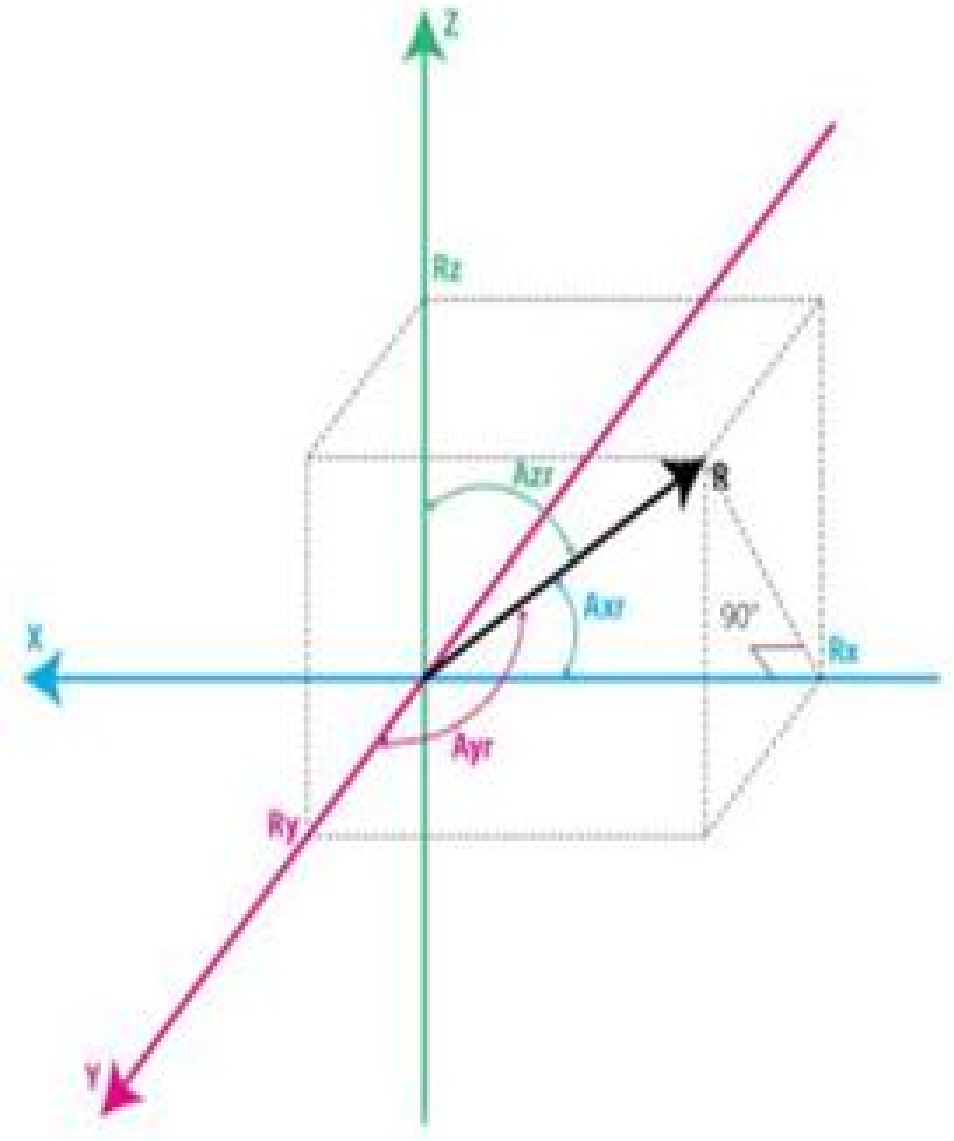

Figure 3 ACCELOMETER

With a similar approach, Pitch can also be calculated. However, Yaw cannot be determined accurately, especially when the force in the z direction = 1g (assuming the accelerometer can only rotate and not translate in any direction). In this case changing the yaw, will have no impacton the components of x and y, making yaw constant. This however does not affect the implementation in the robot as only the tilt angle is required .

2] HARDWARE CONFIGURATION

- 1x Self-Balancing Robot Shield V1.0
- 1xArduino UNO R3 Board
- 1x HC-06 Bluetooth Module
- 1x MPU6050 Accelerometer Gyroscope Sensor Module
- 1x TB6612 Motor Driver Module
- 1 Set Acrylic Plates
- 1x TB6612 Motor Driver
- 1x Ultrasonic Module
- 1x 18650x2 Battery Holder
- 1x Active Buzzer Module
- 2x Motor

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4.1 ARCHITECTURE DESIGN

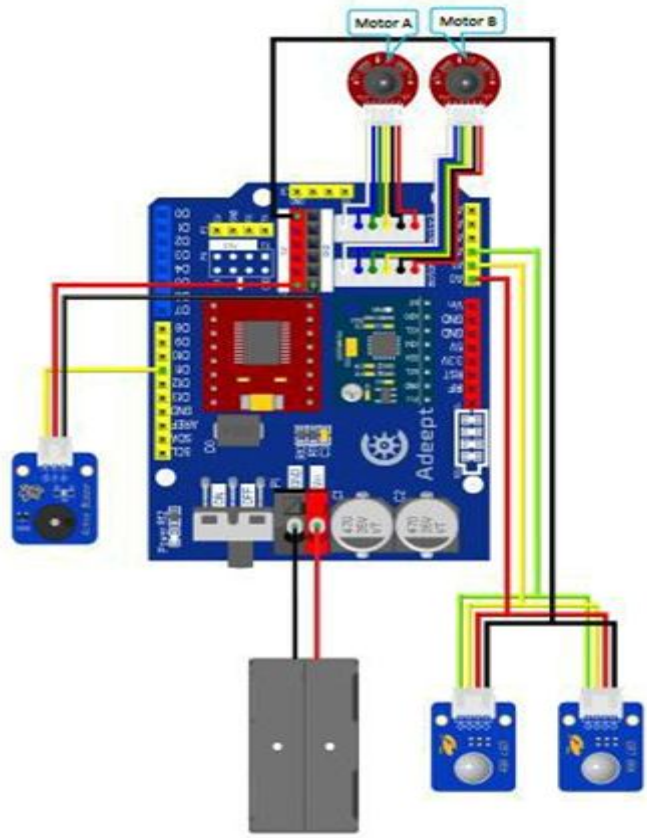

Figure 4. ARCHITECTURE DESIGN

4.2 ANALYSIS OF COMPONANETS

4.2.1 ARDUNIO

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board. The Arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board ,you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program. Arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package.

Figure 5. ARDUNIO

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4.2.2 ROBOT SHIELD

Figure 6. Robot shield

Stabilizer Shield is an expansion board for arduino, which adopts the world's first high precision 6-axis attitude sensors. Meanwhile, the on-board chip L298P is a high voltage, high current dual full-bridge driver designed to accept standard TTL logic levels and drive inductive loads such as relays, solenoids, DC and stepping motors. With a standard XBee socket that can connect Bluetooth or WiFi module.

4.2.3 ULTRASONIC SENSOR

The ultrasonic sensor works on the principle of SONAR and RADAR system which is used to determine the distance to an object. An ultrasonic sensor generates the high-frequency sound (ultrasound) waves. When this ultrasound hits the object, it reflects as echo which is sensed by the receiver as shown in below figure.

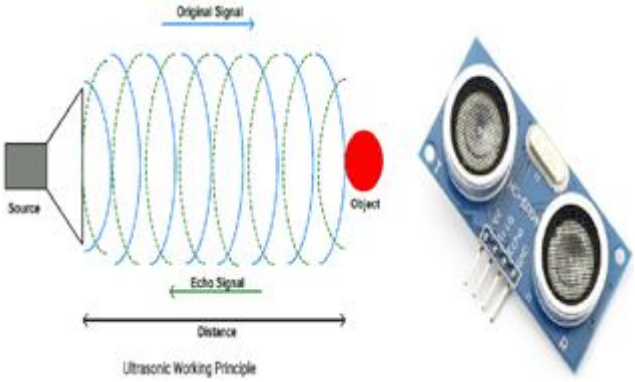

Figure 7. LTRASONIC SENSOR

4.2.4 BLUETOOTH MODULE

It is used for many applications like wireless headset, game controllers, wireless mouse, wireless keyboard and many more consumer applications.

It has range up to <100m which depends upon transmitter and receiver, atmosphere, geographic & urban conditions.

It uses serial communication to communicate with devices. It communicates with microcontroller using serial port.

Figure 8. Bluetooth module

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4.2.5 BUZZER MODULE

The active buzzer has built-in electronics that produces the buzzer sound. For this reason it will sound when power is connected to it and does not need any external electronics or an Arduino for it to produce a sound. an active buzzer rings out as long as it is electrified. Compared with a passive buzzer, it is a bit expensive but easier to control. Typical uses of buzzers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

Figure 9. Buzzer module

4.2.6 RGB LED MODULE

RGB LED modules can emit various colors of light. They are manufactured by packaging three LEDs of red, green, and blue into a transparent or semitransparent plastic shell and have four pins. The three primary colors, red, green, and blue, can be mixed and compose all kinds of colors by brightness, so you can make an RGB LED emit colorful light by controlling the circuit.

Figure 10. RGB led module

4.3 HARDWARE COMPONANTS

1 Fixing arduino on aclyric plate with screws.

Figure 11. arduino on aclyric plate

2. Fixing battery holder and bracket with nuts and screw

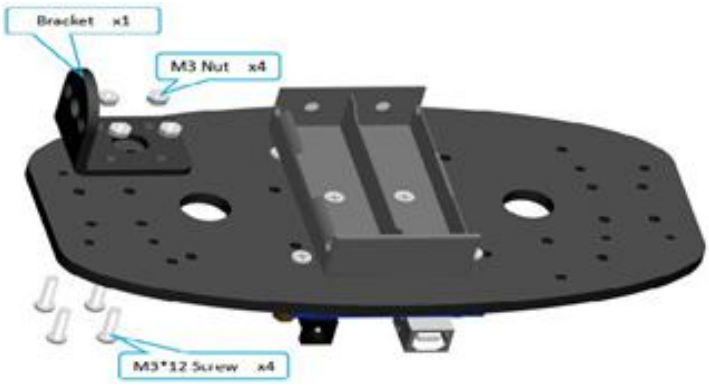

Figure 12. battery holder

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3. Applying motor

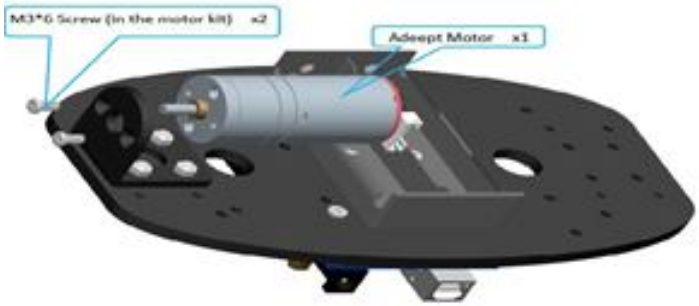

Figure 13. motor

4. Fixing buzzer module

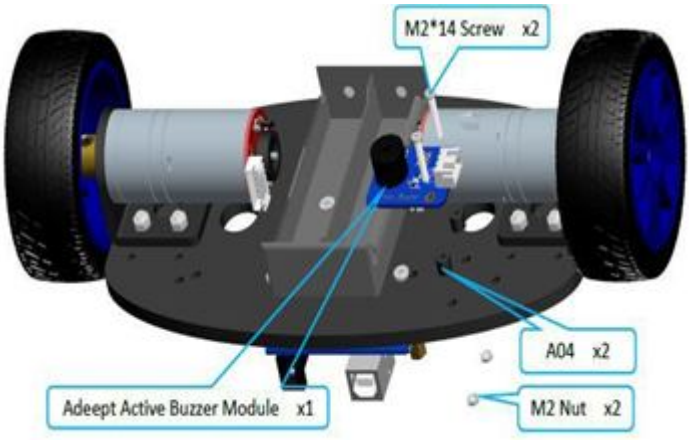

Figure 14. buzzer

5 Fixing motor stabilizer shield

Figure 15. motor stabilizer shield

6. Fixing ultrasonic sensor on motor shield

Figure 16 ultrasonic sensor

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7 Fixing Bluetooth module on motor shield, behind ultrasonic sensor.

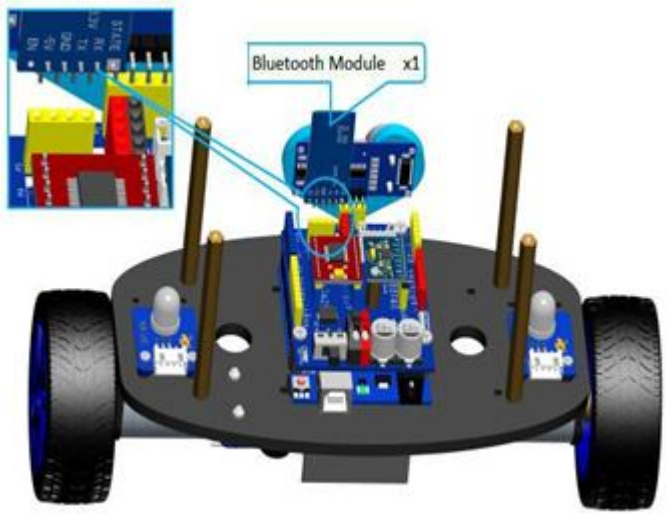

Figure 17. Bluetooth module on motor shield

8 Fix the aclyric plate on the top and the robot is ready

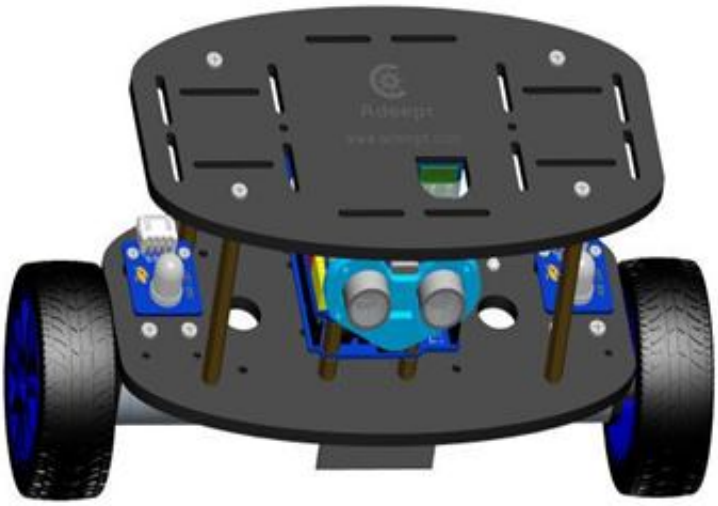

Figure 18. Two wheeled robot

5. RESULTS

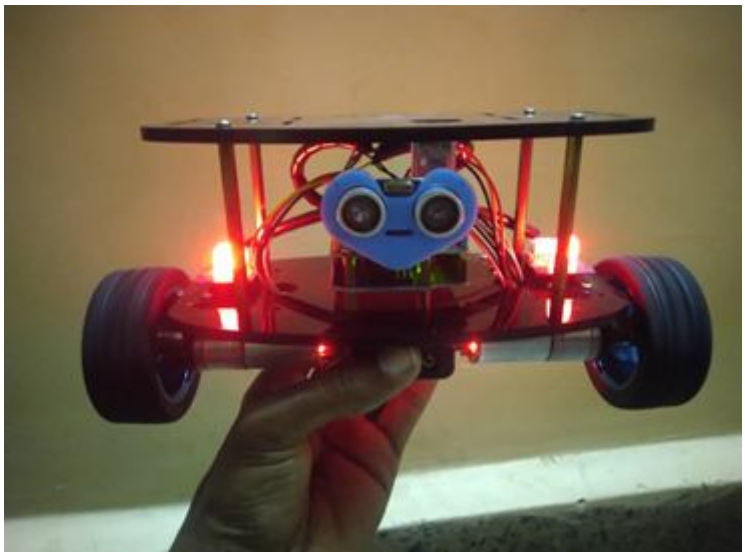

Figure 19. Final Output

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Figure 20. Side View of Robot

Figure 21. Fornt View of Robot

6. CONCLUSION

According to the Characteristics of the Robot movement ,this establish two-wheel robot self Balancing. This project was successful in achieving its aim to balance a two-wheeled self balancing autonomous robot based on the inverted pendulum model. The control strategy called proportional integral derivative controller to control the trajectory of the robot .

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INDIAN SCALE DIGITAL AUDIO TRANSCRIPTION

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ABSTRACT
Analyzing the musical notes just by listening to the audio file is complex and very time consuming task. In this document we have reduced these difficulties of generating Indian notes by using python modules. With help of python program we are able to reduce the time required to generate musical notes. Python modules have facilities for music transcription which we will help to produce output without errors. The python program will take a raw acoustic music audio file from a specific instrument as input and output generated will be corresponding Indian notes of the given rhythm. Digital Audio Transcription is an enabling technology and one of the active areas of research.

Keywords: Constant-Q Transforms (CQT), Digital Audio Transcription, Fast Fourier Transforms (FFT), Indian Scale musical note, Librosa.

1. INTRODUCTION

A scale is a group of musical notes that are arranged by ascending or descending order of pitch. There are large varieties of scales all around the world. Some of the most common are: The Phrygian dominant scale, The Arabic scales, The Hungarian scale, The Byzantine music scales, The Persian scale. The Eastern music consists of five notes in an octave. The Western music consists of seven notes and they repeat at the octave. The scale notes in western music are separated by equal step size, creating twelve intervals per octave. The Indian music divides an octave into seven distinct notes. The tonal system of western music is based on artificial division of the octave into twelve equal intervals. The numbers of intervals available for musical expression are very limited. However the Western tonal system has become dominant in the world, the Indian ragas (note combinations that have significant melodic potential) are in danger of getting lost. There are systems available which can transcript an audio file into Western notes. Here we are proposing a system which can transcript an acoustic audio file into Indian notes for a monophonic instrument.

Indian notation is entirely relative and Western Notation is more rigid. In order to deal with the problems faced by Indian musician with western notes we are proposing a system that will be given raw audio file and output will be the notes of that specific instrument in Indian Scale (Swarlipi).Our aim is to produce accurate transcripts from the given input file. We are going to analyze the pitch, onset time and duration of audio to maximize the accuracy. Filtering the background noise is helpful for accuracy. Melody is a set of notes, struck in succession. Harmony is when notes are struck simultaneously. Indian music is based on melody and Western music is based on harmony as to embellish melody, to make a melody much more impactful, much more interesting and to give texture to the music. Indian classical music do not follow any set of rules they are totally based on the use of ragas where as the western music is totally based on the building block of the scales.

The Indian classical music is meant to worship and follows a rhythm. The main difference between the Indian music and Western music is the method of composition. A western musician first composes music and then puts them in notation and then the player plays them under the guidance of the rules. In this they don't have any improvisation and is totally based on pre determined conduct of tone and speed of music. The Indian classical music is based on the musician's mood and the ability to improvise; whereas the western musician cannot do this improvisation.

Scale	C	D	E	F	G	A	B
Indian Notes	Sa	Re	Ga	Ma	Pa	Dha	Ni
Western Notes	Do	Re	Mi	Fa	So	La	Ti

Figure 1.Indian Notes and Western Notes

In this paper we are proposing a system for audio transcription of a specific instrument in Indian scale. Transcription is defined as a process by which an audio or video is converted into a text format. Transcription of an audio is notating a piece or a sound of human as well as Instrument. Digital audio transcription is digitally typed text conversion of audio file. Transcription of any music audio into any form of music notation is an extremely interesting capability of human intelligence. The process of music transcription includes knowledge representation, perception, cognition and inference. There are algorithms designed and are available to convert a raw acoustic music signals into some kind of form of music notation or notes. Transcription techniques are

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applied in various fields of legislative documents, music, cooperate business, speeches, interviews [1].There are many services offered by Transcription Company or an expert transcriptionist that can prepare a digital copy of text of recorded file [2]. The problem with manual transcription is that audio usually is at a faster speed and we need to be able to type everything while avoiding mistakes. So the better choice is to hire a professional digital audio transcription service or an expert transcriptionist that can do the work more easily that to in less time [3]. On surveying about the automatic transcription, there is a vast majority of approaches that only target Western music. There are some approaches that have proposed to consider note interactions through a music language model [3], [4]. Other subset of approaches estimate notes directly from the audio signal rather than frame-level transcription. There are some other approaches which first estimates onset and then detect pitches within each frames, while others detect and estimate pitch, onset and sometimes also the offset in the same framework [5],[6],[7].

There are approaches which estimate the pitches in each of the time frame and also connect the detected pitch over time into notes. A musical note is characterized by: pitch, onset time and offset time [7]. In this context the most common used techniques are Median filtering [8], Neural Networks (NNs) [6], Hidden Markov models (HMMs) [10]. Mainly post-processing is performed for each pitch independently sometimes without even considering the interactions among the simultaneous notes that sometimes leads to missing notes that share harmonics with correctly estimated notes.

2. LITERATURE SURVEY

By referring the papers which have already worked in this area we got to know the different task that are needed in digital audio transcription such as onset detection, offset detection, beat detection, etc. It gave a vision about signal processing and artificial intelligence in digital audio transcription. There are different methods to retrieve information from sound. There advanced techniques for understanding sound which helps in retrieving the notes. There are papers which provide the methods which could be used to in detecting the notes. They also provide some experiment performed by them to show the methods to improve the accuracy in transcription. It also provides the effect of the recording environment on the transcription process and to tackle some issues while recording and while transcription by exploiting a single note. They provide different methods of pitch detection. They have proposed the method on pitch detection using harmonic series which play an important role in transcription process. Pitch detection is the major factor to detect the high notes. Many researchers have worked on automatic transcription of music, methods and analysis of sound extraction. Their efforts are summarized in Table1

Table 1. Efforts of Previous Researchers

Author	Paper Title	Work Done
Benetos E., Dixon S., Duan Z., & Ewert S	"Automatic Music Transcription: An Overview"[1]	Approaches organized into four categories: frame level, note level, stream level, and notation level.
S. Ewert and M. B. Sandler	"Piano transcription in the studio using an extensible alternating directions framework."[6]	Use of additional information on recording conditions, exploiting a single note.
M. Müller, D. P. Ellis, A. Klapuri, and G. Richard	"Signal processing for music analysis"[8]	Signal analysis techniques in musical dimensions.
L. Su and Y.-H. Yang	"Combining spectral and temporal representations for multi pitch estimation of polyphonic music."[9]	Detection of pitch according to the harmonic series in the frequency domain.
T. Virtanen, M. D. Plumbley, and D. P. W. Ellis	"Computational Analysis of Sound Scenes and Events"[11]	Machine learning methods for sound extraction.
S. Wang, S. Ewert, and S. Dixon	"Identifying missing and extra notes in piano recordings"[12]	Adaptation of score-informed dictionary learning techniques.

There are two ways of event detection mainly used in music transcription first is energy thresholding and onset detection. Event is detected when the energy increases at a particular time beyond the threshold energy then the event is detected. In onset detection sudden change in energy level in the music signal at a particular point is said as event. Onset detection is specially used in auto transcription. Event detection is a crucial stage in music transcription. The papers mentioned above gave us great knowledge of transcription process from the start till the end of the process and the drawbacks off various systems. There are different approaches of transcription for frame level, note level, stream level and notation level [1]. "Computational Analysis of Sound Scenes and

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Event" [11] gave us machine learning methods to detect sound and approach to transcript it which could be used in future advancement such using supervised learning to identify the type of sound recorded as we are dealing with monophonic instrument it helped us to get to know the ways sound is recognized and data acquisition from it.

The study of audio transcription shows that complexity of transcription goes on increasing as we go from frame level to note level. Transcription of audio is an active research area in field of music signal processing. Implementation on Non-Western scale is complex as they do not have fixed scale of a specific instrument. The procedure of audio transcription includes digitalization of audio, obtaining time-varying spectra, identification of pitch and lastly mapping to required scale. The above research work has helped us greatly but it is specifically for western music and not done for Indian music so we have made an effort to transcript the music input in Indian scales using their approach but also improvising it specifically for Indian music scales.

3. PROBLEM DEFINITION

The transcription of audio is done for both human as well as of an instrument. The automatic transcription of an audio for any polyphonic or monophonic instrument is an enabling technology where research is made on western scale which leaves many assumptions about other scales present around the world. The problem statement of our project can be defined as identifying the Indian music notes from the acoustic audio file which is noise free and from a monophonic instrument in python. Here we are producing accurate transcripts from the input audio file. Music transcription includes analysis of an acoustic music signal which requires noting down of the pitch, onset time, source of each sound an duration of the piece of music. Recognizing and detecting individual sounds in music is to be emphasized while transcription of an audio. A python module named Librosa plays an important role for domain audio processing. The methodology proposed for audio transcription includes calculation of CQT and FFT frequencies, CQT threshold, calculation of Onset, and estimation of Tempo then finally generation of Indian notes.

4. IMPLEMENTATION

The proposed system is a command prompt solution and isf or a monophonic instrument. Proposed system uses python modules Librosa, Pyaudio, Matplotlib. Librosa module is used for time domain audio processing of Fast Fourier Transforms and Constant-Q Transforms. Pyaudio is needed for audio input and output. Matplotlib is used for graph plotting in python. The design of system requires the conversion of analog music to digital music. Once the music is converted into digital form, successive short terms FFT are identified. Among them the peaks are analyzed for the strongest individual pitch candidates. The implementation of the python program for the proposed system follows the below given procedure.

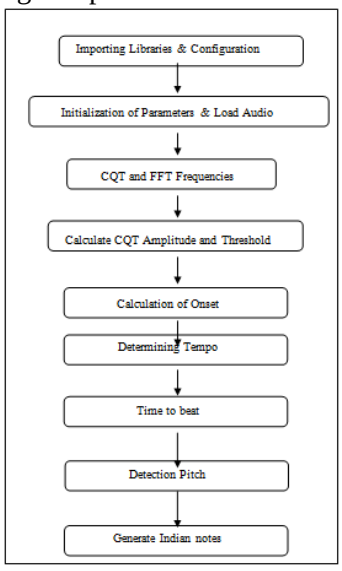

Figure2 .Procedural Diagram

Musical Note corresponds to certain frequency or pitch at which the sound produced is pleasing and clear. The pitch of musical notes is recognized by changing their time domain into the frequency domain. This is accomplished through Fourier Transforms. There are algorithms which can compute the frequency component of signals. The common computer implementation is Fast Fourier Transforms. The output of Fast Fourier Transforms makes it easy to identify notes as it provides frequency information about the signals. The output have peak values for the frequency of the notes present in the signal. These algorithms are useful in processing

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musical audio signals. The procedural diagram shown in Fig.2 has been implemented in Python v3.8 on Jupyter Notebook. Thus we found that our system has few hardware requirements like Processor must be core i3 or above, RAM needed is minimum 4 GB

The program starts with import of libraries. Once the libraries are imported, configurations including the path to the audio file are adjusted. Our ultimate goal is to generate Indian notes form the audio file. First parameters are initialized like sampling frequency, number of samples between successive frames, magnitude exponent, etc and audio is loaded. For estimation of notes we need to detect pitch and the time required to beat a note. Pitch Detection algorithms for monophonic music requires FFT frequencies and onset time. Time required to beat a note is estimated by determining the tempo and calculating the onset boundaries. Tempo of the music is mostly determined by measuring Beats per minute (BPM). Onset calculation requires calculation of CQT amplitude, threshold and onset envelope. On the basis of pitch, onset time, frequency, the Indian notes are generated and are printed in the output.

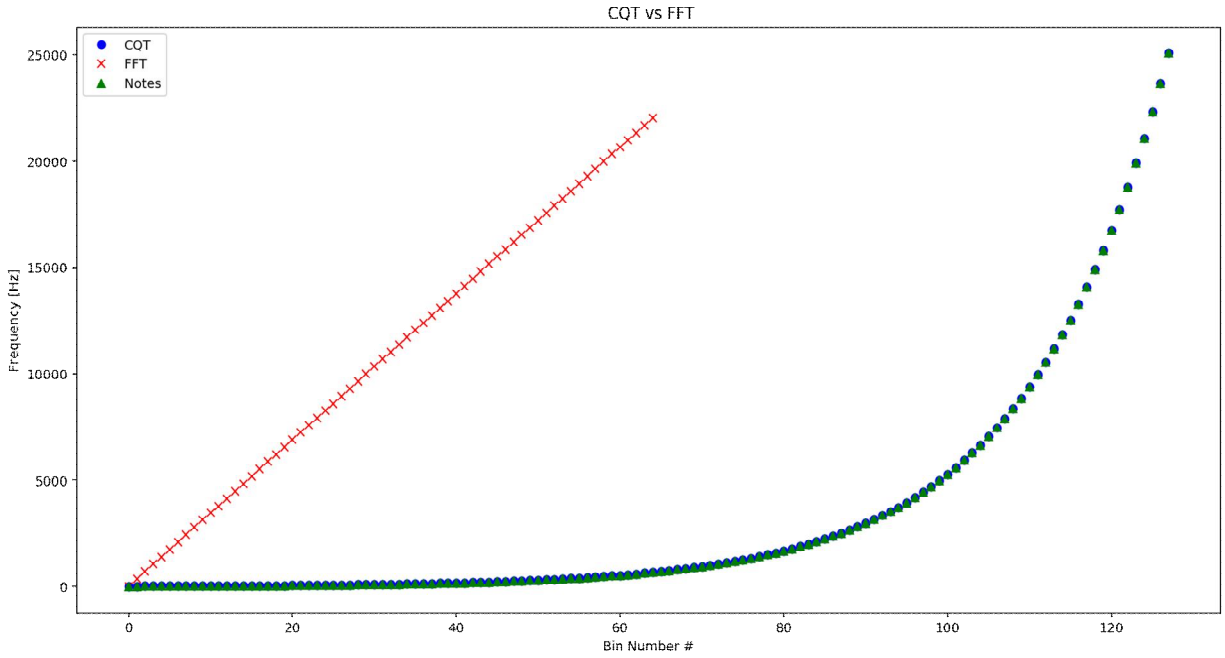

Figure 3.CQT and FFT

Here, we are plotting a graph of frequency versus bin number in Fig.3. The graph dissipates the plotting for the notes, CQT function and FFT function. We can observe that the FFT function has a linear graph where as the CQT has exponential graph. The notes too have an exponential graph. The notes plotted almost overlap the CQT function. This is the clear indication that we need to transform audio signal into CQT function to increase the accuracy of notes displayed. But we require FFT function for pitch estimation. So we require both CQT as well as FFT function. At the end we have time information converted to time-frequency information.

5. APPLICATIONS

A successful digital audio transcription system would have following interactions between people and music:

- Music education
- Music creation
- Music production
- Music search
- Musicology

As such, transcription of audio is an enabling technology with clear potential for both economic and societal impact.

6. CONCLUSION

We presented a method for transcribing an audio file into Indian notes for monophonic instrument such as Electric guitar. As the previous work is done on Western scale, we are proposing a method which can transcript an acoustic audio file for Indian scale. Our method employs pitch detection, estimation of tempo, onset

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calculations, threshold and onset envelop, CQT an FFT frequencies. The combination of previous knowledge available in digital audio transcription related to western scale with our proposed Indian scale digital audio transcription seems to provide a considerable transcription performance of an acoustic audio file. The system is able to generate accurate Indian musical notes for monophonic instrument provided the audio file is without background noise. During the development of system, Electric guitar sound is adopted as the main testing sample. The accuracy of output of the proposed system measured based on the correctness of onset detection and pitch determination. The onset detection is the main step which plays the most crucial role in the proposed system. The purpose of onset detection is to isolate all the sound notes. If the onset for a particular pitch is not detected correctly, then there are chances that the program might not be able to determine the pitch accurately. The method proposed is developed in such a way that it can adapt all types of sound quality and low steady continuous tune and thus is able to return accurate output with minimal errors. Further advancements can be done by making this system available for polyphonic instruments. This system is command line based which can be further enhanced to Web Application or Mobile Application.

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MULTIFACTOR AUTHENTICATION FOR BANK USING MOBILE PHONE

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ABSTRACT
Online system typically required authentication before user allows accessing the sensitive applications and information. Sensitive information generally contains user personal information, confidential data, etc. Earlier user authentication system used user identifier, Password, Personal Identification Number (PIN), Token code etc. These Systems can't fulfill the current requirement of the user authentication. Hence most of the system used multifactor authentication mechanism to allow authorized user to get access the sensitive application and information. In this project, we will propose User's machine specific authentication information generate OTP using algorithmi.e. sha256 and md5.In our project during OTP generation no Network present that is more secured than other system

Keywords: One Time Password (OTP), Authentication and Mobile phones.

1. INTRODUCTION

Security is most important in our life. Today security concerns are on the rise in all areas and most confidential area is bank. so we are implementing multifactor authentication for bank using mobile phone. Earlier Mobile phones are only used as a tool for making phone calls. But today, due to advanced hardware and software, mobile phones use have been expanded to send messages, check emails, store contact, share data, capture videos and photos etc.

System Authentication is a process of verifying the identity of a user or process. Authentication is validating your credentials such as Username and password to verify your identity. Multi- Factor Authentication requires two or more levels of security to grant user access to the system The password generated by OTP SMS are one time password meaning that the OTP SMS password is used only for the one time and can't be used for a second time by you or another person [7]One Time password system is effective and easy to deploy and it requires low computing power specifically designed by keeping the mobile devices in mind [8]

Our idea is to generate multiple OTPs from an initial seed along with the service provider, e.g., an online bank, by using two different types of hash functions, which come with a nested chain. The OTPs will be generated simultaneously on the client and the server side and will be compared. After successful validation of OTP's an additional layer of security i.e. a security question has to be answered to be fully authenticated into the system. The aim of this project is OTP production in the forward direction. In this project, we will generate OTP using algorithm sha256 and md5.In our project during OTP generation no Network present that is more secured than other system.

2. LITERATURE REVIEW

i) The s/key One Time Password (OTP) [6]

Computing systems have been under increasingly complicated attack over the Internet and by using dial-up access ports. One form of attack is monitoring on network connections to obtain login id's and passwords of legitimate users. This information is used to attack the system. The S/KEYTM one-time password system used to counter this type of attack.

ii) Performance improvement using One Time Password (OTP) in Online Voting System [3].

It described the proposed Online Voting System with OTP scheme and the proposed method commences the work with database creation.

iii) The N/R One Time Password System[8]

In this paper, introduced a general framework for deep-learning-based traffic classification. Times series functionality of a set of sampled packets recently shown to achieve good accuracy.

iv) Data Security using Carp Two Step Authentication based on Human and Hard AI Problems [4]

It described the image based on CAPTCHA to protect user data or unauthorized access of information. In that password is generated from images and text password. Current system is based on text password but it has disadvantages like small password mostly used and easy to remember. This type of password is easy to guess.

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v) One-Time Passwords via SMS [7]

Now days SMS OTPs are commonly used for authentication and authorization for many different applications such as Banking application

3. PROBLEM DEFINITION

Cyber terrorism attacks are growing ever more advanced.. With just a single point of failure, any internal system errors can compromise the security If the sole point of security fails, the entire system is either inaccessible or completely open. Passwords may be cracked by brute force, dictionary and rainbow table attacks, once an attacker captures the password database that resides on the protected computer.

Drawbacks of 1FA:

i) Single point of failure

ii) Need to monitor application upgrades and changes

iii) Lowest level of security

iv) Can be easily cracked

Drawbacks of 2FA:

i) Hardware tokens are the most widely used 2FA OTP mechanisms in India. it's vulnerable to several kinds of attacks. As the OTP generation algorithm is being public, the attackers could derive OTPs.

ii) Most OTP systems are susceptible to real-time replay and social engineering attacks. OTPs are also indirectly susceptible to man in the middle (MITM) and man in the browser (MITB) attacks. Real-time replay attack is a form of an man in the middle attack. In this attack, malware resides on the browser captures user credentials. The malware forwards these details to the attackers, and blocks the user request. The user receives an error message which reports a failure. The attacker can perform an replay with the same credentials. These tokens are usually valid for 60 seconds (+/- 10 seconds).

4. PROPOSED WORK

4.1 ARCHITECTURE OF PROPOSED SYSTEM

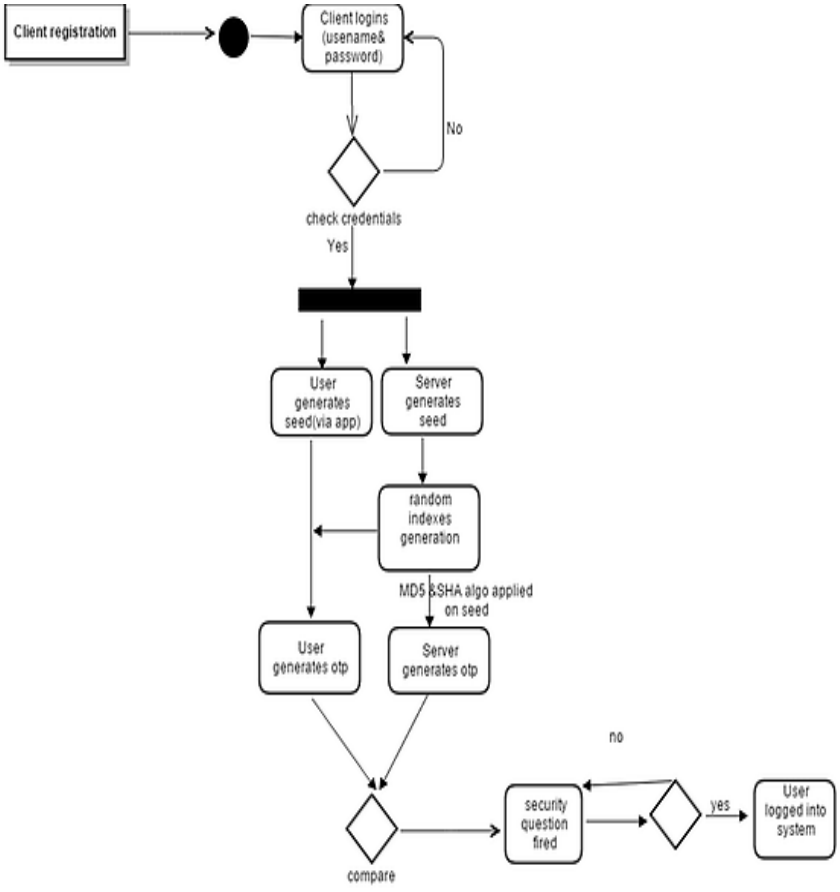

Figure 1. Architecture of Proposed System

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4.2 ANDROID APP

STEP 1: Registration (Online)

A) User is prompted to input

i) Name & Phone Number

ii) Email-ID & Recovery Email-ID (Optional)

iii) Username & Password

iv) Security Question & Security Answer

B) Reads IMEI & IMSI number of the Android device

C) Sends the IMEI, IMSI & user input to the server

D) Server creates a User bank account with following fields

i) Name, Email-ID, Phone Number

ii) Username, A/C No & UserID

iii) Security Question & Security Answer

E) A verification mail for confirmation is sent to user's Email-ID with the above details

STEP 2: Client Seed & OTP Generator (Offline)

A) Seed Generation

i) Reads IMEI & IMSI number of the Android device

ii) Asks user input for A/C number OR reads the stored A/C number

iii) Concatenates IMEI, IMSI, A/C No to generate a seed

B) OTP Generation

i) User is prompted to enter 2 index values generated by server

ii) The index values are used for applying "n" rounds of hash chains

iii) Hash chains are applied to the seed to obtain a final hash value

iv) The hash value is then converted to OTP

4.3 SERVER

A) Data Storage & Logic

i) Stores the user account details during registration

ii) Tracks the login timestamp

iii) Maintains a list of transactions

iv) Compares the server OTP from database & client OTP to authenticate 2nd Factor

B) Client Seed & OTP Generator (Offline)

i) Seed Generation

- Reads IMEI & IMSI number of the Android device from the database
- Concatenates IMEI, IMSI, A/C No to generate a server seed

ii) OTP Generation

iii) OTP

- Server generates 2 random index values (x,y) ranging from 1 to 10
- The index values are used for applying "n" rounds of hash chains
- Hash chains are applied to the seed to obtain a final hash value
- The hash value is then converted to OTP

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- Server sends the 2 index values to the user via browser

iv) OTP Comparison & Security Question

- Server compares its own generated OTP & the entered client OTP and If both are equal, server authenticates 2nd factor & asks a security question in the 3rdfactor.

5. RESULTS

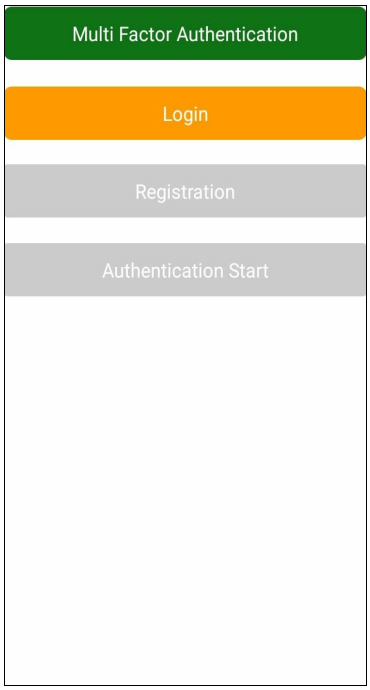

Figure 2. Home Page

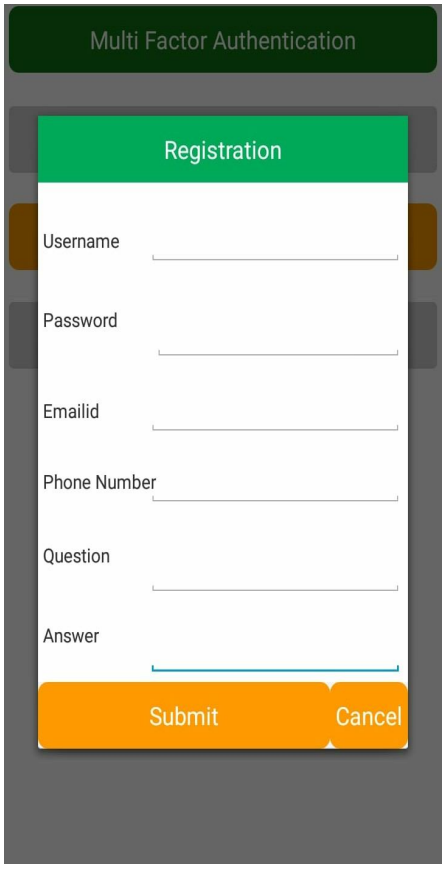

Figure 3. Registration Page

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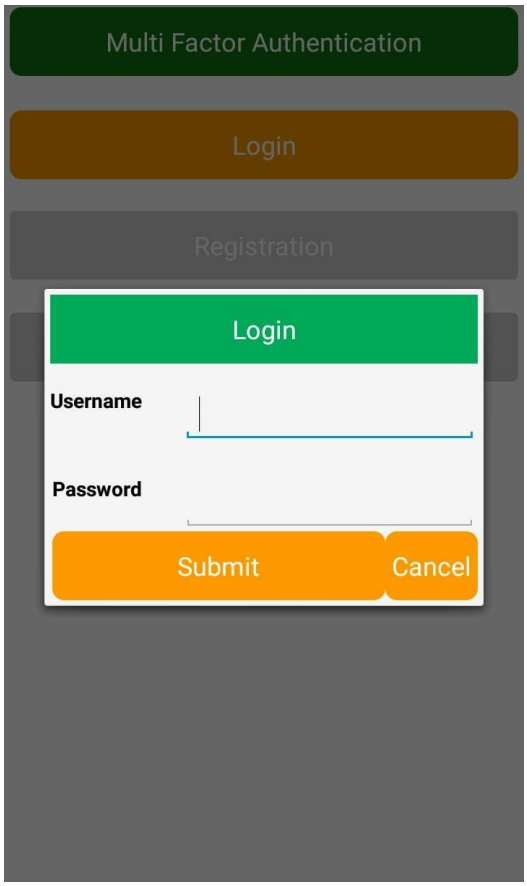

Figure 4. Login Page

Figure 5. Authentication page

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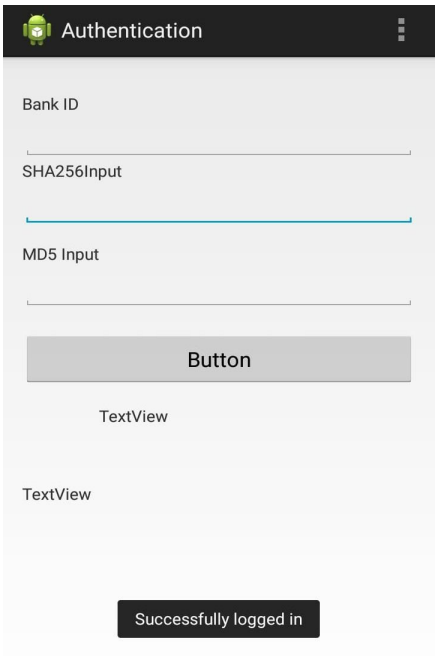

Figure 6. Last Page

6. CONCLUSIONS

A new multi-factor OTP-based authentication scheme has been proposed using mobile phones as they are becoming more powerful devices. This new algorithm provides an OTP generation using two nested hash functions. We have explained our approach to an online authentication process. This scheme has better characteristics than the other schemes discussed above.

Our proposal is not limited to a certain number of authentications, unlike the previously-mentioned OTP hashing-based schemes and does not involve expensive techniques to provide the infiniteness. Our algorithm doesn't require a token embedded server. Our approach removes the problems with using OTPs with an SMS, consisting of the SMS cost and delay.. The multi factor authentication property has been achieved without restrictions

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OFFICE AUTOMATION AND EMAIL AUTOMATION SYSTEM

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ABSTRACT
Office Automation is to automate as many manual processes as possible. These systems are quickly dominating the entire world with its high strategy business control and agility and is also becoming a vital tool in each and every technology. Office Automation systems include collecting, processing, storing, managing, transmitting of data, communication among groups and organizations using automated tools. It helps in reducing manpower, improving efficiency, standardizing business processes and minimizing office cost. It also has the capability to integrate information from different systems in a simple yet flexible manner. The system we are developing is an android application that provides the implementation of these features in a single application. The client sends enquiry related to products via email, so it is necessary to reply those enquiries. Hence it is important for the company to possess the automated email system for normal follow ups with the clients. It also helps the staff to ransack the key points regarding the clients and meetings organized with the clients. Another android application is developed to supervise To Do tasks of employees with date and time and also the staff can set remainders for his or her specific tasks. The technologies that we used to develop the project are Android Studio, Firebase real-time database and SQLite database and Boomerang for Gmail.

Keywords: Office Automation System, Email Automation System, Data Management, Database, Follow ups.

1. INTRODUCTION

Office automation system along with the email automation may be a convenient way for a firm to manage its clients' data efficiently. Employees can retrieve data easily and this project also enables a system that sends emails automatically. The employees of the company can handle and retrieve the clients' information efficiently along with the visit details and quotation details with the help of this project. The login and registration for the staff is authenticated using the firebase. The admin/ owner of the firm can view information stored in the database. The sales engineers and other employees use the android application to store customer, visit and quotation details by filling the forms. The forms that are mentioned above are created using Android Studio and backend used is Firebase real-time database and SQLite database. Another application developed can be used as a substitute for the weekly planner. The application oversees the To Do tasks of employees with the date and time and also the staff can set remainders for his or her specific tasks. The clients' send enquiry of products to the company via emails and therefore the enquiries are answered via emails. Hence, it is important for the company to possess the automated email system for normal follow ups with the clients. Hence to resolve this issue we've used the templates in Gmail and Boomerang to schedule the mails in timely manner.

2. PROPOSED WORK

Office Automation and Email Automation system both are the system designed to automate the processes that takes place in the company.

The complete flow of the system and different functional modules are explained as follows:

2.1 FLOW OF THE SYSTEM

A separate login section for employees and admin is created where each section verifies the user and checks whether the user is authenticated or not. Every new user needs to register first and then only can use the system. After login each user can jump to their respective profiles where they have various tabs of responsibilities. User need to log out from the system after competition of assigned task. The flow of the system is as follows:

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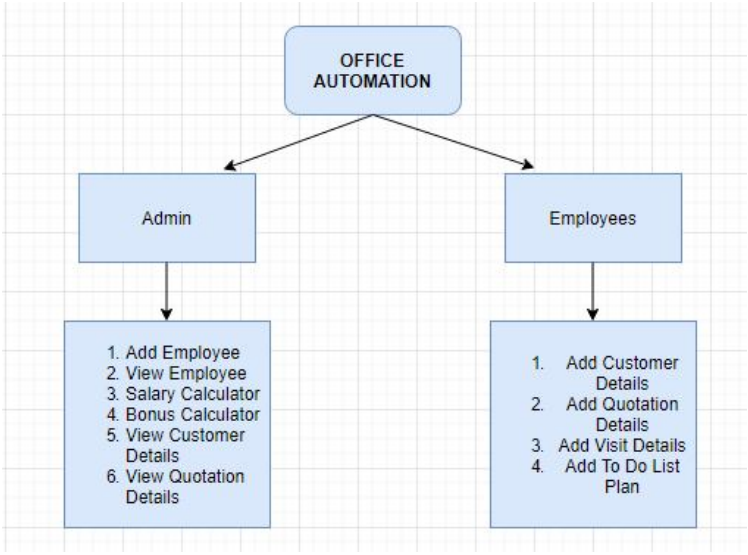

Figure 1. Flow Diagram for Office Automation System

2.2 FUNCTIONAL MODULES

The entire system is divided into two modules Admin module and Employee Module.

1) Admin Module

The admin is highest level authority of the system. It has complete control over the system by supervising different modules and performing its respective tasks.

2) Employee Module

The employee module is responsible for adding details regarding the customers, visit and quotation. The employees are responsible for regular follow ups with the clients.

3. METHODOLOGY

There is a separate login section for employees and admin. Each section verifies the user and checks whether the user is authenticated or not. Every new user needs to register first and then only can use the system. The authentication of the user is done by using the firebase authentication. Once the system finds out that user is authenticated it is allowed to do its respective tasks. The application has separate databases for storing the customer details, visit details and quotation details. Only the employees of the company are permitted to utilize the application. As the sales engineers of the company are mostly on the field to meet various customers over a wide range of area. Hence, it is more feasible for the employees to use their mobile phones to fill in the necessary details on field as well. The visit details consist of the information regarding the meetings with the client and the information about the next point of action to be taken and some other confidential information. Hence, the visit details are stored on Firebase Real-time database. The visit details are stored in the form of JSON tree. The visit details can be viewed by the admin on firebase website. Also, details regarding the customers and quotations send to the customers are stored in SQLite database. Admin can view the customer and quotation details from his module. The employees can set their schedules and remainders for the meetings with the clients. Admin can add and view the employees. The additional feature added in the application is calculator for bonus and salary. The salary calculator breaks down the CTC into monthly – basic salary, House Rent Allowance, Provident Fund, Gratuity, Conveyance, Medical Allowance, Gross Salary, Income Tax, Professional Tax and Net Salary. The bonus calculator breaks down the CTC and calculates the bonus per month for each employee. If the basic salary is greater than Rs. 21000 then no bonus is offered to the employee. The templates are created in Gmail for regular follow up with the clients. The Boomerang is used to schedule the recurring messages for the clients. The recurring messages are stopped once the reply is received from the clients.

4. RESULT

Application consists of Admin Login and Staff Login. Admin and Staff both get different options once logged in. Admin can add and view employee, calculate employee salary and bonus accordingly and some company related options like view quotation details and customer details and then logout. Staff only gets to enter customer related data as follows. An extra feature added to this application where emails can be sent through application wherever necessary by clicking email icon in staff login.

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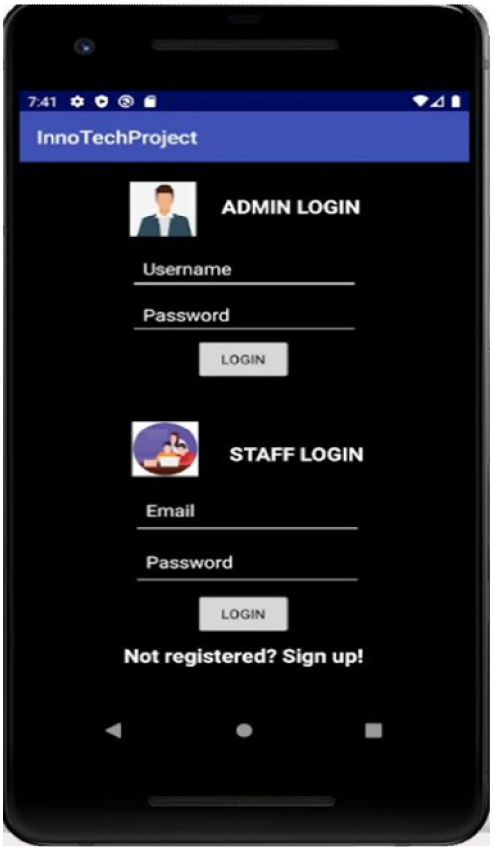

Figure 2. Login Page

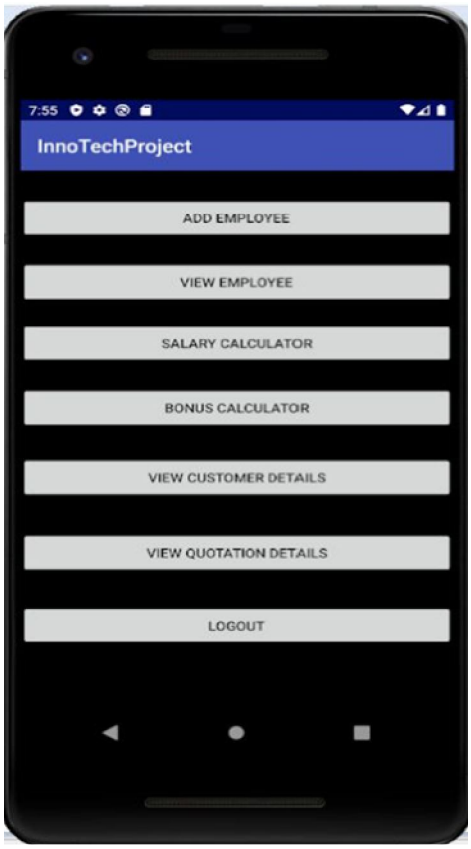

Figure 3. Admin Task

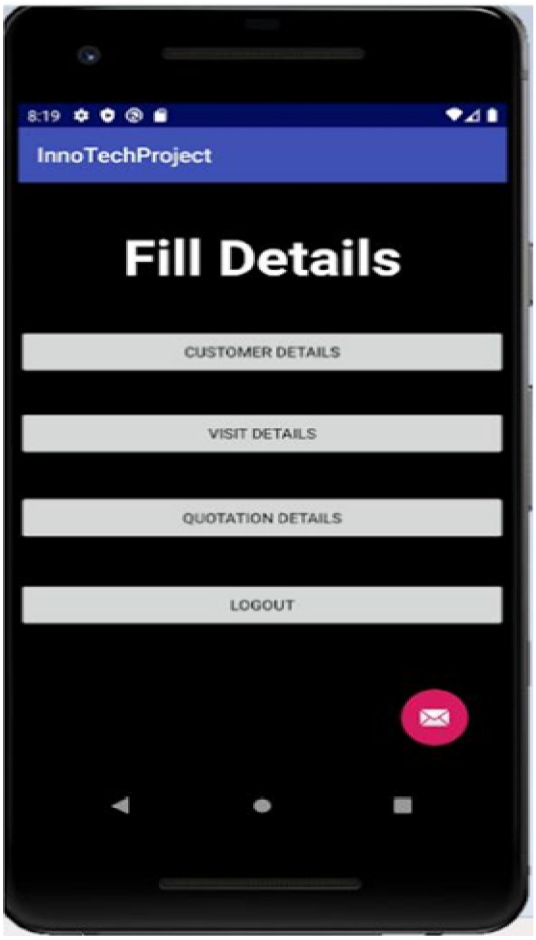

Figure 4. Staff Task

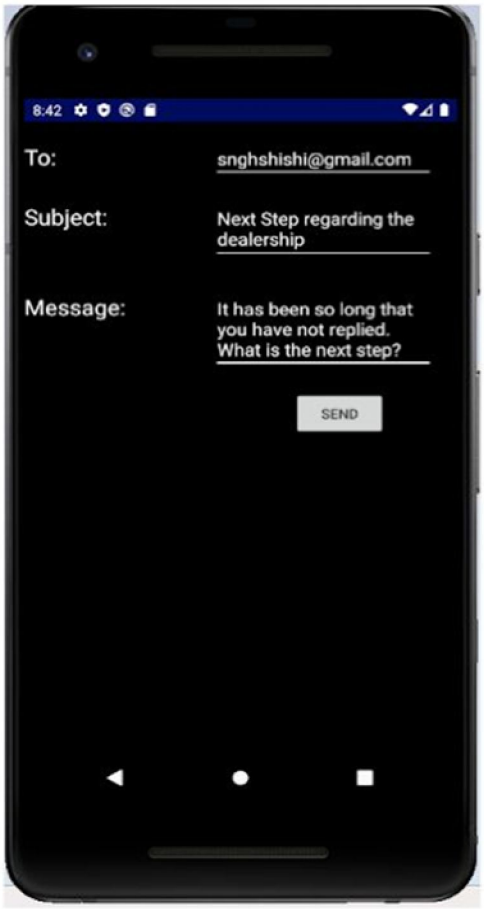

Figure 5. Send Email

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Email Automation: With the help of boomerang, automated emails can be sent to clients for regular follow ups by allotting specific time and date accordingly as follows:

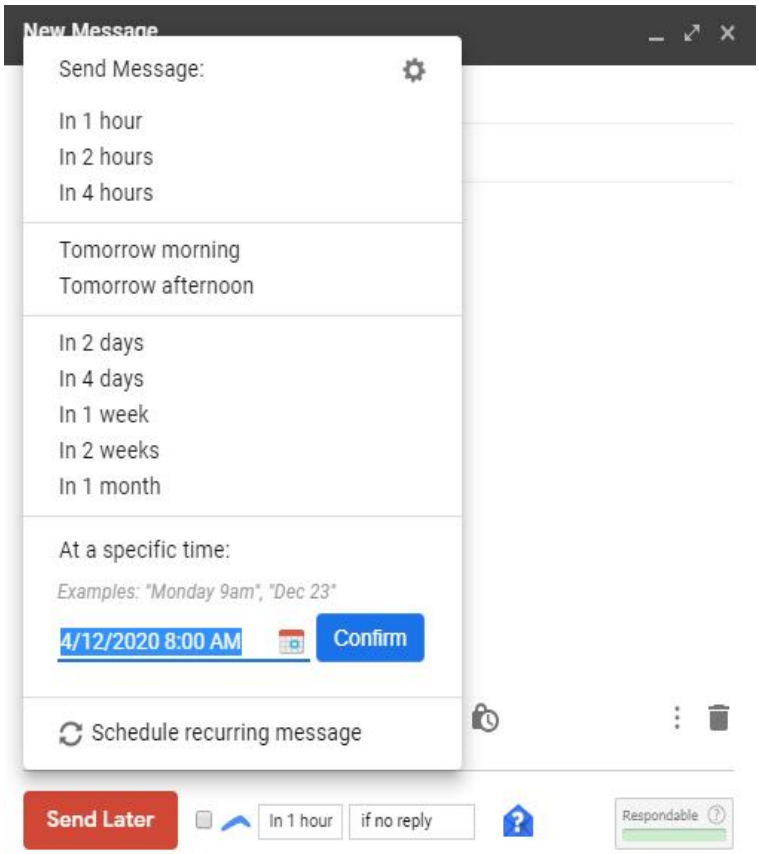

Figure 6. Email Automation

5. CONCLUSION

In the world of digital business, it has become more difficult for the company to maintain and store the data properly. Due to the risk of data mishandling and inconsistency of data, we planned and implemented in all possible ways for benefitting the company. We have focused on modules for managing the confidential information of the company along with the information of their clients.

In office automation system we will automate the ways of internal working of the company management. Using this it is possible to keep track on the confidential information of clients, details about the meetings with the clients, information of every quotation send to the clients and additionally the information of the employees. Database access will be provided only to authorized employees of the company and restricting unauthorized users to read and write data.

Email automation allows employees of the company to send out targeted messages at allotted times or based on specific actions, to build personalized relationships with past, current and future customers.

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OFFLINE CLASSROOM FOR COLLEGE

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ABSTRACT
In this project, Raspberry Pi-based Offline Data Streaming using Android, we used Wi-Fi router to synchronize data between Raspberry Pi and Mobile Application (Android). Raspberry Pi has in built Wi-Fi and Ethernet port for the connectivity. We use memory card as HDD in Raspberry-Pi to store various kind of data. For this system, we use a memory card of size 64 GB to store data in the system. The main purpose of this system is to serve multiple users with training videos, educational books and college notices without using the internet. We only use Wi-Fi to connect mobile devices to the Raspberry Pi. There is no need of Internet connection but only Wi-Fi connection is sufficient to access the data. We can even download the content like training videos and educational books in the mobile application in order to watch them offline when we are not present inside the college premises. In order to manage data (Training videos, Educational book, and notices) we provide a control panel to the system administrator, so that admin can manage content at any time. We use Raspbian OS for Raspberry Pi. We use the XAMPP server in the Raspberry Pi. We prefer to use Apache and MySQL servers in the XAMPP. Android studio will be used for the development of Android Application. Java is used for logic building and XML is used for user interface development of the Android Application.

Keywords:-Raspberry Pi, Android Studio, Wi-Fi, XAMPP

1. INTRODUCTION
With the advance technology and rapid increase of Internet of Things devices in our daily life, we are seeing a growing market of streaming analytic.The Raspberry Pi-based Offline Data Streaming using Android system is specially designed to assist and provide support in order to fulfill the needs of college going students.

In the 21st generation, each and everyone are using android mobile phones that have Wi-Fi function which provides smart browsing capability [1]. By taking advantage of this function, we are going to use offline data streamer that can be used by every user and can enjoy different media that will be stored in the Raspberry Pi by the admin. Since, we are going to use Raspberry Pi that has the inbuilt Wi-Fi hotspot function to broadcast the media [2]. In the Raspberry Pi there is one static IP, in that there are some PHP files which will access to the user end and they will be able to access the data whatever available on the PHP page. All this work will be done on Raspbian OS platform that contains XAMPP Server. By connecting to the WI-FI provided by Raspberry Pi, your phone, tablet or laptop is able to access the data through an offline-server provided by the Raspberry Pi [3]. Videos, books and notices can be loaded, downloaded and read from the user android application.

This system provides the admin as well as user to access the system. Through this system, admin adds any kind of data such as training videos, educational books and important notices. Admin is responsible to add, edit or delete these kinds of data which is stored in the MySQL database in the XAMPP server. All these data is been managed in the Raspbian/ Ubuntu Operating system by the admin. In order to change the data management or storage, the admin has to first login in to the web page of this system. By using this application, any user or any student have to first register incase if the user has to login. Users can also download the video or books for further use in case they are not present in the premises that have the Wi-Fi connection of the system[4]. Users can also read or load videos, books and notices by just connecting to the system. The whole system works mechanically by merely powering the Raspberry Pi.

2. EXISTING SYSTEM
Today various types of media have become an inseparable part of our life. It is used for entertainment, to gain require information as well as for educational purposes. Hence, it has become most important to provide good streaming speed on the internet. It is almost impossible to play any video continuously until it is of a poor quality. It is difficult to find many types of media within a single web-page. Streaming is the process which enables this, by viewing a media while downloading it. Streaming is one of the technologies for playing audio and video files from a Web page. There are various users that wish to play an audio or video file over the internet. In this system, It is necessary to download the video file when it is played over a network. However, user can view the video or audio files directly from the Web server for immediate playback. When an audio/video file is streamed it does not play continuously. Streaming is a process where the file is downloaded

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from the network into the system buffer which is a time consuming process. When audio or video is streamed, a small buffer is created on the computer, and data starts downloading into it. As soon as the buffer is full, the file starts to play and it uses information in the buffer, but while it is playing, more data is being downloaded. Thus, the whole system is time consuming and has complex process.

3. PROPOSED SYSTEM

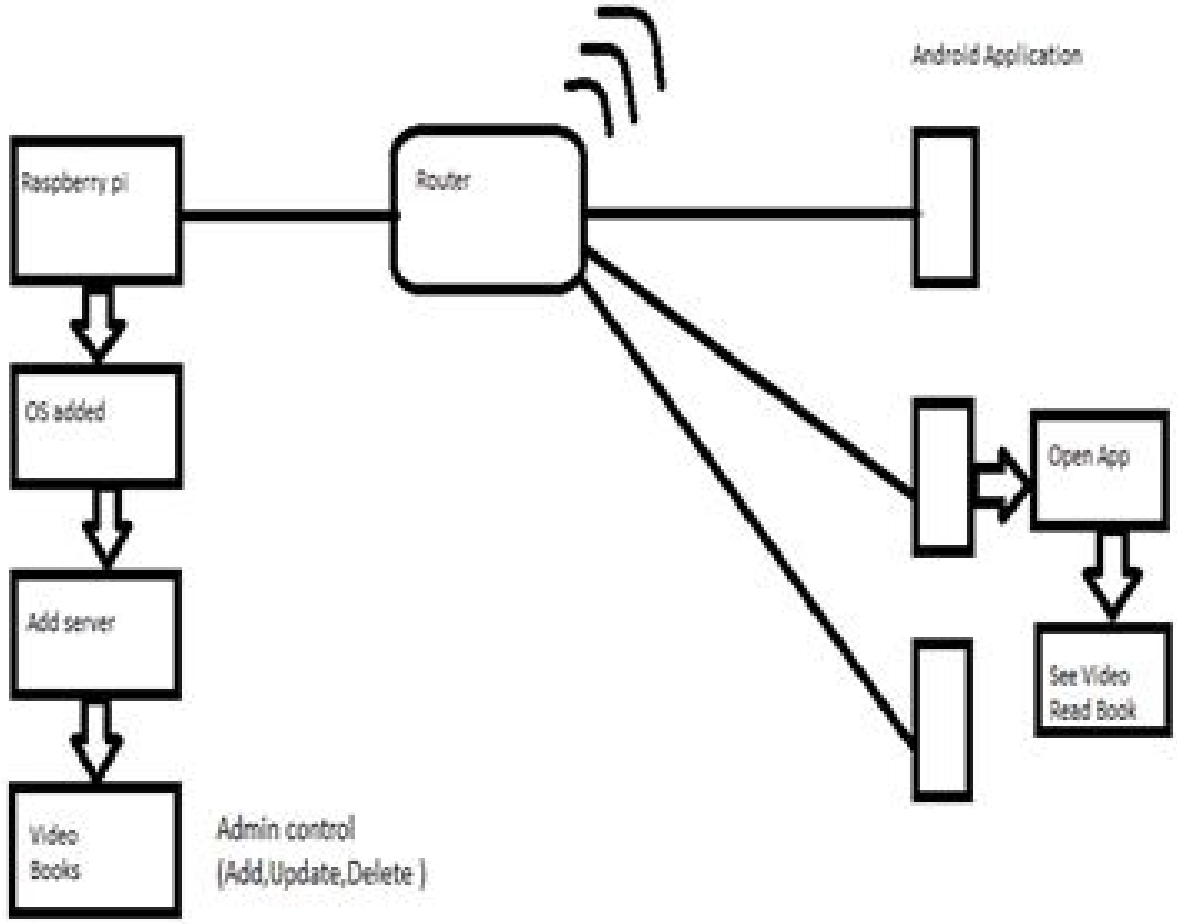

Figure 1. Block diagram of proposed system

From the literature survey it is concluded that there are various system for streaming the video files which is very time consuming process. To overcome this drawback of time consumption and complexity, the proposed method is been developed which is very useful.

Raspberry Pi based Offline Data Streaming using Android is the proposed system.The main component of this proposed system is Raspberry Pi. We have used Raspberry Pi for the admin panel wherein admin manages all the data that needs to be stored in the MySQL database of Raspberry Pi. In Raspberry Pi we are using HDD memory card which has 64 GB of capacity to store all the data.Admin manages all the training videos, educational books and important notices in the MySQL database. Admin can also add, edit as well as delete any kind of data from the database. In this system, we are using WI-FI routerin order to synchronize the data from Raspberry Pi to the mobile android application. Since, Raspberry Pi has in built Wi-Fi and Ethernet connection, the data is been transferred through this connectivity to various android application users. Applications users will first have to get connect to the Raspberry PiWi-Fi so that to get all the videos,books and notices displayed in their application.After getting the access to the Wi-Fi, if user is not logged in into the application,user will have to register first. This data is being sent from Raspberry Pi to their application. Users can also download the video or books for further use in case they are not present in the premises that have the Wi-Fi connection of the system. Users can also read or load videos, books and notices by just connecting to the system .

4. UNIFIED MODELLING LANGUAGE (UML)

4.1. CLASS DIAGRAM

A class diagram is an illustration of the relationships and the source code dependencies among classes in the UML

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A class diagram models the static structure of an application. It shows relationships between the classes, objects, attributes and operations.

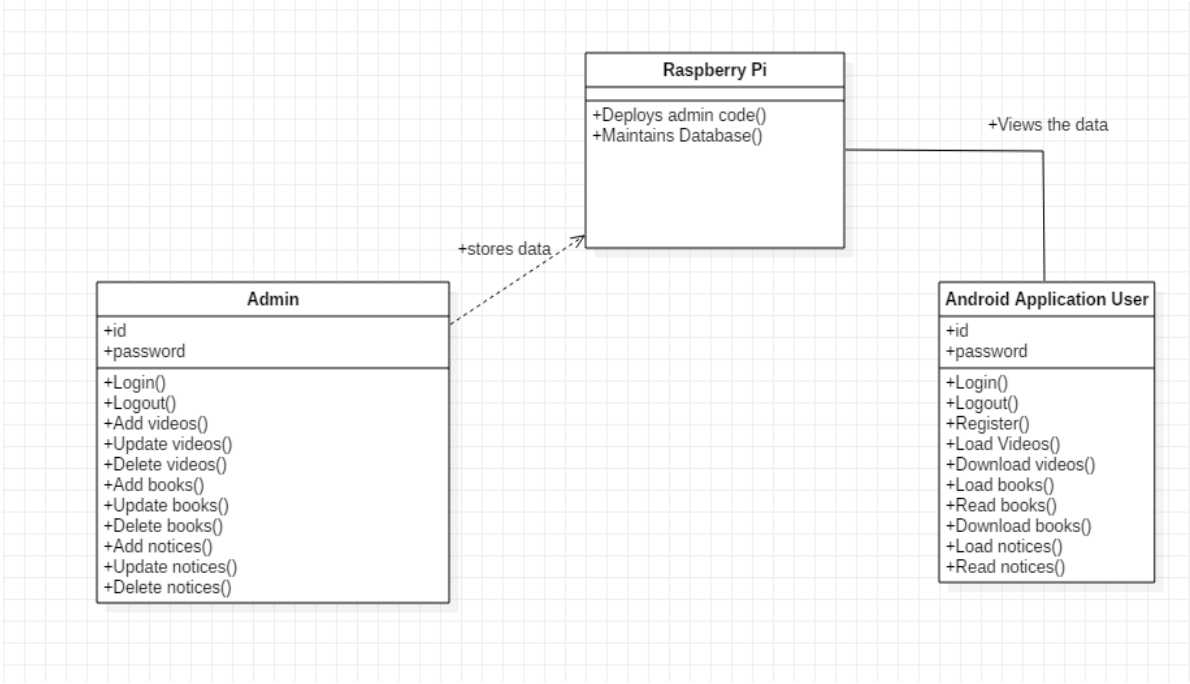

Figure 2. Class Diagram

4.2. ACTIVITY DIAGRAM

Activity diagram describes the dynamic aspects of the application. It is essentially an advanced version of flowchart modeling the flow from one activity to another activity. It describes how activities are coordinated to provide a service which can be at different levels of abstraction

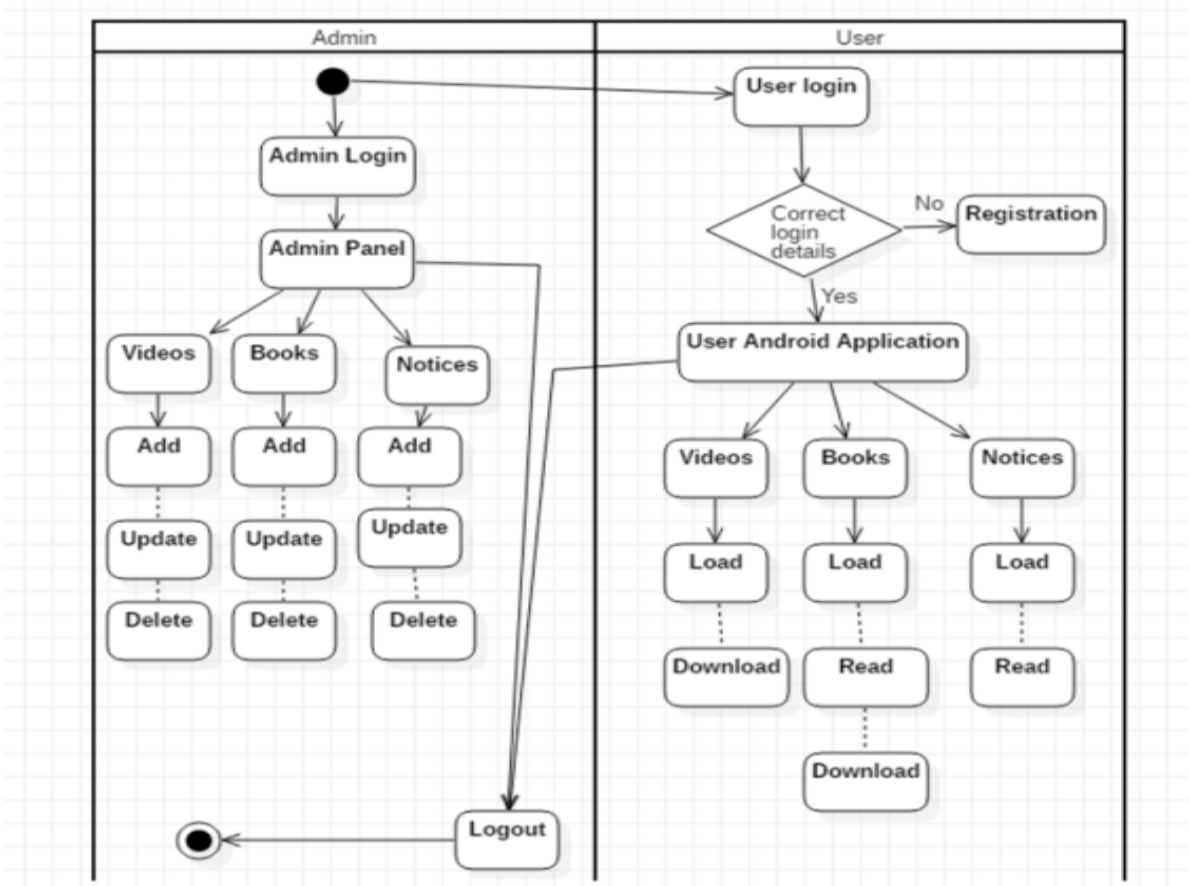

Figure 3. Activity Diagram

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4.3. PROCEDURE DIAGRAM

A process flowchart is a graphical representation of business process through a flowchart. Its used as a means of getting top-down understanding of how a process works, what steps it consist of, what events change outcomes, and so on.

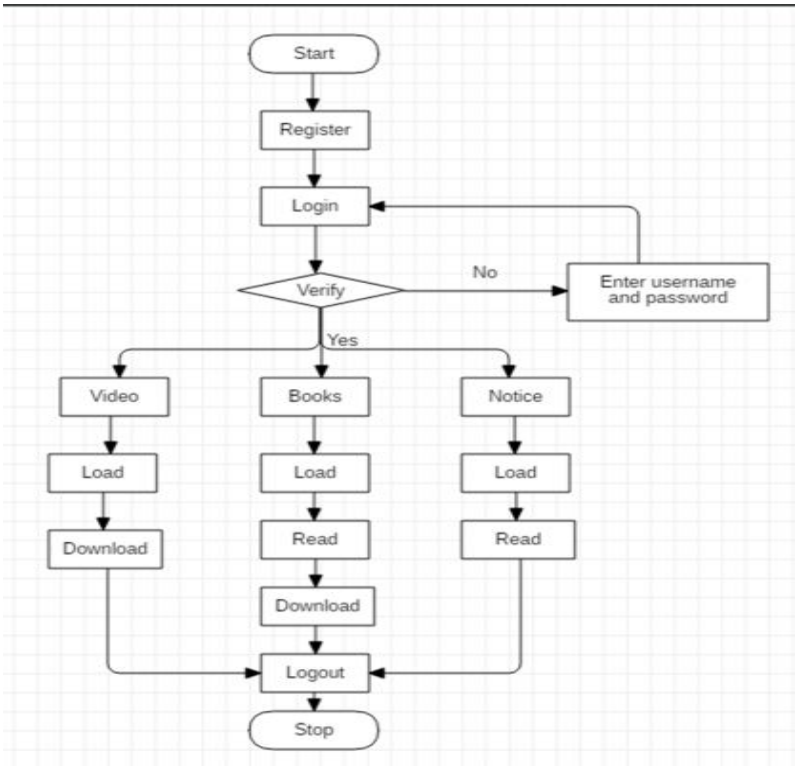

Figure 4 Procedure Diagram

5. RESULTS

Client site:

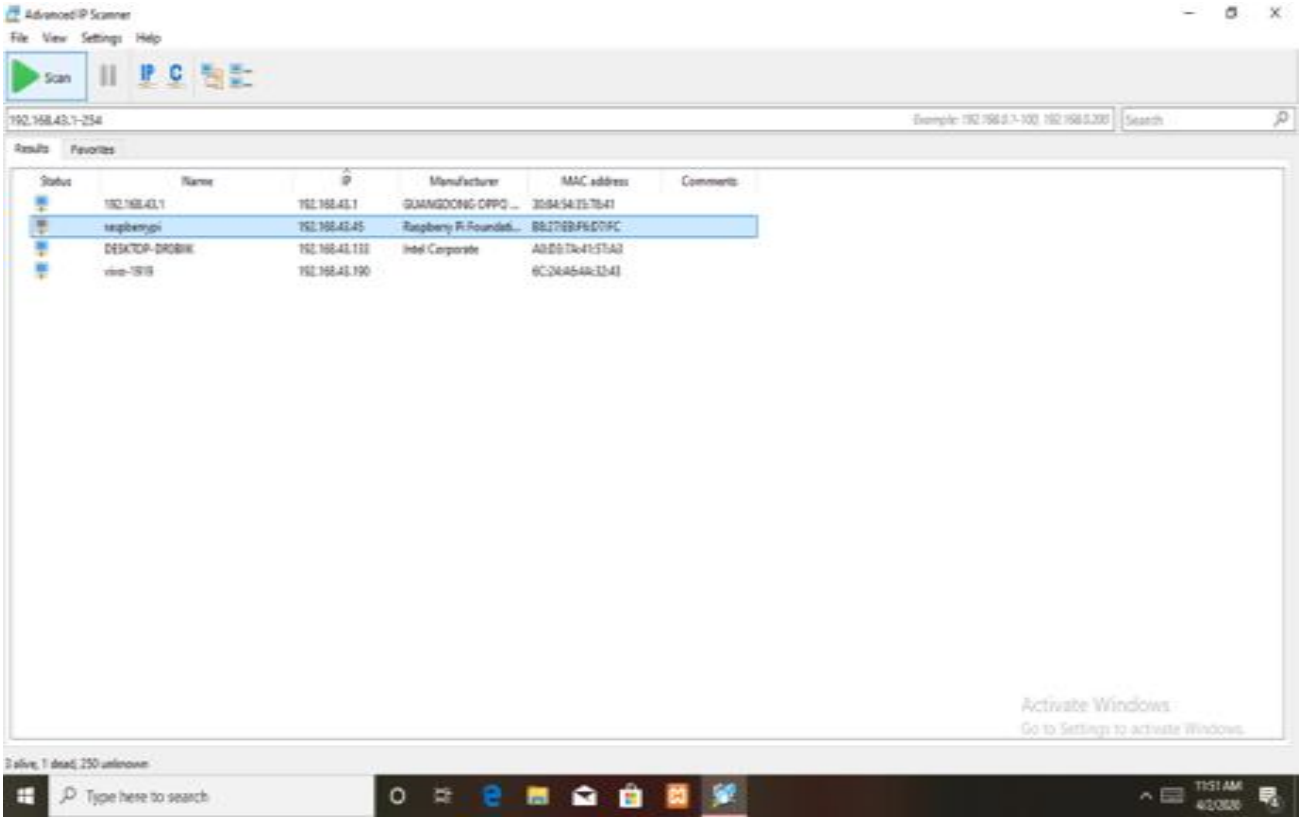

Figure 5. Client Site

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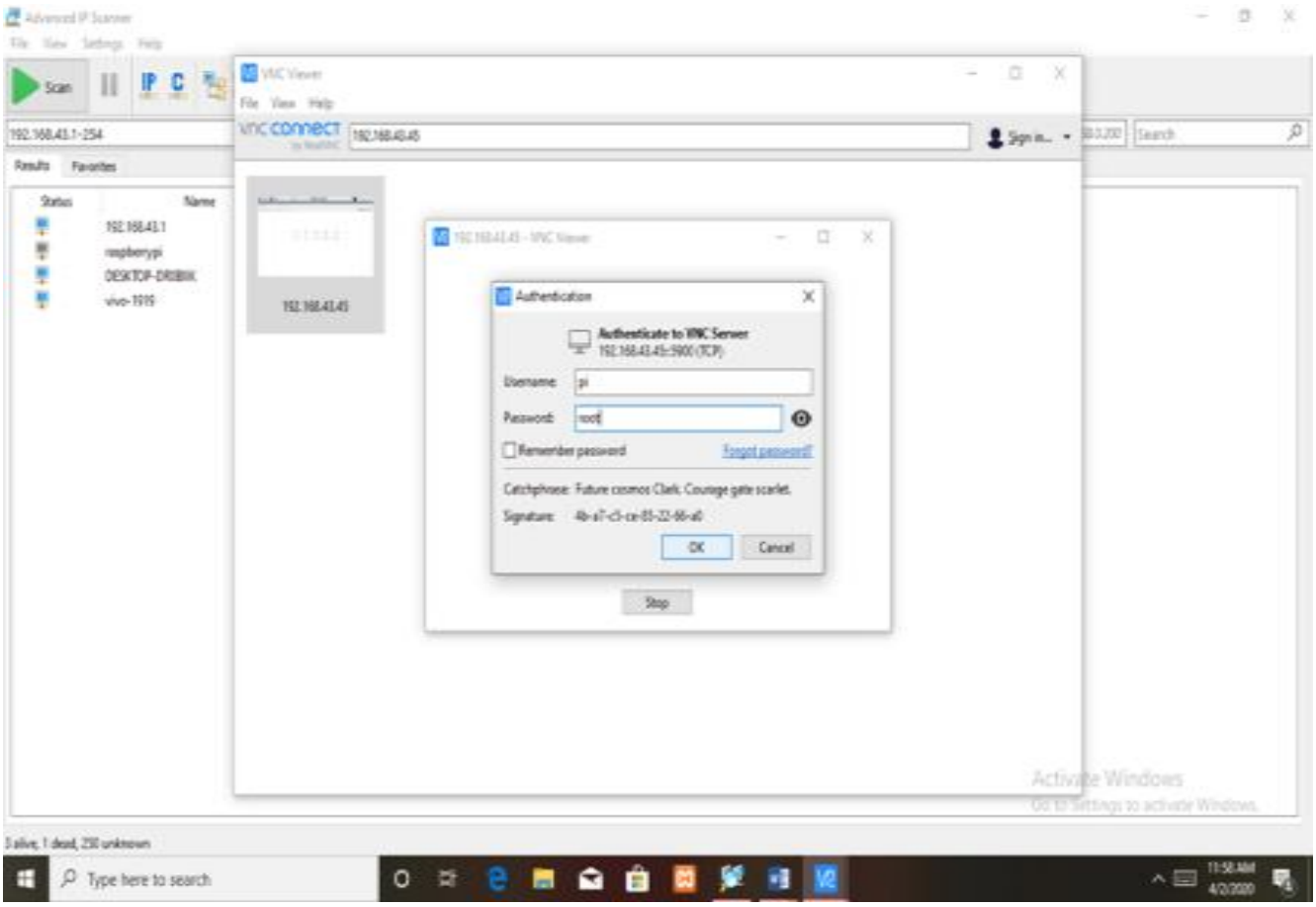

Figure 6. Client Site

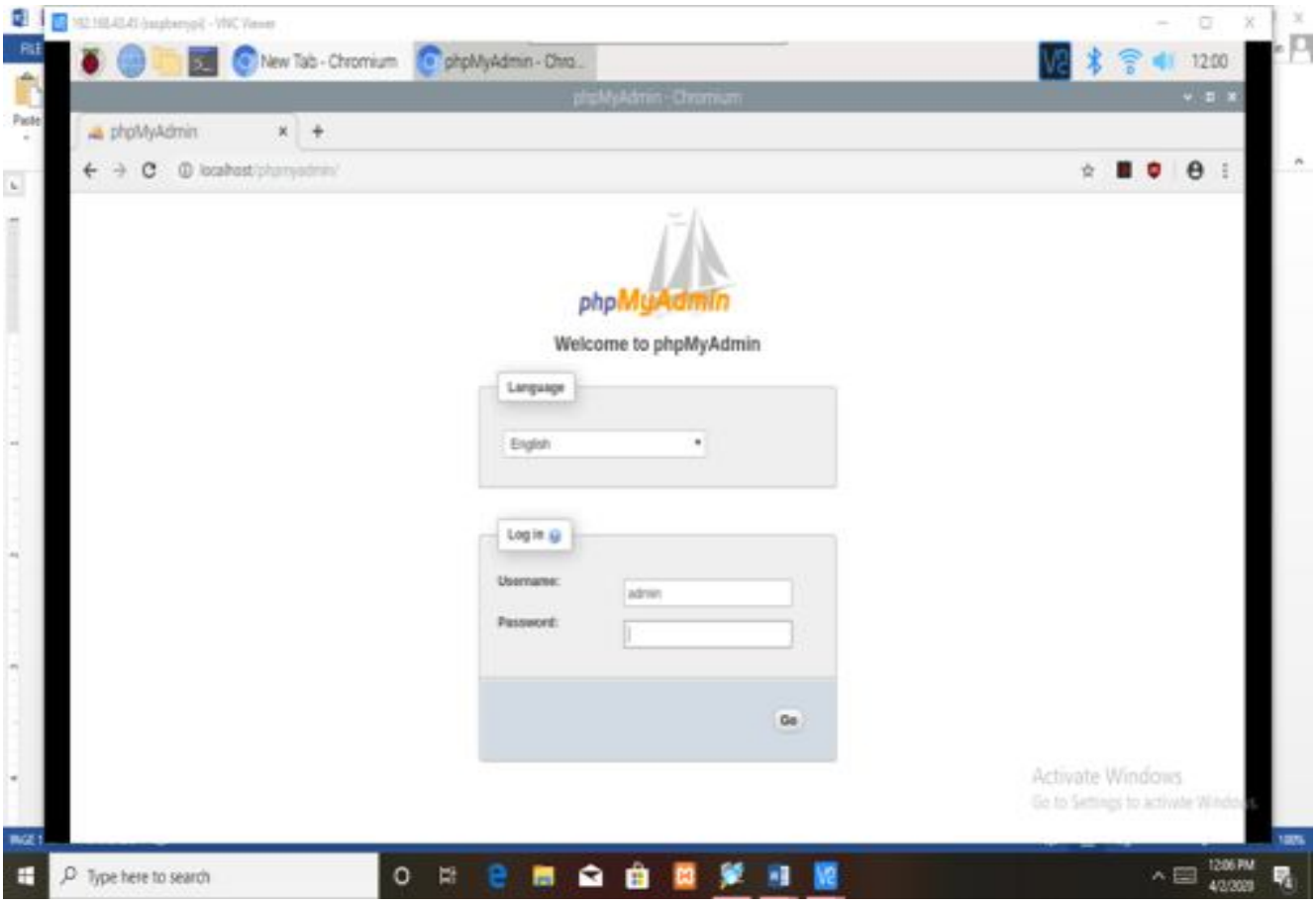

Figure 7. Client Site

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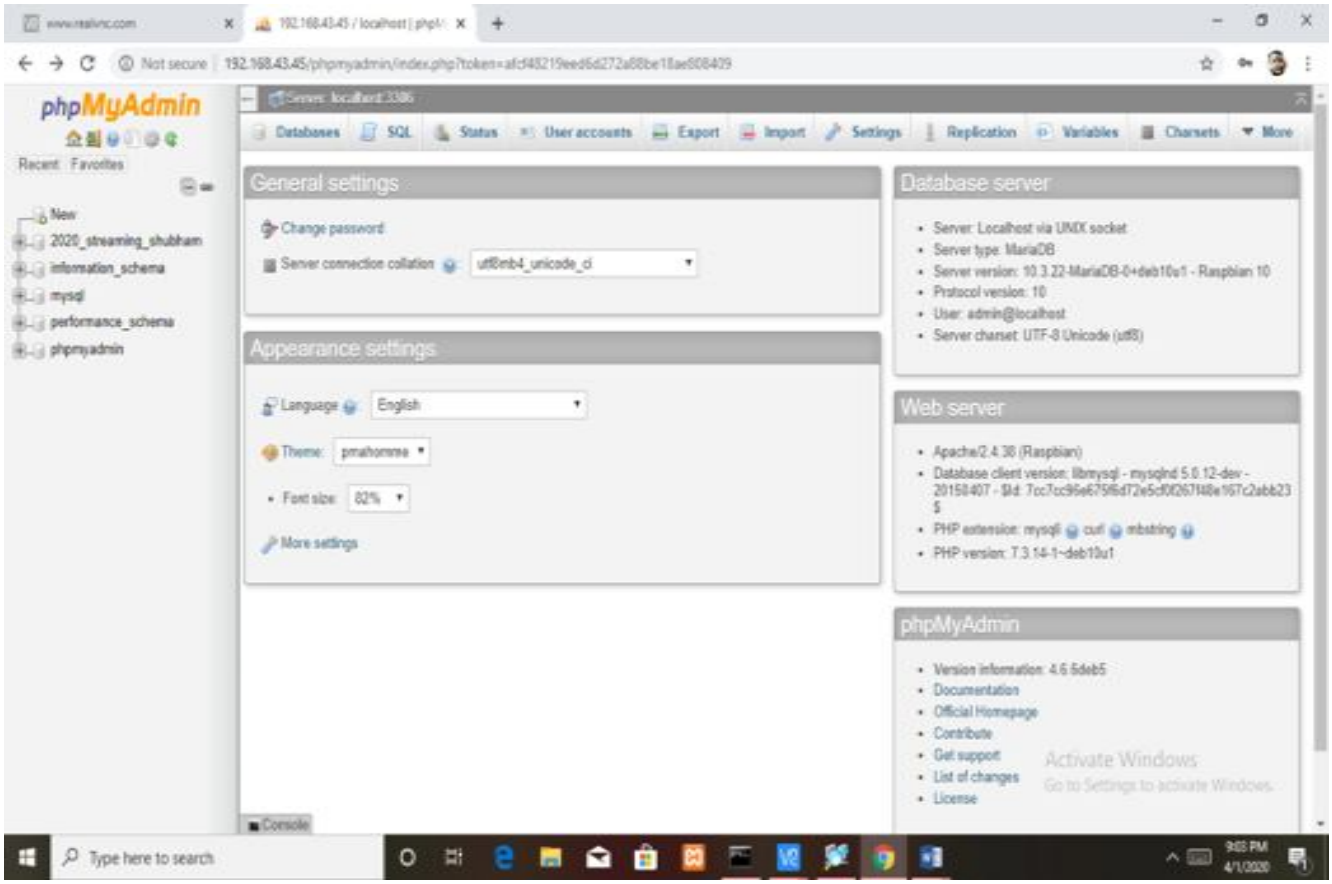

Figure 8. Client site

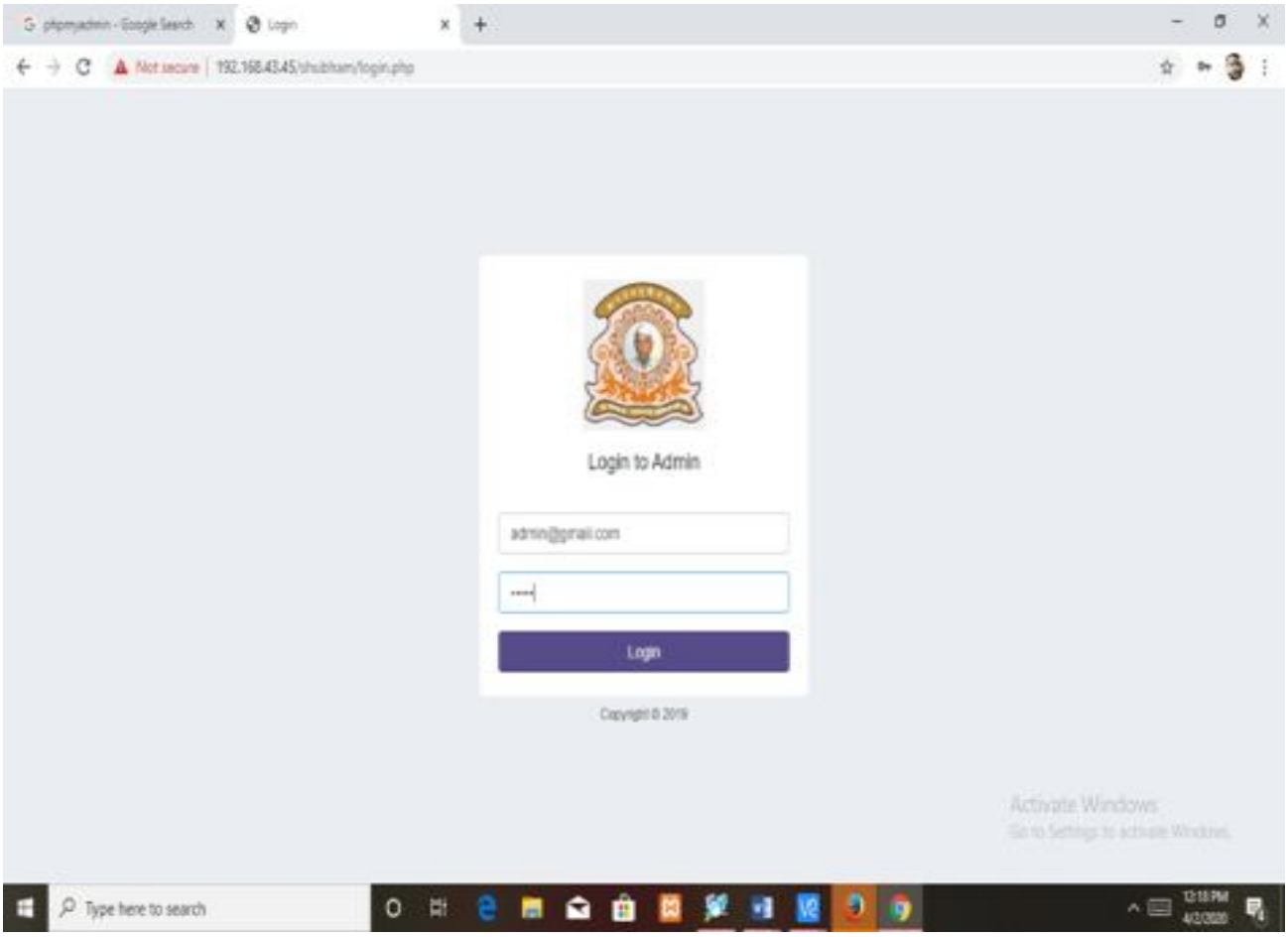

Figure 9. Admin login

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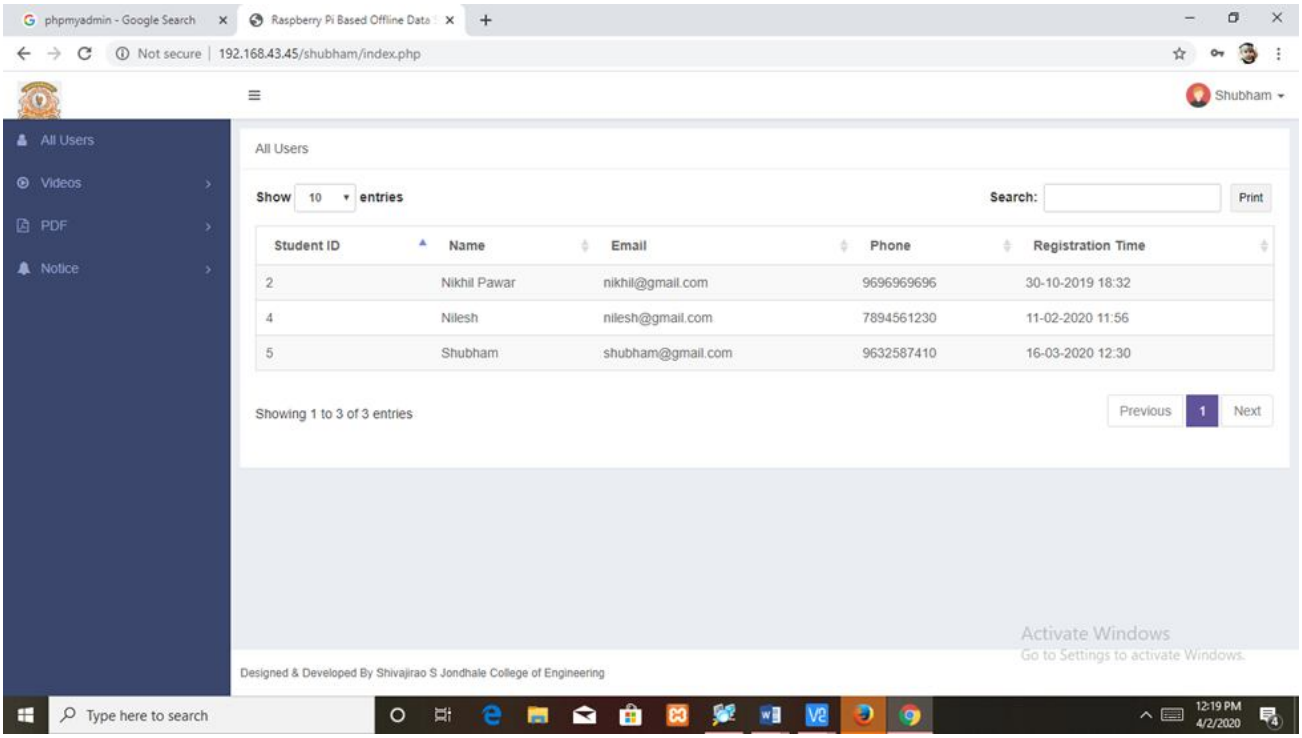

Figure 10. Admin access content

User site:

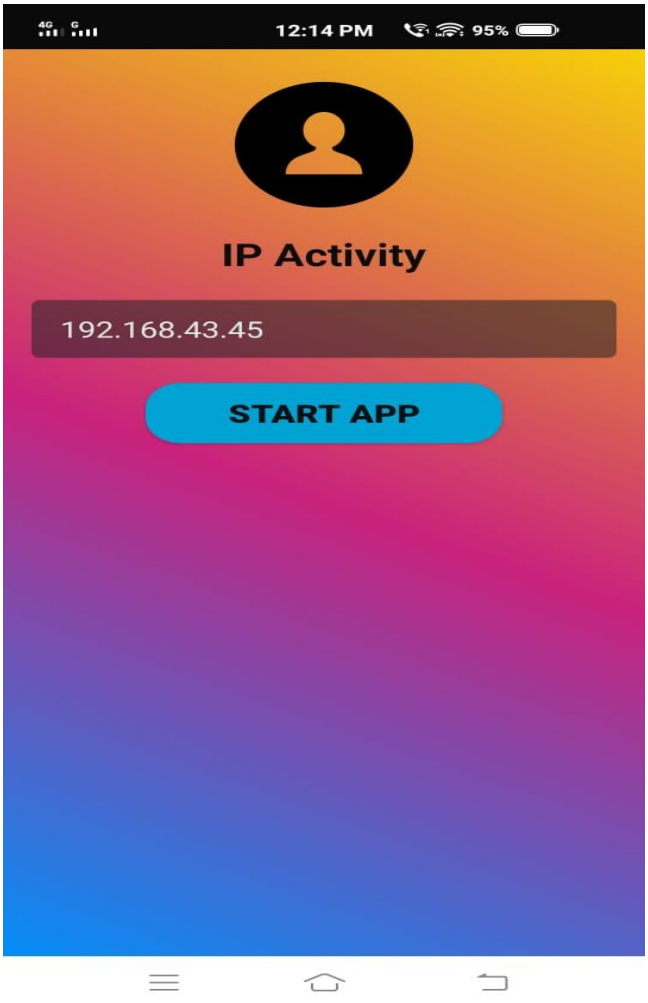

Figure 11. Ip Activity

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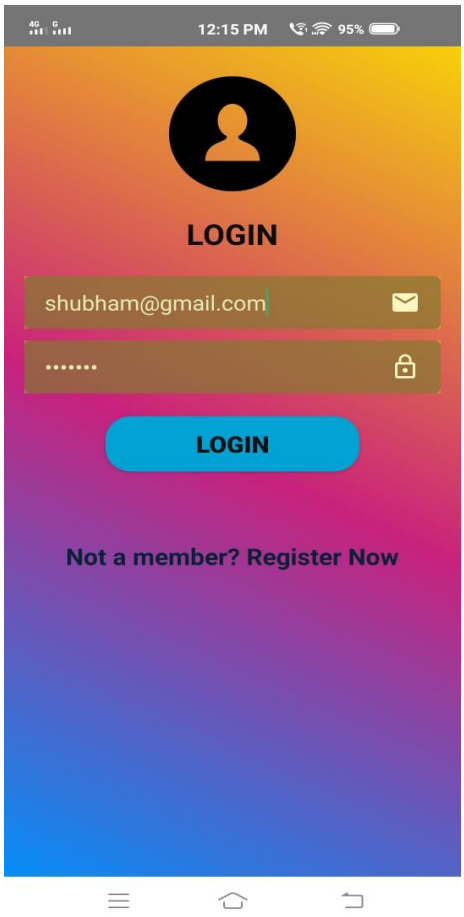

Figure 12. Login Page

Figure 13. Offline video Streaming

Figure 14. Offline Notes

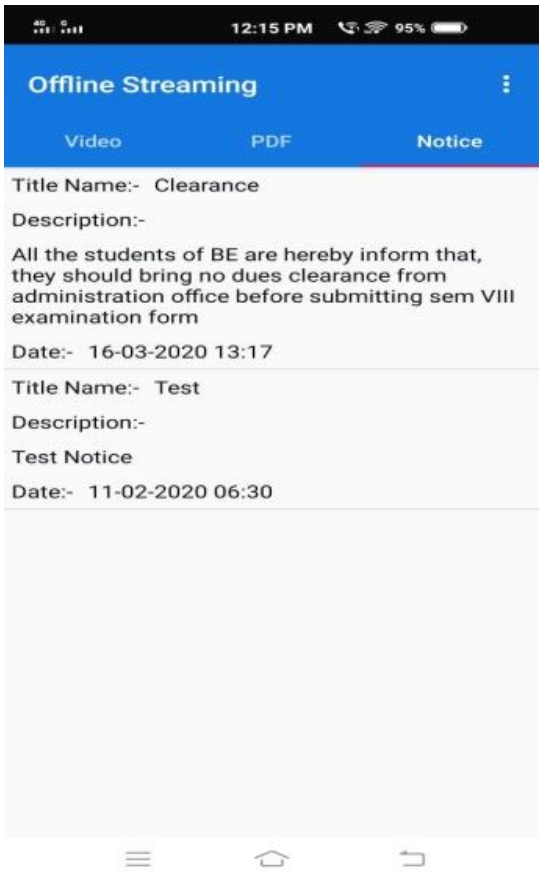

Figure 15. Notice Updates

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6. CONCLUSION

This system is regarding offline data streamer for that RaspbianOS platform is being used. It is developed to help the students present in the college to view or download any data which is loaded using Raspberry pi by the admin. The users should have the android application in order to get connect to the system through Wi-Fi feature which is provided by Raspberry pi. Thus, after being connected through Wi-Fi, users are able to access through data and can even download the data to view it offline. This data includes training videos, educational books and important notices.

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ONLINE LEARNING LICENCE EXAMINATION USING FACE DETECTION AND RECOGNITION

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ABSTRACT
In today's world that witnesses an ever-changing scenario in various fields, the concept of an "examination" too has changed. From the traditional methods of pen-and-paper and Optical Mark Recognition (OMR), it has evolved into 'Online Examinations', which are a lot more flexible, time-saving as well as require much fewer resources. However, they have certain drawbacks too. While the uncertainties involved in the working of the electronic equipment and server break-down' do affect the examination. The developments in technology have helped overcome these. However, the most important problem faced by online examinations is the authenticity of the student who is taking it and offline verification of document. Impersonation, as it is called, is in fact, due to the negligence (or in certain cases due to the cooperation) of the human factors that are present at the examination centre. In order to eliminate these human factors, to ensure that impersonation, if any, can be easily detected, and the impersonator is not allowed to take the examination. For this purpose biometric verification(face detection and recognition) of the candidate is done. And the online verification of documents using OCR(Optical Character Recognition) is used in our system of online learning licence examination in order to overcome the offline verification of document.

Keywords: Online Examination, Face Detection and Recognition, Optical Character Recognition

1. INTRODUCTION

In today's world that witnesses an ever-changing scenario in the technical fields, the concept of an "examination" too has changed. From the traditional methods of pen-and-paper and Optical Mark Recognition (OMR), it has evolved into 'Online Examinations', which are a lot more flexible, time-saving as well as require much fewer resources[12].

However, the most important problem faced by online examinations is the authenticity of the student. So, there is need to eliminate these human factors, to ensure that impersonation, if any, can be easily detected.For this purpose, biometric verification (Fingerprinting verification, Face detection and Recognition etc.) of the candidate is done [11].

Face detection and recognition is becoming popular and is in demand because of its requirements such as authentication, access control, and surveillance system.So, there is need to come up with an approach that is a good candidate for face detection and face recognition.For this purpose, several existing face detection and recognition approaches are analyzed and discussed [7].Local Binary Patterns Histogram algorithm can be used for identifying a face. It can acknowlege the existence both from front and side faces and improve the value of poor enlightened picture and also enlarge the recognition rate in real time [10].

But still, the offline verification of documents in online examination is one the problem faced. So, there is need to implement the online verification method to overcome the shortcoming in online examination. Therefore has to review and analyzed different methods for text recognition from images in order to validate the document [4].OCR (Optical Character Recognition) can be used for online validating the document.This technology allows to automatically recognizing characters through an optical mechanism [2].

2. LITERATURE REVIEW

Phases included in Literature survey of Online Learning Licence Examination using face detection & recognition are as follows:

1. Literature review on Verification Of Document
2. Literature review on Face Recognition
3. Online Learning Licence Examination

For the verification phase, the author [1] has explained all phases of Optical Character Recognition.The author [2] had used the feature extraction,classification and various phases to increase the accuracy of OCR.The author [3] had proposed the preprocessing method which consists of the segmentation step and image classification step.The proposed preprocessing method improves Tesseract OCR performance by approximately 20%.The author [4] has reviewed and analyzed different methods to find text characters from scene images and also has

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reviewed basic architecture of text recognition from images.The author [5] has summarized the method of extracting text from images in order to prove tesseract to be efficient for OCR system.

For the Face recognition and detection phase,the author [6] summarizes the system developed for face detection and recognition using OpenCV.The author [7] has summarized several existing face detection and recognition approaches and discussed.each approach is discussed briefly&compared with the other in terms of key evaluation parameters in order to come up with an approach that is a good candidate for face detection and face recognition.The author [8] has proposed new human face detection algorithm by primitive Haar cascade algorithm combined with three additional weak classifiers to show effective performance.The author [9] shows that using LBPH the multiple faces are detected at a single trainer set and its accuracy is high .The author [10] summarizes face recognition system based on Local Binary Patterns histogram algorithm for recognizing faces.

For the Online Examination Phase,author [11] had presented impersonation detection in online examination.It provides the facility of minimal human intervention and does not depend on the trustworthiness of the invigilators present in the examination hall.The author [12] has explained the online examination that saves time as it allows number of user to give exam at a time.The author [13] has used Robust Automated Face Detection & Recognition system .It is developed and employed for Detecting Impersonation of Candidates in the examination system.

2.1 PROBLEMS WITH EXISTING SYSTEMS

After studying the existing work , there are some challenges which are listed below:

1. The existing system does the offline verification of documents. Due to offline verification the numbers of R.T.O centres are limited.
2. The existing system is time consuming. As the numbers of R.T.O centres are limited the one who is giving exam has to travel long distances leading to the time consuming system.
3. The existing system does not use the biometric security system for identifying individual. Biometric security like fingerprint, face recognition are not used leading to not secure and reliable system.

3. PROBLEM DEFINITION

Online learning licence Examination System is an online project built to help to conduct online examination. The aim of this project is to provide quick an easy way to appear the exam. It can provide the special advantage for that user/ applicant who lives far away from the location of R.T.O/examination centre. The online system automatically adds the marks allocated in each question as per the correct or wrong answer to get the result. A time limit is set for the examination process. Login module helps the user to login to the site.so to get the login ID user first need to register for the examination. During registration a unique register number will be given for each user to login the site. The applicant will also undergo the verification process to check whether that user is authorized or not using face recognition and document verification process.

4. PROPOSED WORK

4.1 ARCHITECTURE OF PROPOSED SYSTEM

The architecture is mainly consisting of two parts which is registration phase and examination phase.

4.1.1 REGISTRATION PHASE

In registration phase examiners have to fill the details, upload document and also captures the candidate's image. While uploading document, system itself checks whether that uploaded document is valid or not using OCR. After registration, system creates login ID for that examiner.

4.1.2 EXAMINATION PHASE

The Face Recognition, Aadhar number and ID verification is done in this stage for the identification of examiner. After the identification of examiner the online learning licence exam will start. As it is a time based exam, the examiner has to complete the entire exam in that particular time only, as the time completed the exam will automatically stop and the result will display on screen. And then print of that result will get to that examiner for their further process.

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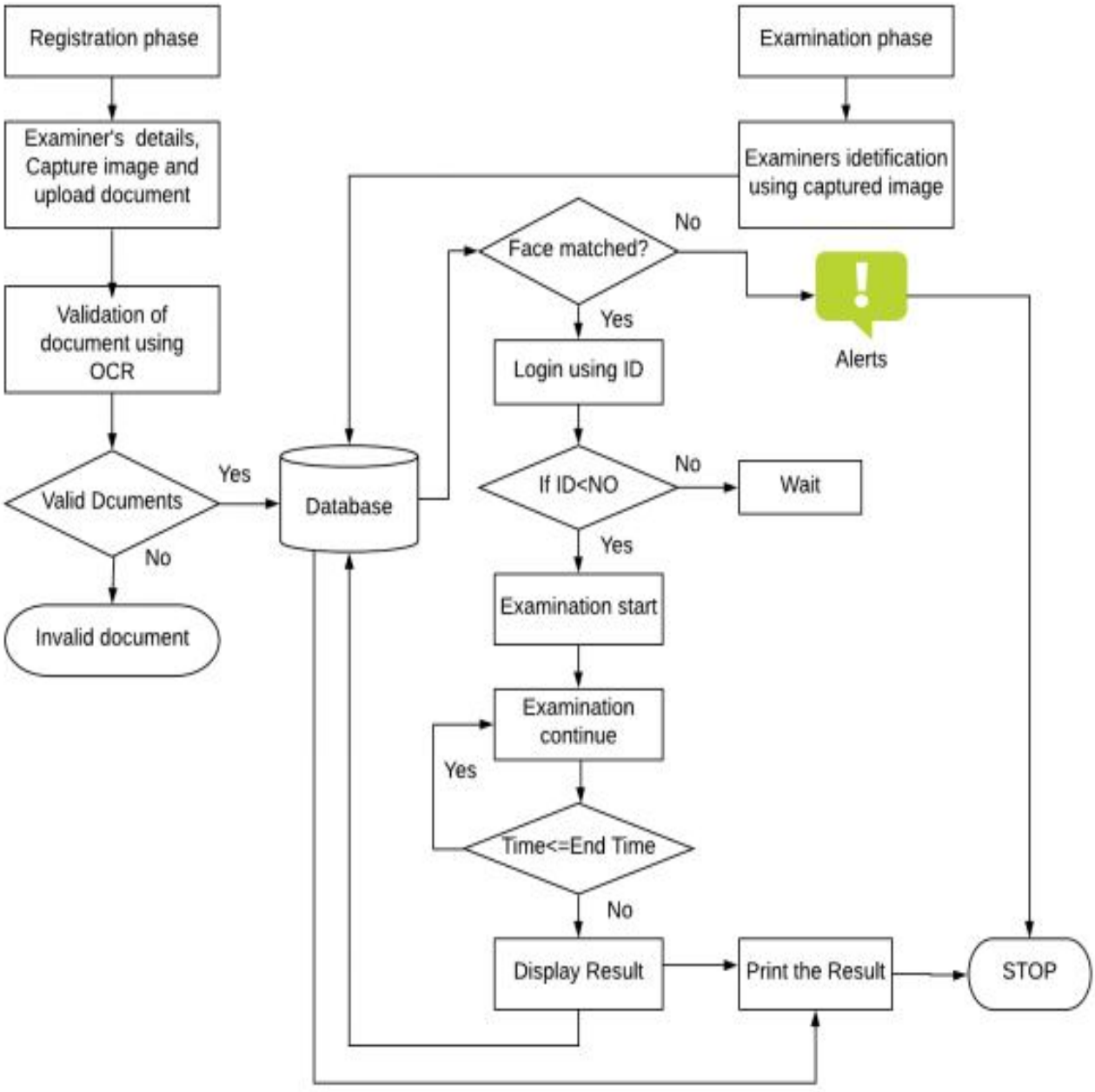

Figure 1. Architecture of Proposed System

4.2 OPTICAL CHARACTER RECOGNITION (OCR)

Optical character recognition (OCR) is the conversion of scanned images of printed, handwritten or typewritten text into machine-encoded text. The OCR system primarily involves four steps: Pre-processing, Features extraction, Features training, and Feature matching. Flow chart of the OCR is shown in Figure 4

Algorithm for OCR:

STEP 1: Take input image.

STEP 2: Convert input image into editable text document.

STEP 3: Pre-processing and feature extraction is done on test data.

STEP 4: Feature extracted from test data is compared with feature extracted from training data.

STEP 5: If the extracted feature is matched then go to step 7 else go to step 6.

STEP 6: Invalid document.

STEP 7: document is successfully uploaded.

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4.3 OPENCV

OpenCV (Open Source Computer Vision) is a library of a programming functions mainly aimed to use at real-time computer vision. In simple language it is library used for Image Processing.Haar Cascade classifier is used for face detection. Haar cascade classifier lies on the concept of Viola Jones detection algorithm which trained a lot of input faces and non-faces and training a classifier which identifies a face.

4.3.1 LOCAL BINARY PATTERN HISTOGRAM (LBPH) ALGORITHM

The Local Binary Pattern Histogram (LBPH) algorithm is a simple solution on face recognition problem

Steps for the Algorithm LBPH in face recognition:

STEP 1: Take three parameters **Neighbours,** Grid X (the number of cells in the horizontal direction), Grid Y (the number of cells in the vertical direction).

STEP 2: Train the algorithm, to do so we need to utilize dataset with facial image. We need to also place an ID (it may be a number or the name of the person) for each and every image, so that algorithm will use this information to identify an input image and give you an output.

STEP 3: Apply LBP operation:

i. Take a facial image in gray scale.

ii. We can get a section of this image as a window of 3×3 pixel (0~255).

iii. Then, take a central value of matrix which is to be used as threshold.

iv. For each neighbour of the central value, set a new binary value.

v. Set 1 for value equal to higher than threshold value and set 0 for value lower than the threshold value.

vi. Now, concatenate all the binary values

vii. After that, convert this binary value to decimal value and set it to the centre value of matrix.

STEP 4: Extracting the histogram:

i. Now, using the image generated in step 3.

ii. Take grid X and grid Y parameter to divide the image into multiple grid

iii. Each histogram will contain 256 positions (0~255) to represent each pixel intensity.

iv. After that concatenate each histogram to create new histogram to create new histogram.

v. Assume we have 8×8 grid, then for 256 positions, we will have 8×8×256 = 16,384 position in final histogram.

vi. Final histogram represents the features of original image.

STEP 5: Performing face recognition operation:

i. Take a new image for face recognition.

ii. And again perform the steps 4 for this new image and generate histogram which constitute the image.

iii. Now, matched this input image by noting the similarities and dissimilarities between two histograms.

iv. To compare the histogram, use the Euclidean distance.

D = $\sqrt{\sum_{i=1}^{n} (hist1_i - hist2_i)^2}$

v. If the histogram vale matched the value store in ID with that name then it shows face matched.

vi. Else face not matched.

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5. RESULTS

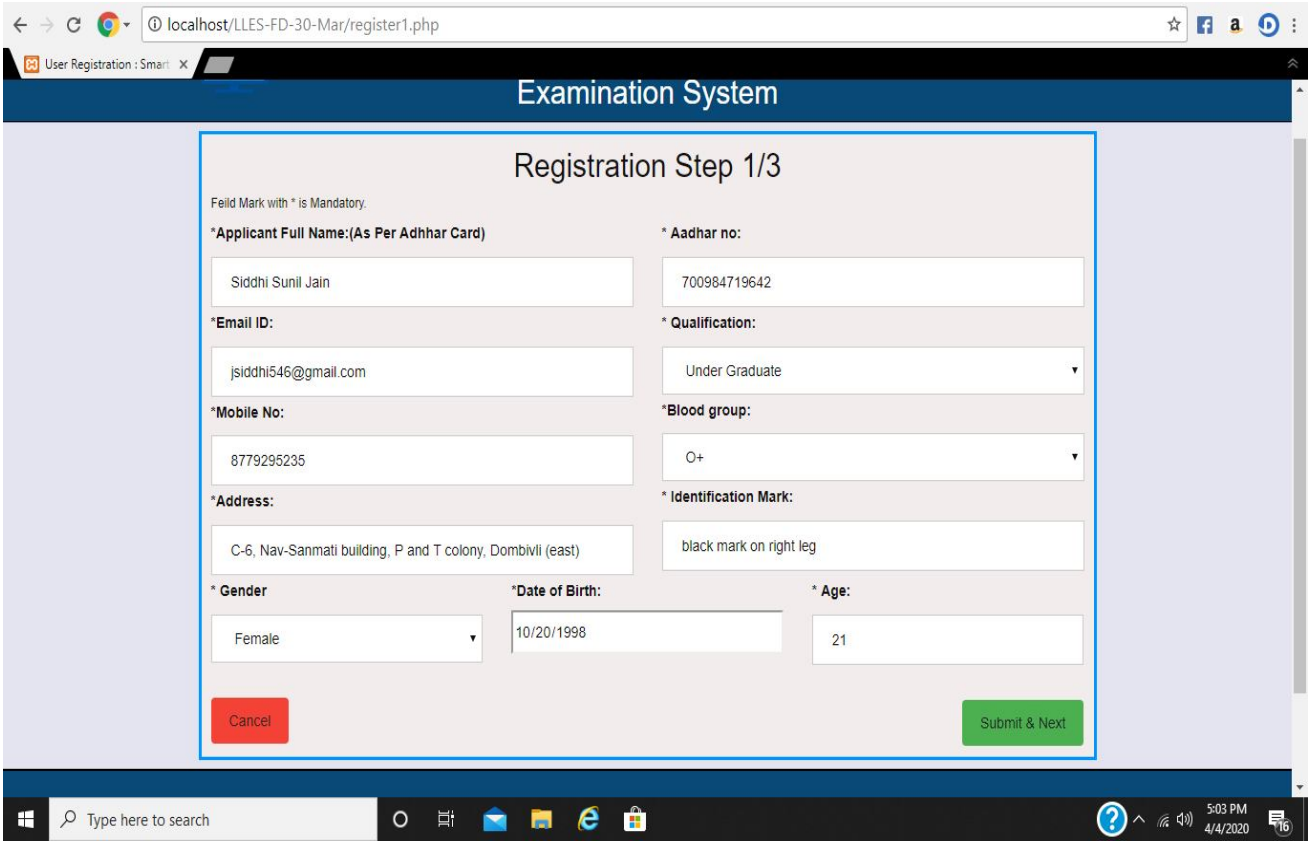

Figure 2. Registration Step 1

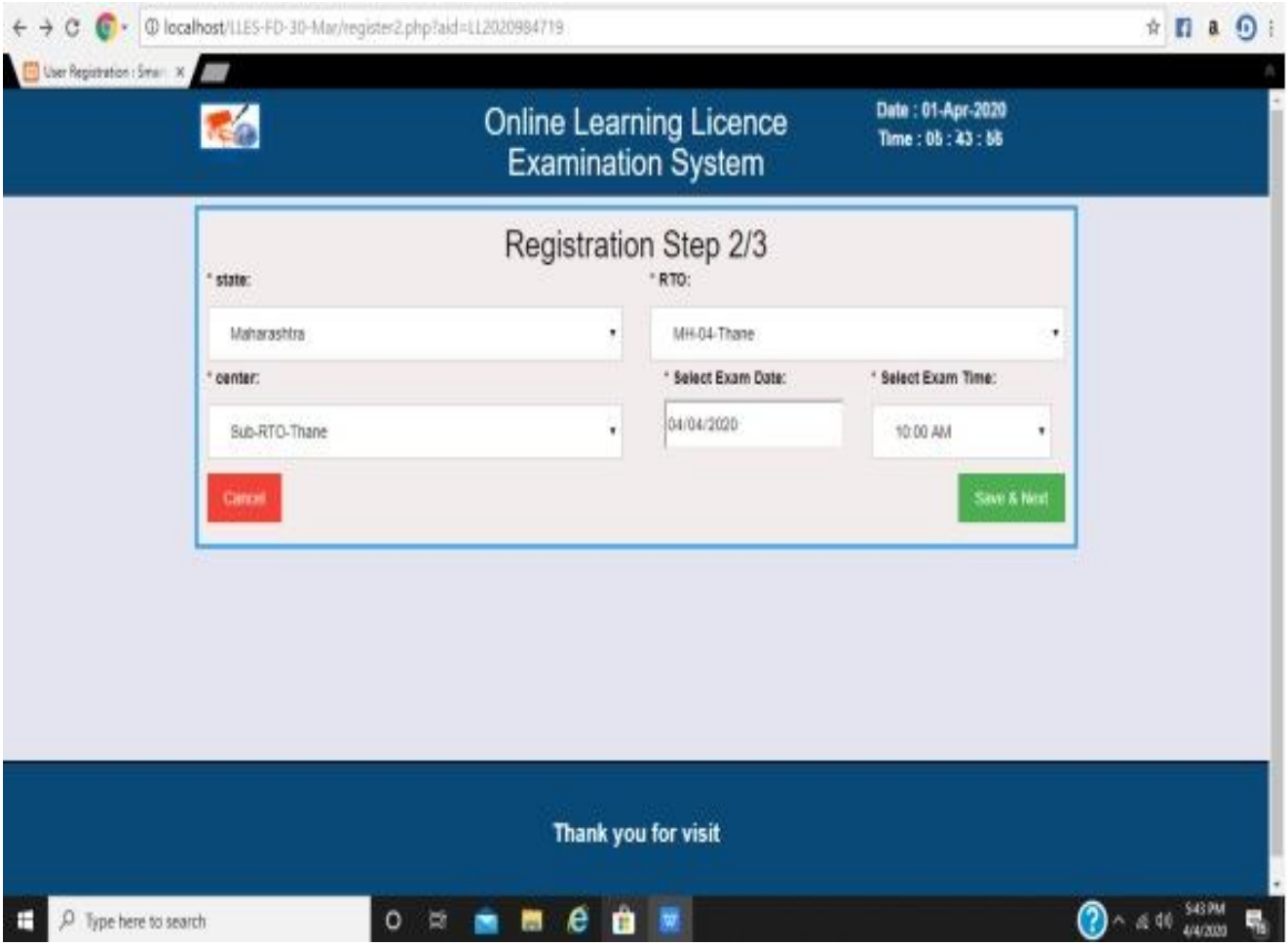

Figure 3. Registration Step 2

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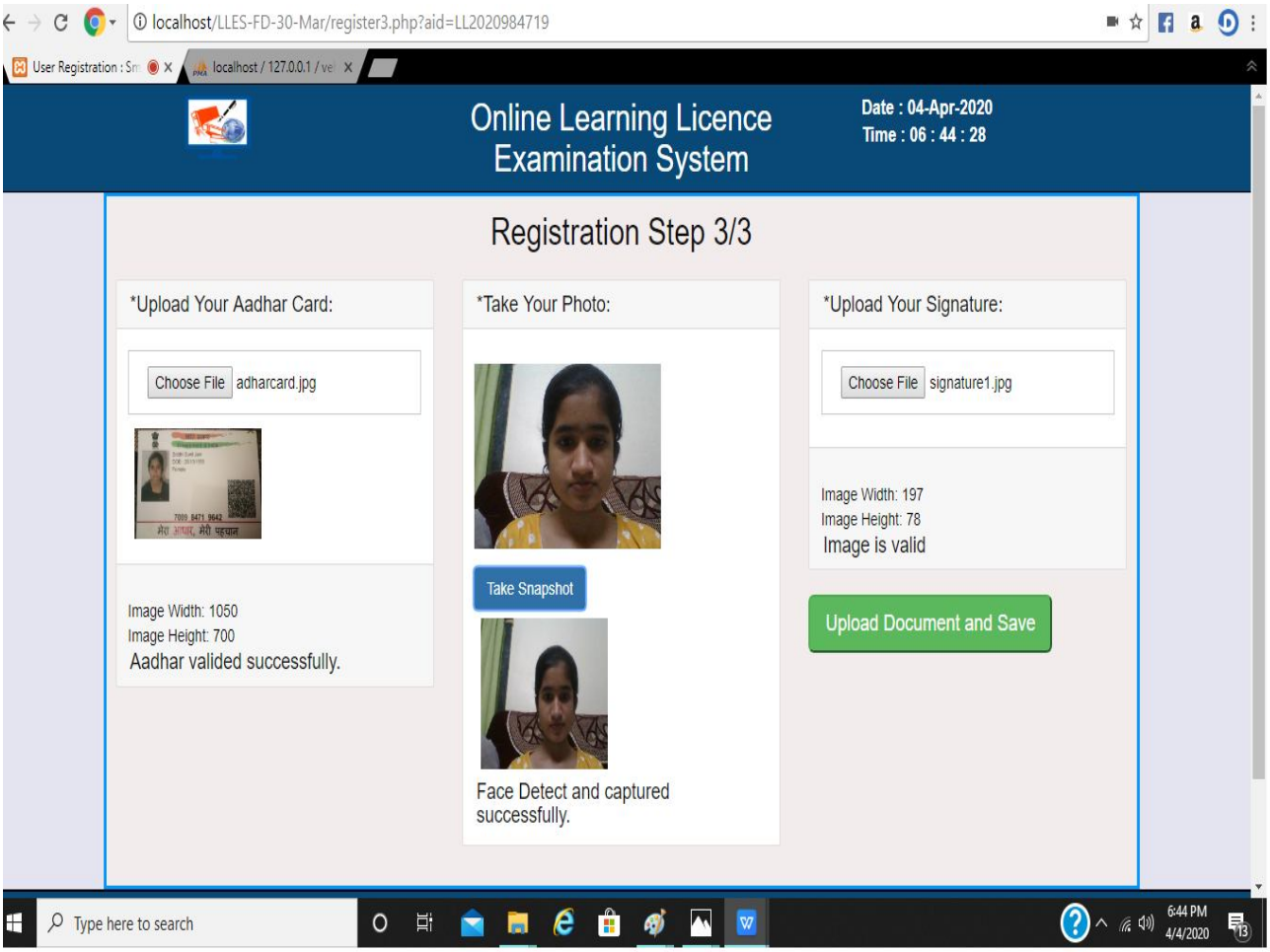

Figure 4. Registration Step 3

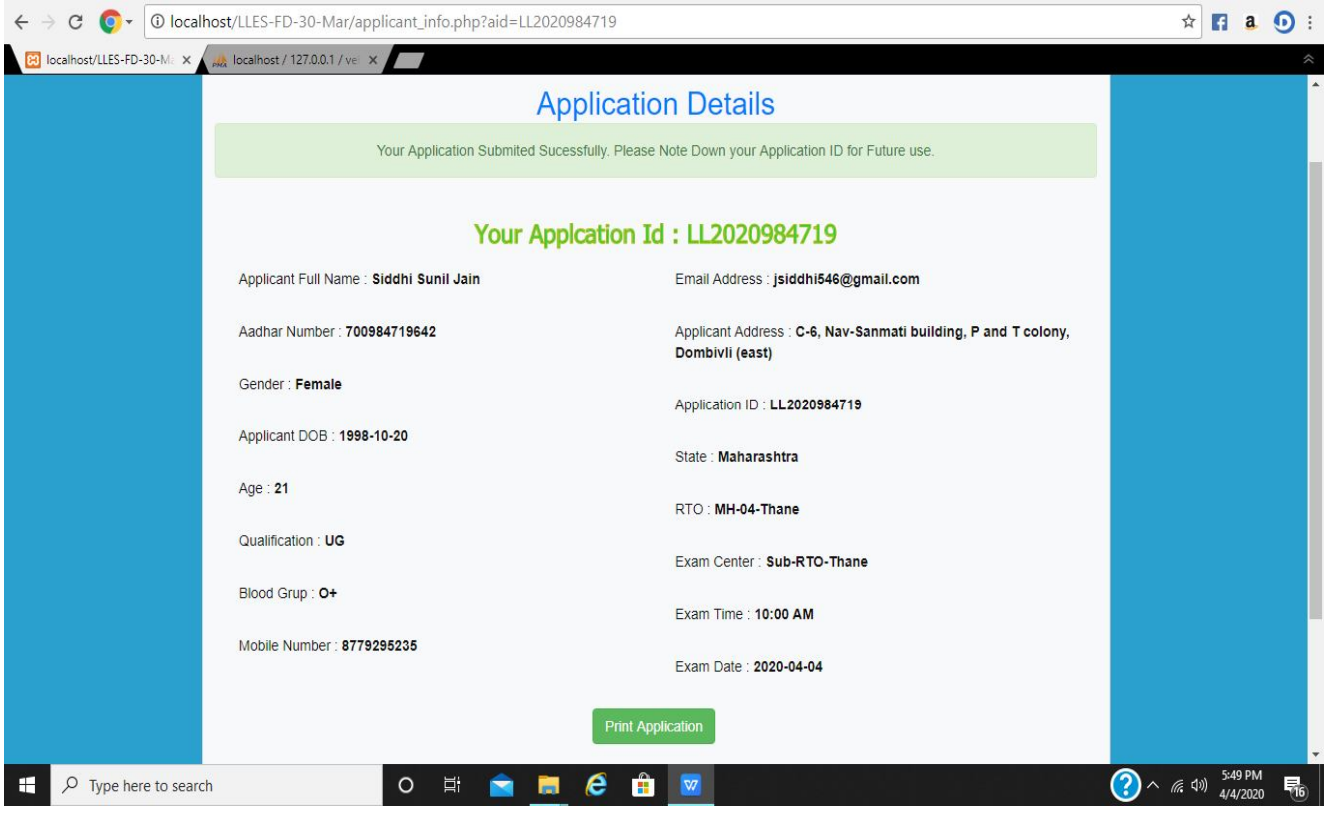

Figure 5. Application details

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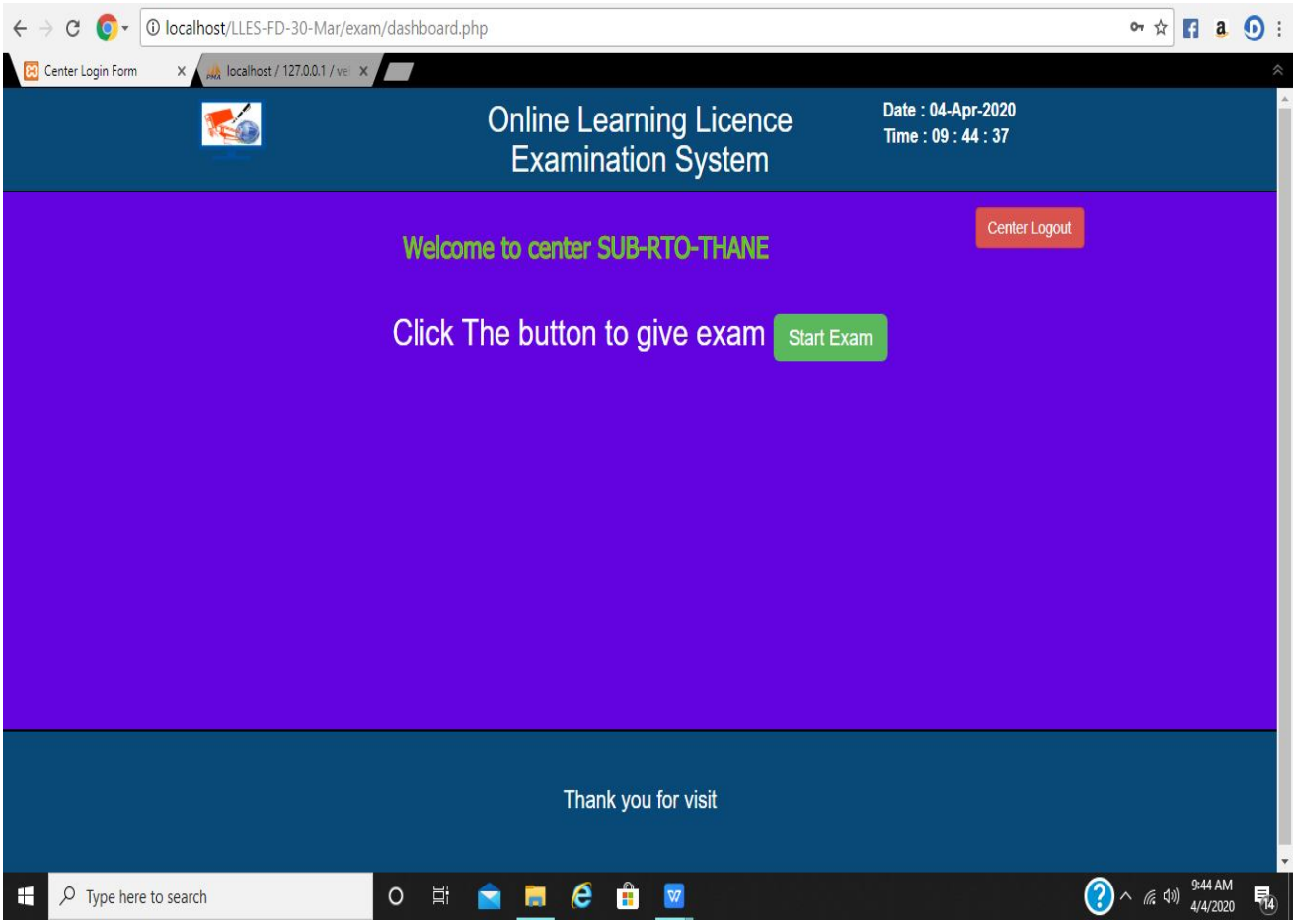

Figure 6. Examination Phase

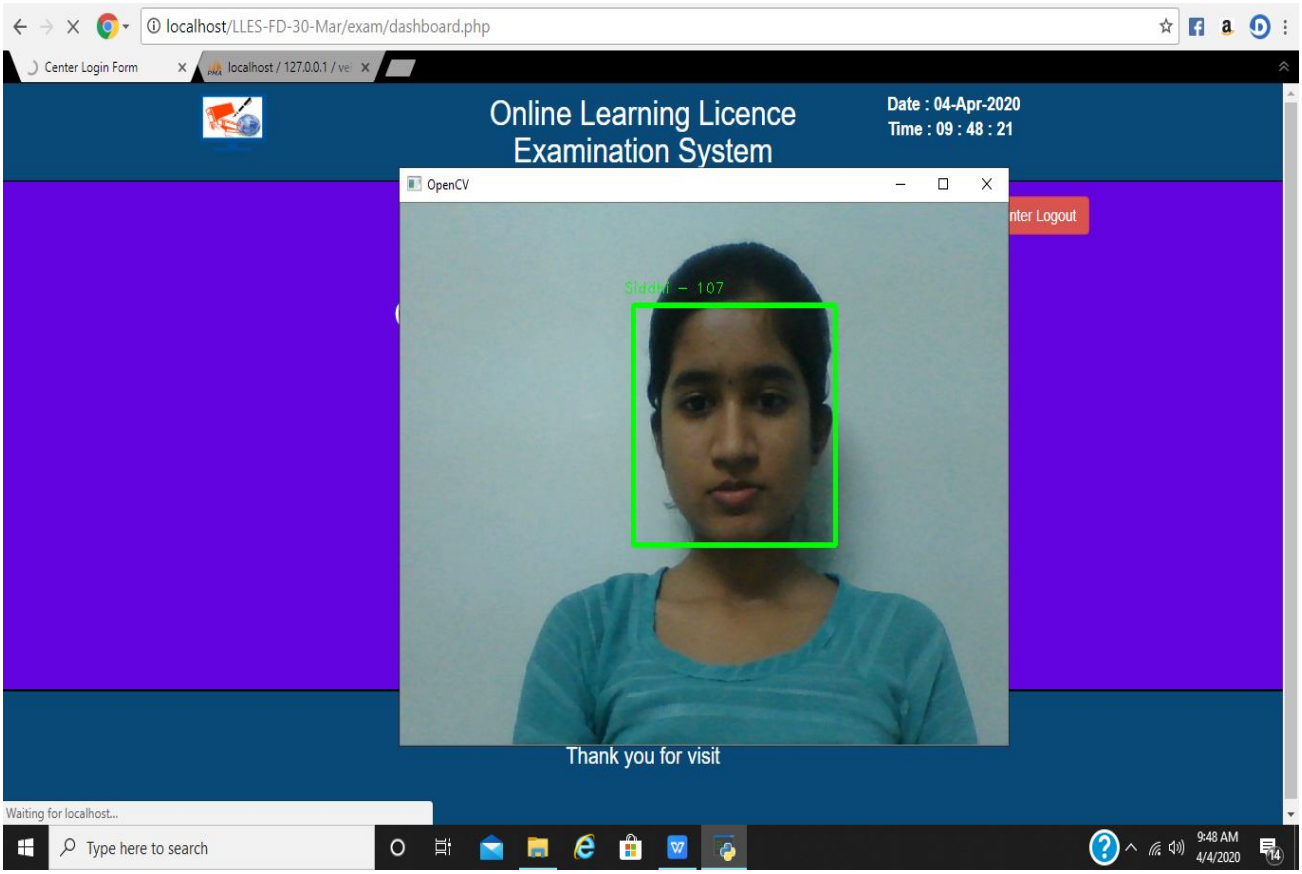

Figure 7. Face Recognition Phase

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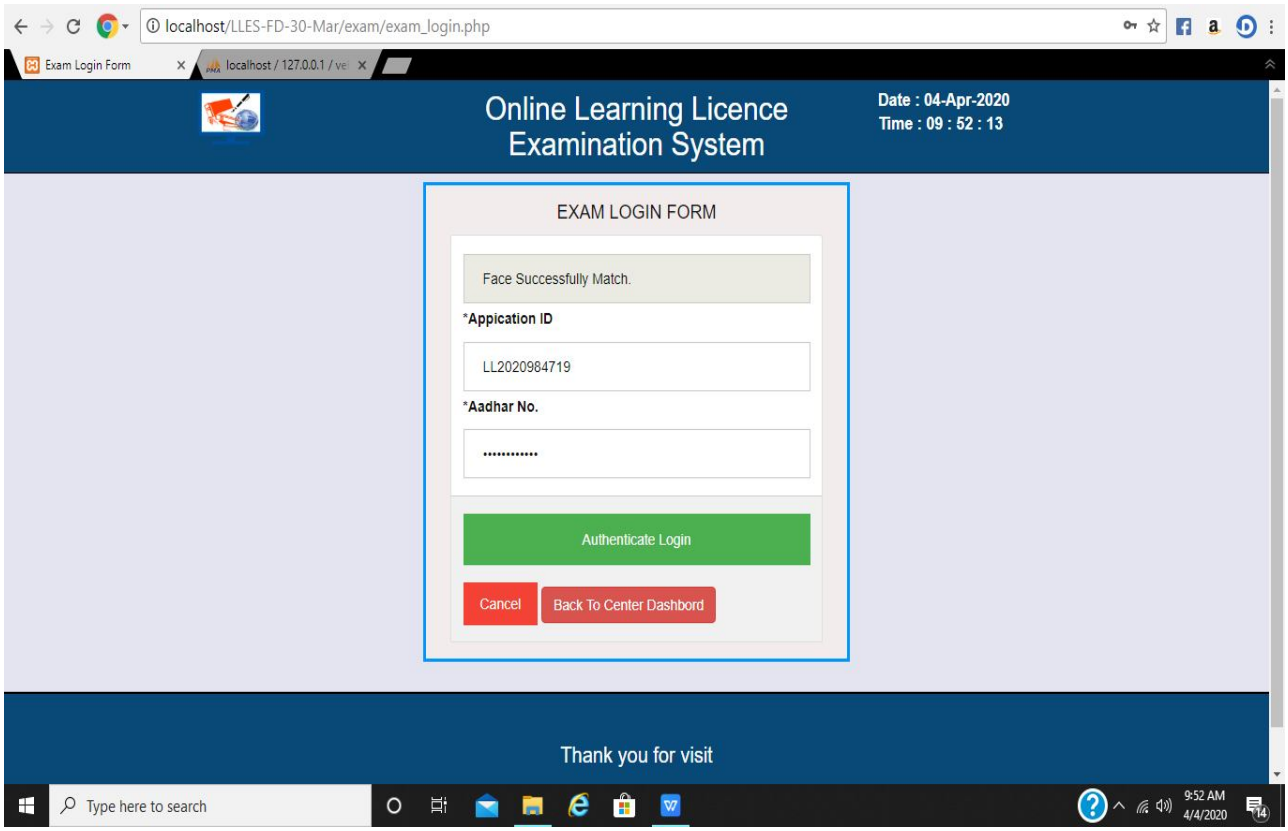

Figure 8. Exam Login Form

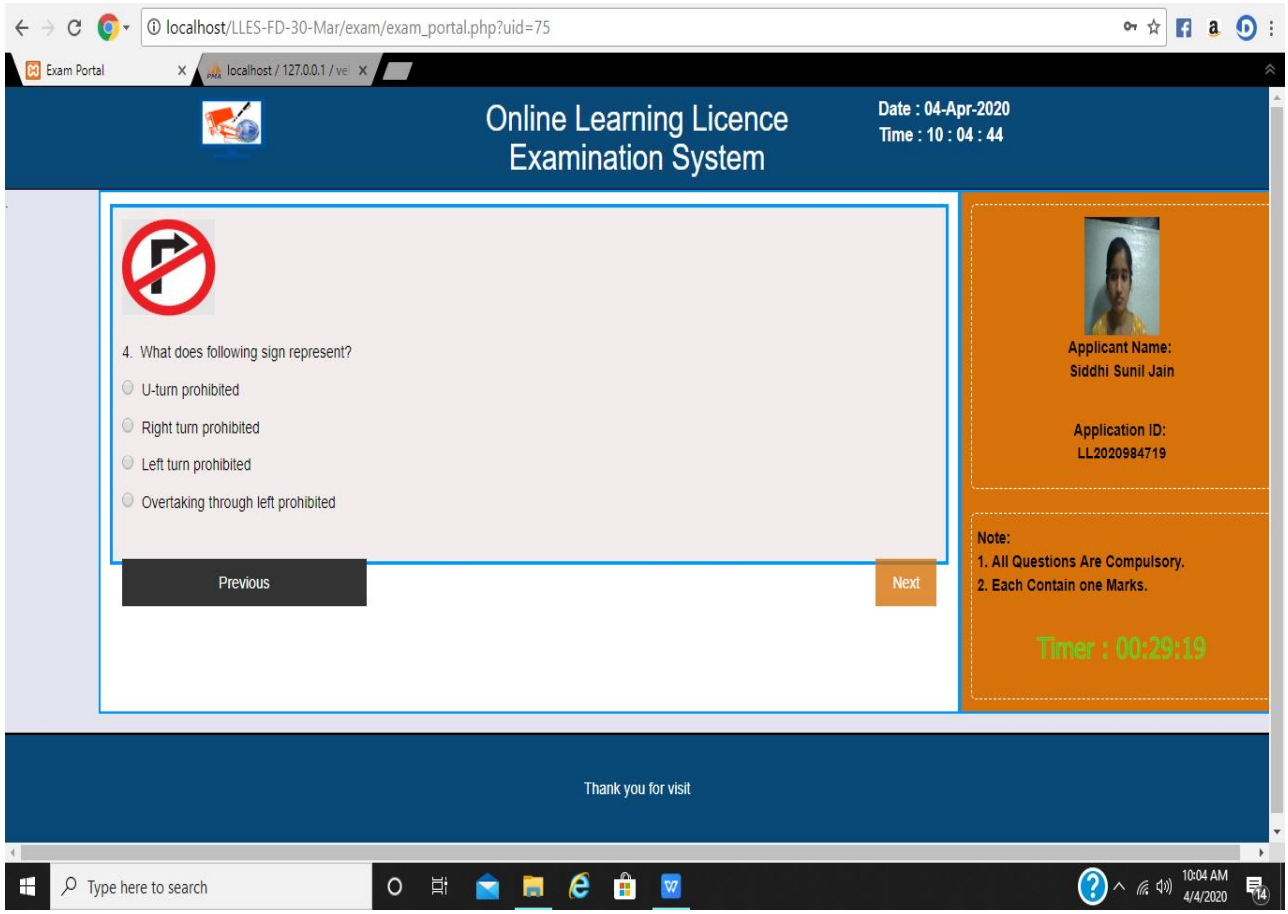

Figure 9. Examination conducted

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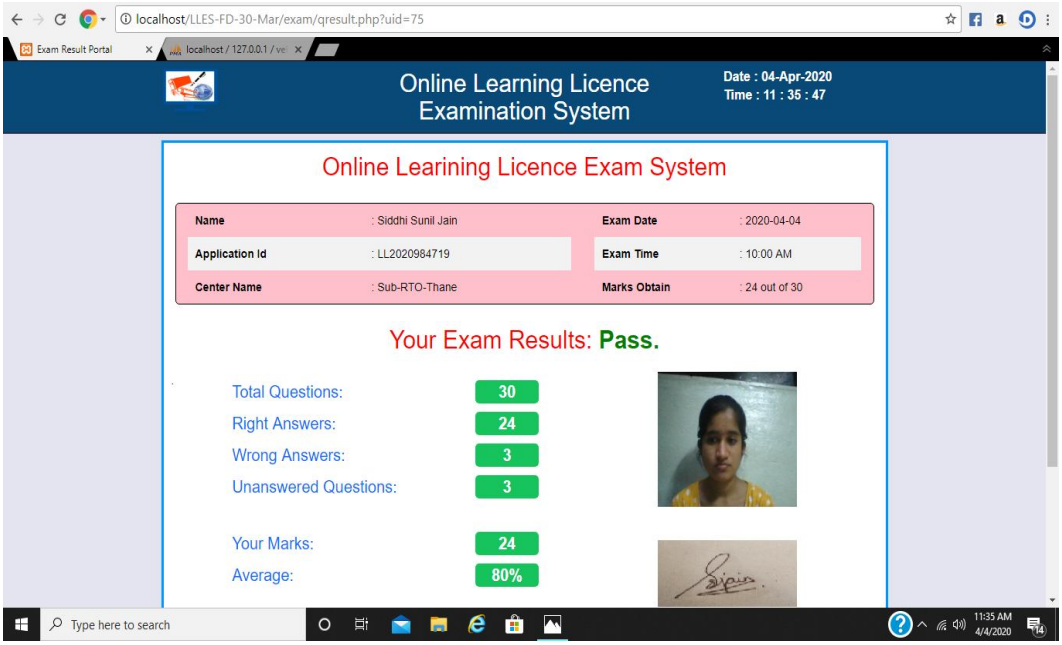

Figure 10. Exam Result

6. CONCLUSIONS

The Online Learning licence examination system using Face detection and Recognition is used to solve the shortcoming of the Learning licence Examination that includes offline verification of document. To eliminate these human factors, to ensure that impersonation, if any, can be easily detected, and the impersonator is not allowed to take the examination; therefore the system includes face detection & recognition which eliminates impersonation. The system developed save the time as it allows number of users to give the exam at a time. Thus it is secure as well as reliable system.

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OPTICAL CALCULATOR

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Student[2, 3, 4], Computer Engineering Department, SSJCOE, Maharashtra

ABSTRACT
Our paper presents an easy to use calculator which is highly focused on student use but is also useful for others for simple arithmetic & scientific-calculations. This paper is based on the simple calculator or the pocket calculator used by everyone and is an effort to bring that into the form an android application.It uses OCR which is a part of deep learning, in this project we used it to recognize characters from the image captured by the camera from the device consisting of an arithmetic, trigonometric or algebraic equations. The proposed system combines the character recognition provided by firebase's Ml-Kit and uses it to recognize and solve the aforementioned problems.Firebase is Google's mobile application development platform that helps you build, improve, and grow your app and its kit gives accurate results when used to recognize problems in computer text and can also recognize handwritten text to some extent.Basically converting the image to text and giving the result.

Keywords: OCR, deep learning, android, problem solving, firebase.

1. INTRODUCTION

Calculator is one the most used devices in the world, in today's day and age we use the calculator applications on our mobile phones instead of those separate pocket calculators that are just used for simple math problems.[3] The proposed system is an application-based system used to calculate values that are captured from an image using character recognition. Machine learning is an emerging tool that is currently being developed to be used in every sector to reduce the amount of human-error made in a specific task. Taking a step in that direction we have created an application that uses deep learning which is a part of machine leaning's supervised learning to create an application that takes images captured by the device as an input and gives the user the result based on the character captured from the image. [1][2] To convert the captured image via the android application into text format the firebase's ml-kit is used. The main aim of this application is to give students an easy way to find the answers to their queries.

2. OBJECTIVE

The main objective of this paper is to design an application that can solve arithmetic, trigonometric and quadratic problems in a way that easy to use and gives accurate results.

3. PROPOSED SYSTEM

The objective of this application is to provide an interface for students to provide them with answers to their arithmetic queries. The proposed application will display the result of the text in the image captured by the user device camera which will be converted to text and displayed on the screen as a separate screen on the camera feed as 'problem'. If the users writing is not appropriate or there seems to be a mistake in the displayed text user can revert to the camera to try again. We have selected the Android Studio and Camera Module for the integration of computer vision. This API is based on the Open GL ES3 platform for building Android applications.

We have used the Firebase's for the conversion of the captured real-time image into text.

ML Kit is a mobile SDK that brings Google's machine learning expertise to Android applications yet easy-to-use package. Whether you've experience in machine learning or not you can implement the functionality you need in just a few lines of code without any difficulties. Deep knowledge of neural networks or model optimization is not essential to get started. On the other hand, if you are an experienced ML developer than ML Kit provides convenient APIs that help you use your custom Tensor-Flow Lite models in your mobile apps.

3.1 PROPOSED SYSTEM IS DIVIDED INTO FOLLOWING FUNCTIONS

I. Real-time Image Capturing

II. Verification of the input.

III. Result

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4. SYSTEM DESIGN

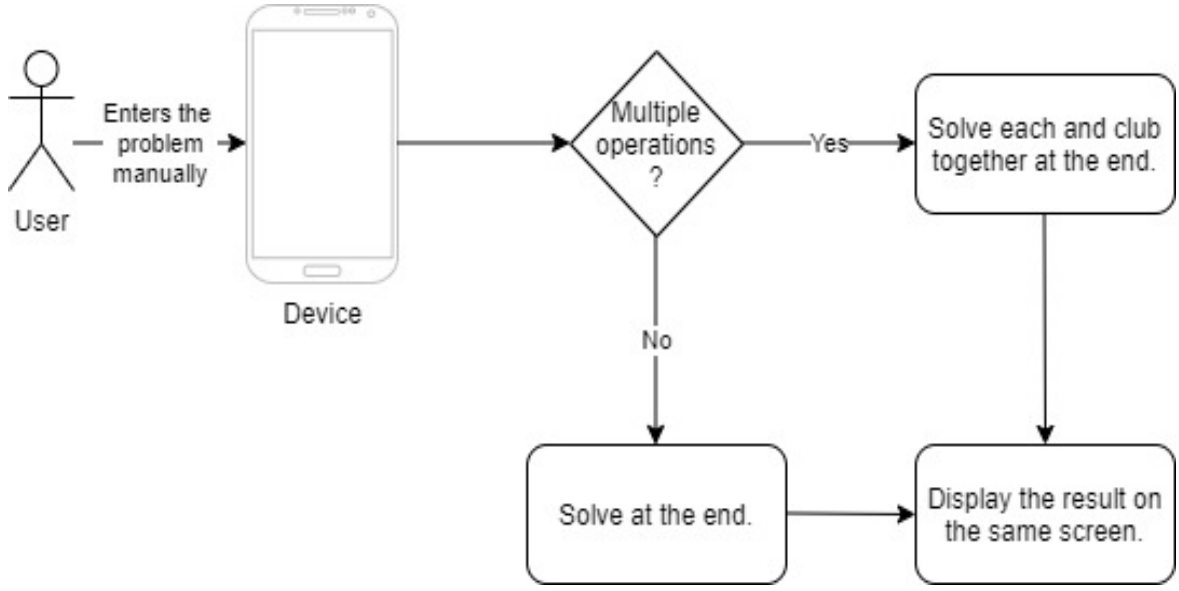

Figure 1. Flowchart for simple and scientific calculator.

The user opens the applications and enters the problem manually in either basic, scientific or the equation solver. The application then gives the answer after the user has pressed the solution button.

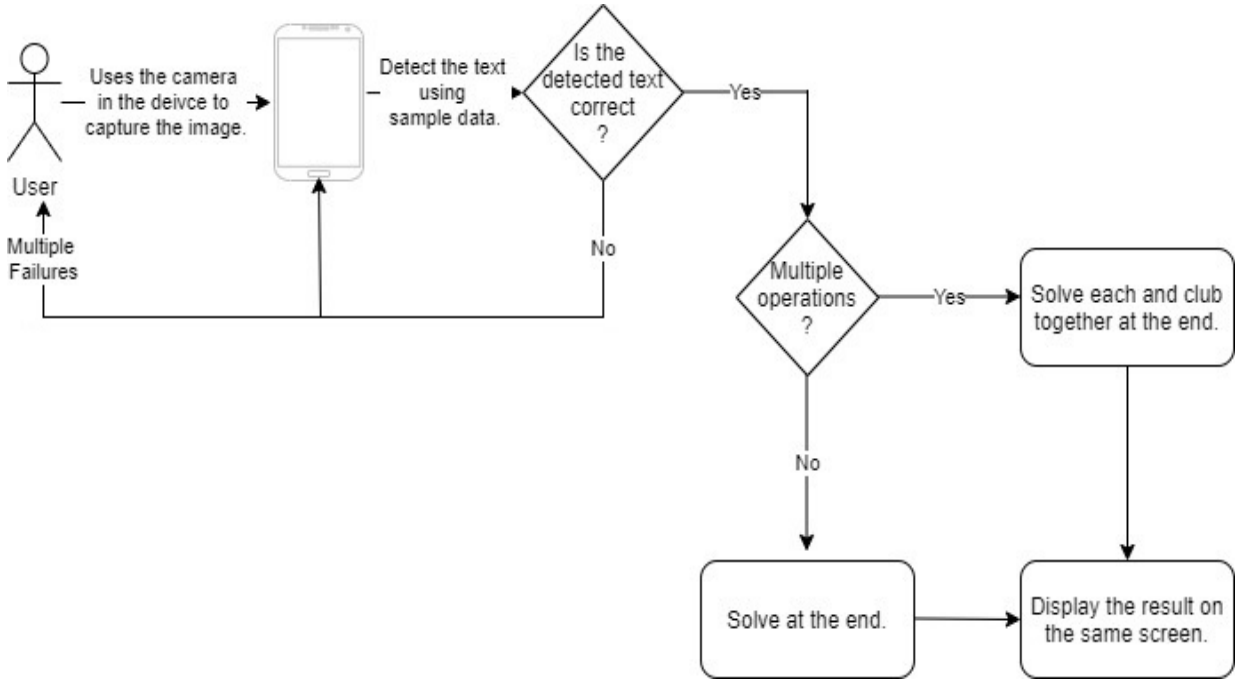

Figure 2. Flowchart for optical calculator.

The user opens the applications and clicks a picture of the problem the applications than detects the text in the picture and displays the result of the same if it is satisfactory the user sees the solution after the application identifies whether problem is basic, scientific or an equation. The application then gives the answer after the user has pressed the solution button.

5. WORKING OF THE SYSTEM

The Optical calculator is to provide an interface for students to provide them with answers to their arithmetic queries.

There are five main modules in the optical calculator:

1) **Basic**

This the first activity open to the users as soon as they open the application.

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It has all the basic arithmetic operators and can provide results to multiple operations although not in the bodmas format but in the precedence in which they were entered.[3]

2) **Scientific**
The second option in the toggle menu is the scientific calculator it has the trigonometric operators like the sine, cosine, etc.

It also has parenthesis to decide the precedence order according to the user.

It also has other options to find the log, square and factorial of the operands.[3]

3) **Equation solver**
In this mainly quadratic equations are solved and some linear equations with a solution.[2]

4) **Photo Calculator**
This is the last part of the application it performs all the above operations by recognizing he images provided by the user instead of the user to manually type it out.[1]

5.1. BLOCK DIAGRAM

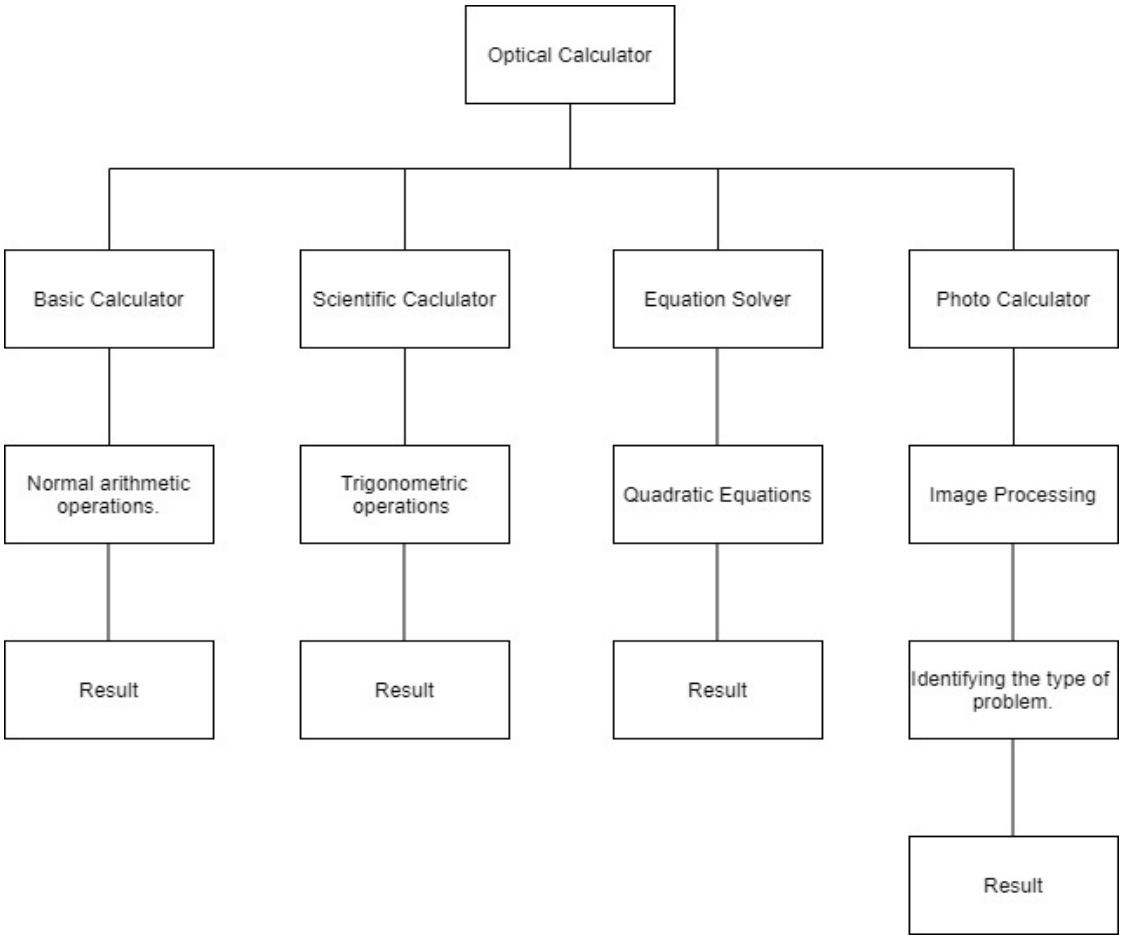

Figure 3. System Architecture

The architecture of the system is as shown in the above diagram the application is divided into four activities.

The first one is the basic calculator which takes care of the normal operations.

The second one is the scientific calculator which takes of bracket operations and other trigonometric operations and then displays the result.

The third one is the equation solver which gives solution to quadratic equations and gives the required result, and shows no result if the solutions doesn't exist.

The last one is the photo calculator, it is the equivalent of the above but the only difference being that the users don't have to enter the value themselves manually rather just take a picture of the problem they want solutions to, the activity will identify he type of problem and give the desires answer.

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6. RESULTS

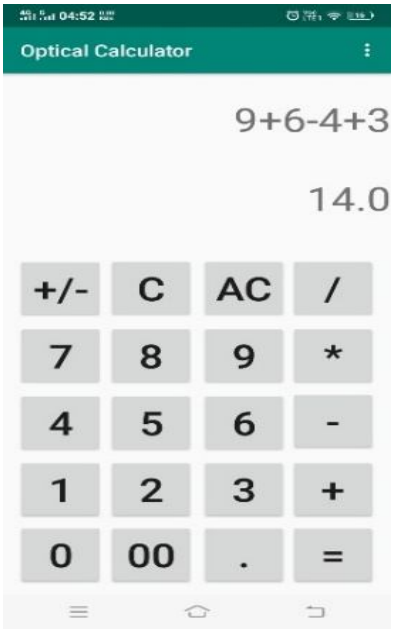

Figure 4. Basic

Figure 5. Scientific

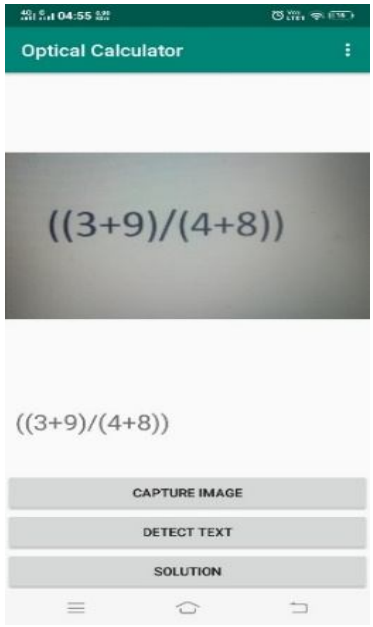

Figure 6. Photo Calculator

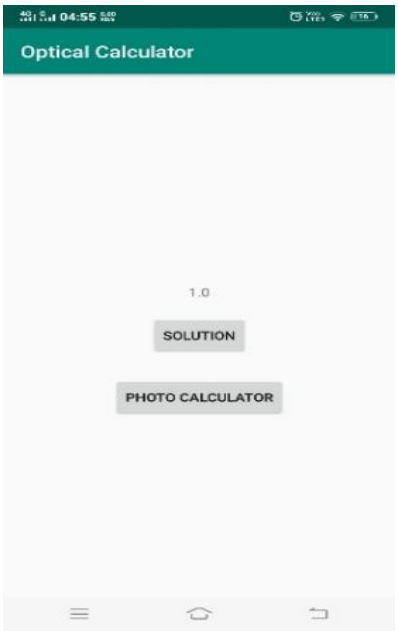

Figure 7. Solution Window

7. CONCLUSION

The proposed system is an easy to use calculator which uses optical character recognition to perform basic and scientific operations by recognizing the text in the image. It ensures an accurate result to the problems, although lacking when the equations are complex. The application can be further developed with the help of new developments in the field of both machine learning and android applications.

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PHISHING ATTACK DETECTION IN MAILBOX

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ABSTRACT
Phishing could be a new sort of network attack that constitutes over 1/2 all security incidents on the web. Email based mostly phishing is essential security thread on the web. Additional and additional user square measure plagued by email based mostly phishing attack over a final few year. This project gift summary concerning phishing offensive email, its classification. Sadly, current email server systems cannot manifest the genuineness of incoming emails. So, a correct rule is employed to classify these suspicious emails from the real senders. By that Associate in Nursing applicable thanks to segregate the e-mail into classes is established employing a filter technique of black listed websites, address and contained. that reciprocally offers a secured mail.

Keywords: detection, mailbox, phis-mail, phishing, etc.

1. INTRODUCTION

Phishing could be a fraud that uses to gather personal data from unsuspecting users. The false e-mails usually look amazingly legitimate and even the net pages wherever users square measure asked to enter their data could look real, Phishing email could be a special sort of spam message. Such email could be a criminal mechanism that depends on solid email claims supposedly originating from a legitimate company or bank. later on, through Associate in Nursing embedded link inside the e-mail, the phisher tries to airt users to pretend Websites [1] Phishing could be a kind of on-line fraud that aims to steal sensitive data like on-line banking passwords and MasterCard data from users [2]. There square measure several variations on this theme. it's potential to Phish for alternative data in additions to usernames and passwords like MasterCard numbers, checking account numbers, Social Security numbers and mothers' maiden names [3].The problem of phishing e-mail is turning into worse. A survey by (GARTNER, 2007) on phishing attack showed that concerning three.6 million users within the USA lose cash thanks to phishing. the entire losses quantity is calculable at US$3.2 billion bucks and therefore the variety of victims multiplied from a pair of.3 million in 2006.6 million in 2007. one amongst the most recent reports depends on the eCrime Trends Report (Reports, 2012), that justify that Phishing attacks has multiplied by 12-tone system year-over-year[4], Recent phishing scams, referred to as "spear phishing," square measure a kind of extremely targeted email attack to organizations and it seems real to staff or members inside the organization. Spear phishing emails have several similar options as early generations of phishing scams, however square measure additional context specific[5],The phishing attacker's trick users by using completely different social engineering techniques like threatening to suspend user accounts if they are doing not complete the account update method, give alternative data to validate their accounts or another reasons to urge the users to go to their spoofed internet pages[6] Some variety of users fall for these attacks by providing the requested data, which might result in fallacious charges against credit cards, withdrawals from bank accounts, or alternative undesirable effects[7].

Phishing attacks square measure growing speedily by the day. The opposed Phishing Work cluster detected a complete of twenty-seven,221 distinctive phishing URLs in January 2007. Sophos, Associate in Nursing anti-virus company, claims that freely downloadable homemade phishing kits exist[8], Phishing web content typically use similar page layouts, designs (font families, sizes, and so on), key regions, and blocks to mimic real pages in an attempt to persuade net users to let on personal data, like checking account numbers and passwords[9], knowledge counsel that some phishing attacks have convinced up to five of their recipients to produce sensitive data to spoofed websites , concerning 2 million users gave data to spoofed websites leading to direct losses of $1.2 billion for U.S. banks and card issuers in 2003 [10].

Phishing scams are receiving in depth press coverage as a result of such attacks are escalating in variety and class. several on-line service suppliers believe that their name is at stake and worry that users can lose confidence in electronic commerce[11] in keeping with a recent study by Gartner, fifty seven million US net users have known the receipt of email joined to phishing scams, and concerning one.7 million of them square measure thought to possess succumbed to the convincing attacks and tricked them into divulging personal data. Studies by the opposed Phishing unit (APWG) have terminated that Phishers square measure possible to succeed with the maximum amount as five % of all message recipients[12] With HTML email readers, it's conjointly potential to produce a reproduction of a login page directly in email, eliminating the necessity to click on a link and activate the user's browser. In browser-based attacks, it's potential to use JavaScript to

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require over the address bar or otherwise deceive the user into basic cognitive process he or she is act with a legitimate website.

1.1 PROBLEM DEFINITION

- Phishing attacks started with a spoofed email masquerading as authorize sender.
- These emails impersonate MasterCard firms, ecommerce websites, IT service supplier or whole names of banks.
- Furthermore, these solutions use several rules that increase the time computation and therefore the complexness of the classifier.
- In addition, a number of the foundations may increase the proportion of false positive

2. LITERATURE SURVEY

Phishing emails pose a significant threat to electronic commerce because they're wont to defraud both individuals and financial organizations on the net.

Over all study of all the relative paper of the project and its remakes are mentioned as above. The research gap we found from the papers and our ideas to beat it:

- The paper we went through gave us a decent scope for researching over the system and even to construct a more reliable and robust system for further development.
- The main reference paper we selected to check over may be a review paper on the privacy preservation through phishing email where differing types of phishing attack are described. Through which we got path to execute the flow for filter for the system security algorithm.
- Many other papers we went thorough had some research gap such as:

> In one in every of the research papers the algorithm use of detection are only URL filter but only that's not enough for now-a- days phishing emails.

> Machine learning algorithm is implemented that produces it complex for developer to make.

> Even a paper made “phishing stimulator” that took an around 20 people for experiment and that was just a simulator limited for experiment.

By of these points we came up with more upgraded idea were bifurcation of the real and suspicious mail are often through with help of adding a feature of filtering black listed mail in mail using the reference paper: Review Paper On Privacy Preservation Through Phishing Email Filter.

3. DESIGN

The system includes a systematic procedure for the development of the project. the subsequent datagrams will make a transparent definition for building the project:

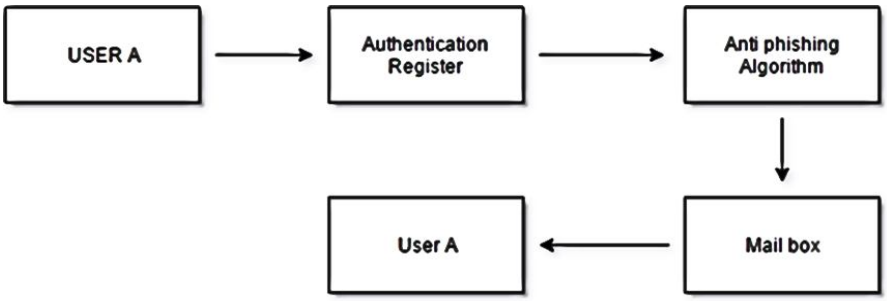

Fig. 1: Block Diagram Of System

Spyware mailbox is software that aims to collect information a few person or organization without their knowledge which may send such information to a different entity without the consumer’s consent. a tool is also infected by spyware in a very style of ways, except for purposes of this post we are considering spyware delivered as an email attachment or via a hyperlink in an email.

- The First block is use to represent the user where user must open the software or the mailbox and acquire registered or login.
- The third Block is use to represent the algorithm because it works thereon.

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- As soon because the mailbox or the spyware mailbox gets open it'll differentiate all the phishing mails.
- Thus, the general diagram represents the differentiation between phishing mails and also the non-phishing mails

4. METHODOLOGY

The methodology for the system to work over the detection of the phished mail is based on use of line of border. The system has 5 line of border to test the mail arrived know as working scenarios. The 5 line of border are the algorithm of this system that will check the fetch mail of the user. Algorithms of the system is given below:

1. Number of Dots '.' Present within the URL:

When an internet site prepared, generally two dots '.' are used for the separation of www and therefore the domain type (For example www.yahoo.com). If a greater number of '.' are using within the website, it means the phishing attack is trying to redirect the web site to a different webpage. So, if we discover that the web site is using quite 2 dots, we are able to keep the web site in suspicious condition and therefore the website is checked by matching the associative features of the accessing webpage. the instance of suspicious or phishing website is http://www.myhomepage.co.in//yahoo.co/php.

2. Number of Symbols '@' Present within the URL:

Some of the phishing man uses '@' symbol to redirect the user to a different website. Generally, @ symbol is employed within the FTP server to redirect the user. Since when user create his e-mail account, @ symbol is employed. So, the employment of @ symbol within the URL is incredibly good thinking of the attacker to spoof the net user. The attacker can create the web site like http://www.myhomepage.co@yahoo.com?login.com. during this case, the user can think that he's being directing from yahoo.com website.

3. Domain Name:

The domain names (if any) utilized by fraudsters are usually used for a limited time-frame to avoid being caught. we are able to thus use this feature to flag emails as phishing supported the very fact that the domain is newly registered and set a criterion of being new if it's but 30 days old. this will be achieved by performing

a WHOIS query on the name within the link. A WHOIS query provides
other information like the name or person to which the domain is registered to, address, domain's creation and expiration dates etc.

4. Number of Slash '//' Present within the URL:

When an internet site prepares, it's uploaded with either http or https protocols. 'http' protocol uses '//' symbol to redirect the webpage. So, the attacker uses variety of '//' within the URL to spoof the net user. it's noticed that the legitimate websites don't use quite two '//' symbols during redirecting the webpage. So, if an attacker uses quite two '//' symbols, we are able to identify whether the web site is spoofing or not.

5. Number of Keywords Present within the URL:

It's seen that some attacker uses phishing keywords in situ of legitimate website by changing, replacing, shifting or deleting the characters from the web site. as an example, in situ of http://www.google.com, phishing attack can create the web site likehttp://www.gooogle.com, http://www.goog1e.com, http://www.gugle.com etc. during this case suppose a user hit the incorrect URL, it means the user is sending his lead to a spoofed website.

5. RESULT

Fig. 2: Register Page

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Fig. 3: Login Page

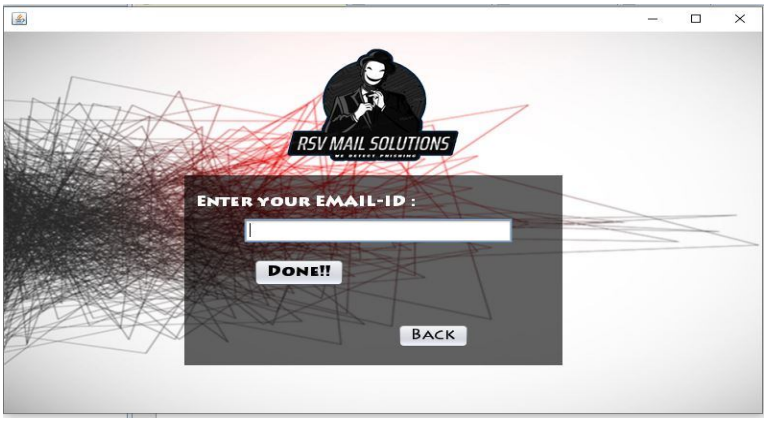

Fig. 4: Forgot Password Page

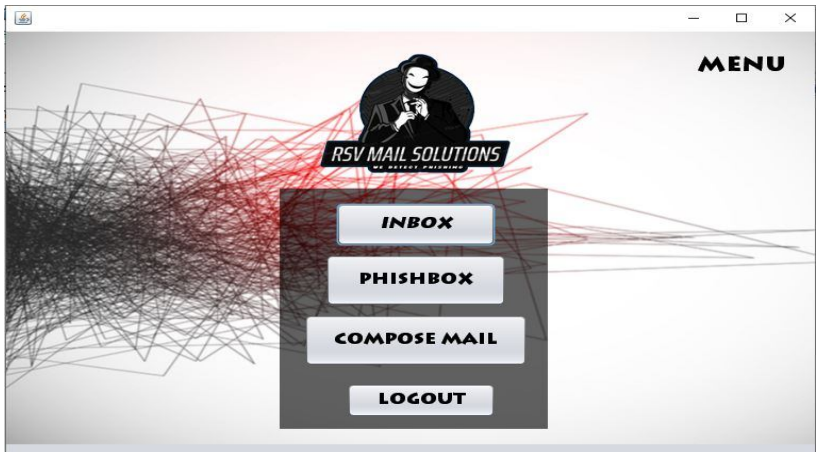

Fig. 5: Main UI Page

6. CONCLUSIONS

The phishing email detection system is utilized by various individuals or companies which are at risk of phishing attacks or which have internet transactions happening on day to day basis. It is utilized by different colleges or schools across a city or state and this might safeguard their system. The system is further developed or enhanced for including more features upgradation of detecting phishing mails.

7. FUTURE SCOPE

There are many features that can be improved in the work, for various other issues. The heuristics can be further developed to detect phishing attacks in the presence of embedded objects like flash. Identity extraction is an important operation and it was improved with the Optical Character Recognition (OCR) system to extract the text and images. More effective inferring rules for identifying a given suspicious web page, and strategies for discovering if it is a phishing target, should be designed in order to further improve the overall performance of this system. Moreover, it is an open challenge to develop a robust malware detection method, retaining accuracy for future phishing emails. In addition, the dynamic and static features complement each other, and therefore both are considered important in achieving high accuracy.

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RESTAURANT SEARCH

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ABSTRACT
Mobile applications can be perhaps the most ideal approaches to keep consumers drew in with a brand as they are progressing. With the expansion popular for smart phones and productivity of wireless network, the interest for mobile applications has expanded unfathomably. Android is one of the most famous open source platforms that offer the developer's full access to the system API's in order to manufacture creative applications. The fundamental point of this project is to assemble an Android application that causes the clients to discover a closest Restaurant in a predefined location. This application which could locate a list of restaurants based on the location. User need to select a particular restaurant after that this application will be display all the restaurant details and also give a direction of restaurant.

Keywords: API, application, consumer, direction, restaurant.

1. INTRODUCTION

This application that helps the users to find the nearest restaurants based on their locations. User can used this application at any place. This application saves the time of users. User need to select a particular restaurant after that this application will be display all the restaurant details. The user can likewise map the location of the restaurant on Google Maps accessible to the user on the phone and discover the way from his present location or from some other location to the restaurant. The user interface is basic and entirely justifiable.

2. EXISTING SYSTEM

In television method people are not aware of offers running on restaurant and food courts they just moved to regular restaurants and known restaurants. All they have to search manually offers running in various restaurants and food courts by visiting one by one. In this way user has to invest their time for personal travelling no one like to waste time when they are hungry for food and users moved to nearby or known restaurants and not get benefits of offers running in other restaurants.

3. OBJECTIVE OF OUR PROJECT

The main objective of the application is to provide restaurant list based on the user location. The user can make a choice of the best restaurant based on the rating, price, distance and per-person cost.

4. PROPOSED SYSTEM

The purpose system of this application is to make an undeniable Android application which could locate a rundown of restaurants dependent on the area. User need to select a particular restaurant after that this application will be display all the restaurant details. In restaurant details, user can see restaurant name, photo, and menu photo, price, direction. The user can make a choice of the best restaurant based on the rating, price, distance and per-person cost. The user can likewise map the location of the restaurant on Google Maps accessible to the user on the phone and discover the way from his present location or from some other location to the restaurant. The user interface is basic and truly justifiable. User can utilized this application at any places. This application saves the time of users.

5. SYSTEM ARCHITECTURE

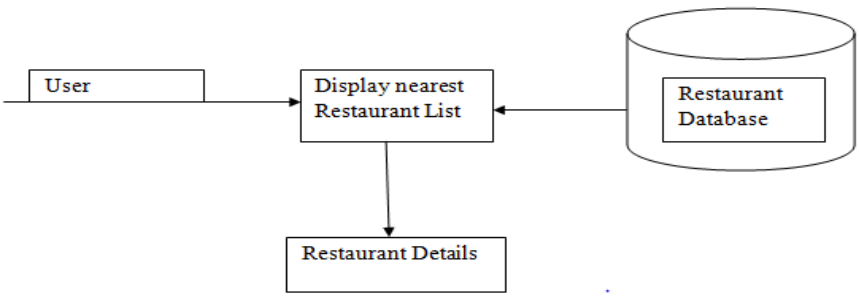

Fig.1. System architecture

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The system architecture consist of four major elements namely

1. User

The user of the application provides the detail on the basis of which the data is filtered. The user will open the app the list of restaurant will be seen according to the database.

2. Restaurant Database

This restaurant database consist of all the restaurant available.

3. Display Nearest Restaurant List:

It takes inputs from the database and based on the user details it filters and creates a list of all the nearby restaurant.

4. Restaurant Details

Based on the user selection the details of the restaurant such as address, menu card, distance, quality, rating etc. are displayed.

6. DFD DIAGRAMS

6.1 DFD level 0:

User can use mobile phone and using mobile phone user can display nearest restaurant list using GPS.

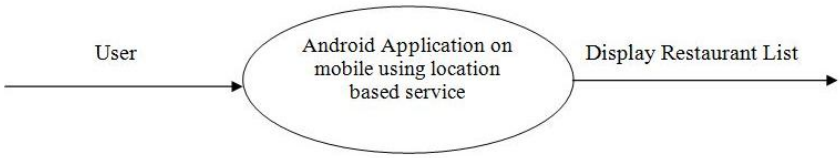

Fig.2. DFD level 0

6.2 DFD level 1

User can see nearest restaurant list based on their location.

After that user need to select a particular restaurant after that user can see all restaurant details. In restaurant details, they show direction of restaurant.

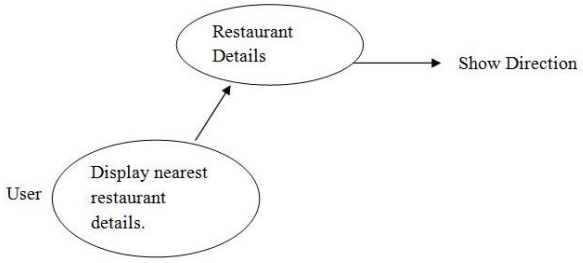

Fig.3. DFD level 1

7. RESULT

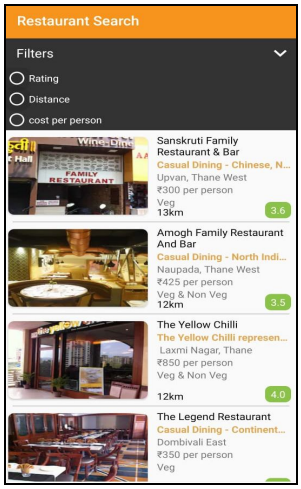

Fig.4. Search filter

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Fig.4. shows the application consists of a filter option which could sort restaurants based on its prices, ratings and location. This application is a convenient way for the user to find the restaurant which fits his/her needs.

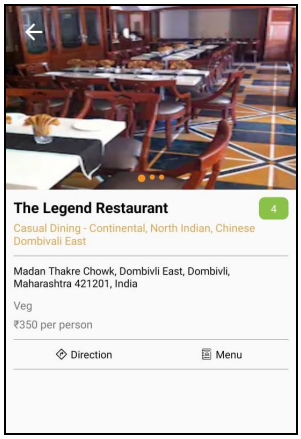

Fig.5. Restaurant detail

Fig.5. shows the restaurant details. User can view its prices, ratings, menu list and can also get the direction to the restaurant straight through Google Maps.

8. FUTURE SCOPE

The application can be improved in many features using some algorithms and technology. In future: We can give add to cart option then user can book restaurant on a particular data and time. We can also add call feature. We can also add favorite wish list options.

9. CONCLUSION

This application uses location based service has been developed to satisfy all proposed requirement. The application is highly scalable and user friendly. Almost all the application objective has been met. The application has been tested under all criteria. The design of database is flexible ensuring at the system can be implemented. Further extension of this application can be made require with minor modification.

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SMART HEALTH PREDICTION SYSTEM

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ABSTRACT
This project is used for the information mining techniques within the medical field, research field, and academic field and various aspects. As per the modern technology huge improvement Has been made in computer field and therefore there is no need to deal with such a large amount of data at a same time. It uses machine learning and database management techniques to extract new patterns from large data sets and the knowledge associated with these patterns. By using this technique data can be extracted automatically or semi automatically. It uses different parameters included in data mining include clustering, forecasting, path analysis and predictive analysis.

Keywords: Data Mining, Web based Appointment System, Web based Prediction System, Database System, Computer System.

1. INTRODUCTION

It might have happened such large amount times that you simply or someone yours need doctors help immediately, but they're not available because of some reason. The Health Prediction system is an user support and online consultation project. Here we propose a system that permits users to induce instant guidance on their health issues through an intelligent health care system online. The system is fed with various symptoms and therefore the disease/illness related to those systems. The system allows user to provide their symptoms and issues. It then processes user's symptoms to test for various illnesses that might be related to it. In doctor module when doctor login to the system doctor can view his patient details and the therefore the report of that patient. Doctor can view details about the patient search what patient explore for in step with their prediction. Doctor can view his personal details. Admin can add new disease details by specifying the kind and symptoms of the disease into the database. Supported on the name of the disease and symptom info the data mining algorithm works. Admin can have a eye on various disease and symptoms stored in database. This Technique will provide proper guidance when the user specifies the symptoms of his illness. Here we use some intelligent data processing techniques to guess the foremost accurate illness that might be related with patient's symptoms.

2. PROBLEM DEFINITION

In today's world where changes are rapidly performed, human being needs to cope up with those changes to survive and live better. Everybody is in race with others for moving ahead and tries to realize more. In this race human has ignored one of the important part i.e. Human Life. To fulfill the needs for surviving, human has cost his precious life. To cope up with all these, human has started living into stress and depression, from that several diseases arise. In such situations healthcare comes into portrait. Now a days everybody needs help from healthcare domain, may be it advise for some disease or treating and consulting patients or fetching information regarding health issues. Health care is recognized various forefront technologies and new scientific discoveries to enable better cures for diseases and better means to enable early detection of most life threatening diseases.

The smart health system is making available for optimally reducing the healthcare costs. There are several functionalities remain untouched into health management system. So by living in the edge of technology and still if we are not able to utilize it in efficient and proper manner then there is no use of it. To tackle this, research is carried out in Health management system. There are several applications which use any one of the technology. This project shows the merging of both the technologies to achieve efficient result. In this project hospital activities are targeted for developing application.

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3. METHODOLOGY

3.1 FEATURES OF THE SYSTEM

1] Module 1 : Admin Module:

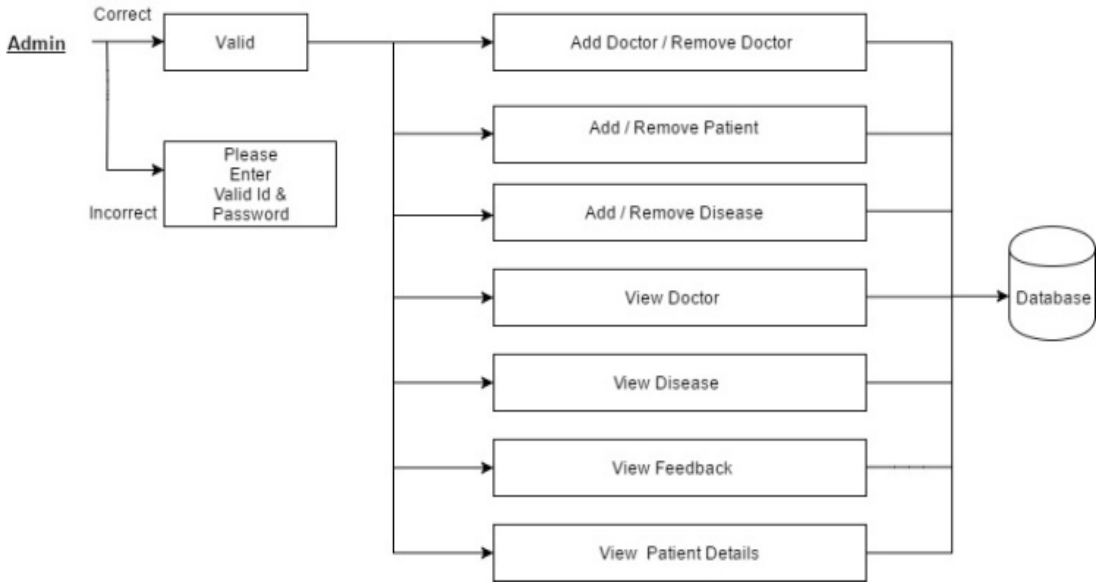

Figure 1: Admin module

- **Admin Login:**

Admin can login to the system using his USER ID and Password.

- **Valid:**

After Successful Login Of Admin, Admin Can Perform Following Functions :

- **Add Doctor:**

Admin can put new doctor details into the database.

- **Add Disease:**

Admin can put new disease details along with symptoms and type.

- **View Doctor:**

Admin can have a look on various Doctors along with their personal details.

- **View Disease:**

Admin can have a look on various diseases details stored in database.

- **View Patients:**

Admin can have a look on various patient details who had accessed the system.

- **View feedback:**

Admin can view feedback posted by various users from their account through the system.

- **IN Valid:**

If Admin Login is Failed There Will Shown an Error as Patient ID and Password are incorrect.

2] Module 2: Doctor Module

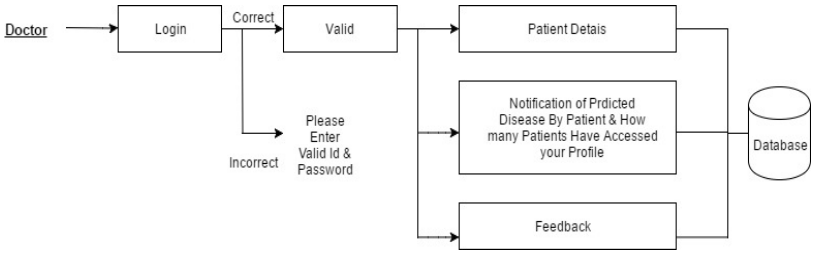

Figure 2: Doctor Module

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- **Doctor Login:**

Doctor will have the access on the system using his User ID and Password.

- **Valid:**

After Successful Login Of Doctor, Doctor Can Perform Following Functions :

- **Patient Details:**

Doctor can view patient's personal details.

- **Notification:**

Doctor can view how many people had accessed the system and what are the diseases predicted by the system for a Patient.

3] Module 3: Patient Login

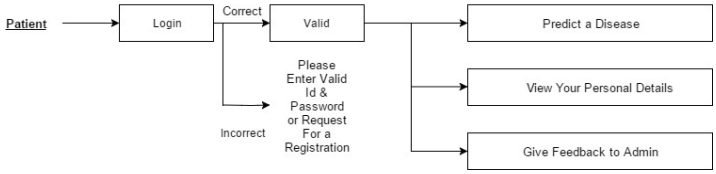

Figure 3: Patient Login

- **Patient Login:**

Patient will have the access on the system using his User ID and Password.

- **Valid:**

After Successful Login Of Patient, Patient Can Perform Following Functions :

- **My Detalis:**

Patient can view his personal details.

- **Disease Prediction:**

Patient will specify the symptoms caused because of his illness. System will ask certain question regarding his illness and system predict the disease supported the symptoms specified by the patient and system will suggest the doctors based on the predicted disease from symptoms.[2]

- **Search Doctor**

Patient can search for doctor by specifying name, User ID or their specialty in Disease .

- **Request for Appointment:**

Patient Can Request For Appointment Convenient to Them according to availability of Doctor.

- **Feedback:**

Patient can post the feedback through his account and the will be reported to the admin account.

3.2 DATA MINING ARCHITECTURE

Data Mining utilized in the field of medicinal application can abuse the concealed examples present in voluminous therapeutic information which generally is left unfamiliar. The term Knowledge Discovery in Databases, or KDD for short, alludes to the wide procedure of discovering learning in information, and accentuates the "abnormal state" use of specific information mining techniques.[1]

3.3 NAIVE BAYES ALGORITHM

The proposed framework utilizes a data mining Knowledge strategy "Naive Bayes classifier" for the expansion and evolution of the expectation framework. This framework includes a higher number of data indexes and characteristics which are legitimately gathered from specialist's data for the exact expectation of the symptom. "Naive Bayes or Bayes" Rule is the reason for some, AI and information mining strategies. The standard is utilized to make models with prescient capacities. It gains from the "proof" by figuring the connection between is the objective (i.e., subordinate) and other factors.[1]

3.3.1 NAÏVE BAYES ALGORITHM

Following advances are actualized in Bayes calculation:-

Bayes' Theorem : $P(c \mid x) = P(x \mid c)\, P(c) / P(x)$

Where,

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P (c | x) = Posterior Probability

P (c) = Prior probability

P (x | c) = probability of predictor

P(x) = Predictor's prior probability.[1]

4. CONCLUSION

This system can be used by all patients or their family members who need help in emergency.
This System Consumes Less Time. At a time multiple users can have a access on to the system.
Admin Can Control Whole System from Anywhere .This System can be used From Everywhere.

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TOURIST ASSISTANT SYSTEM

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Student[2,3,4], Computer Engineering Department, SSJCOE, Maharashtra

ABSTRACT
The tourism industry is the widely growing industry in present world that has made its place in the digital world. At the time of emergency tourist are unable to get the emergency help due to absence of network. Anyhow, tourist is often getting lost and many accidents happens because they couldn't track back the way and the help could not reach in time to them. The proposed system aims to provide an easy, user friendly solution to these problems. this project aims to develop the application for tourist/user which will provide the all the information about that place, trace back facility along with the emergency contact numbers.

Keywords: Tourist Assistant System, Android, Mobile Phone, Bluetooth.

1. INTRODUCTION

Tourism is the one of the biggest international industry Which revolves around the transmission of large amount of data. The rapid changes in the Tourism industry gave in too many innovative technologies to ensures the best travelling experiences and smooth and hassle-free journey. The problems faced by travellers are shortage of information and incomplete information of the places they are going to visit. The tourist will use the mobile phone to get the information. Now a day's tourist will use the tourist guide application to guide them in museum which uses the mobile audio guides in museum environment, while using the personal digital assistants (PDAs) to intensify the museum visit experience. GPS (Global Positioning system) are used to help the travellers to find out the routes by providing them directions to various locations. Some web and mobile application which when tangled with various technologies like GSM and GPS find the route for tourist according to his current location. The optimization can be done either before the journey, with respect to various input or could be real time optimization integrated with a server which assist the user.

Many times, travellers meet with some emergency conditions or are in need of some important information along with details of nearby places of attraction. Because of limited access in manual guides, web navigation or PDA's are unable to meet the requirements due to absence of mobile network. The time to time updates about places, contacts, directions to reach the destination and other things are the latest demands without some complex hardware and software involved. And, it is also necessary to track down the users, to know their last location so that they could tracked down and provided necessary help in time.

This proposed system assists tourists to get all the required information of nearby commodities. This system allows the traveller to get all the necessary information of current location with the emergency contacts. The most important target of this system are the locations where the mobile network is unavailable and where there is no one else to ask around. It also includes tracking of travellers that may be able to help local bodies to have last location of user, if in case the traveller goes missing. It will also help the user to trace back its route to his/her last location on GPS.

Android is the fastest growing and widely used mobile operating system. Daily more than one million new android devices are activated. Hence this proposed system TA (Tourist Assistance) system works with the Android operating system. TA system establish the BLE (Bluetooth Low Energy) technology for initiating communication between peripherals because every mobile phone has inbuilt Bluetooth technology in it. The main motive behind this project work is to increase human mobile interface in concerns of tourism. Tourist must make the trade-off between mobility and information. This work will intensify the information database with better mobility. And this project would save lives by providing help to tourists at the right place at right time which is not possible due to no mobile network connection available now a days. The RF technology and NFC (Near Field Communication) cannot be used because not every phone does have these technologies installed.

The tourist is subjected to various spatial variations during their journey. As the numbers of cases of misplacing tourist are increasing, the need of having a suitable solution to this problem arises.

2. PROBLEM DEFINITION

The main goal of this project is to assist the tourists by providing facts and information about their current location. This information comprises of contacts of nearest hospital, hotel, store, places of attraction and

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directions to reach there. It also gives the current temperature and provides information about nearby places for essential commodities. This system aims the places where this information if not easy to obtain due to unavoidable constraints.

3. PROPOSED METHODOLOGY

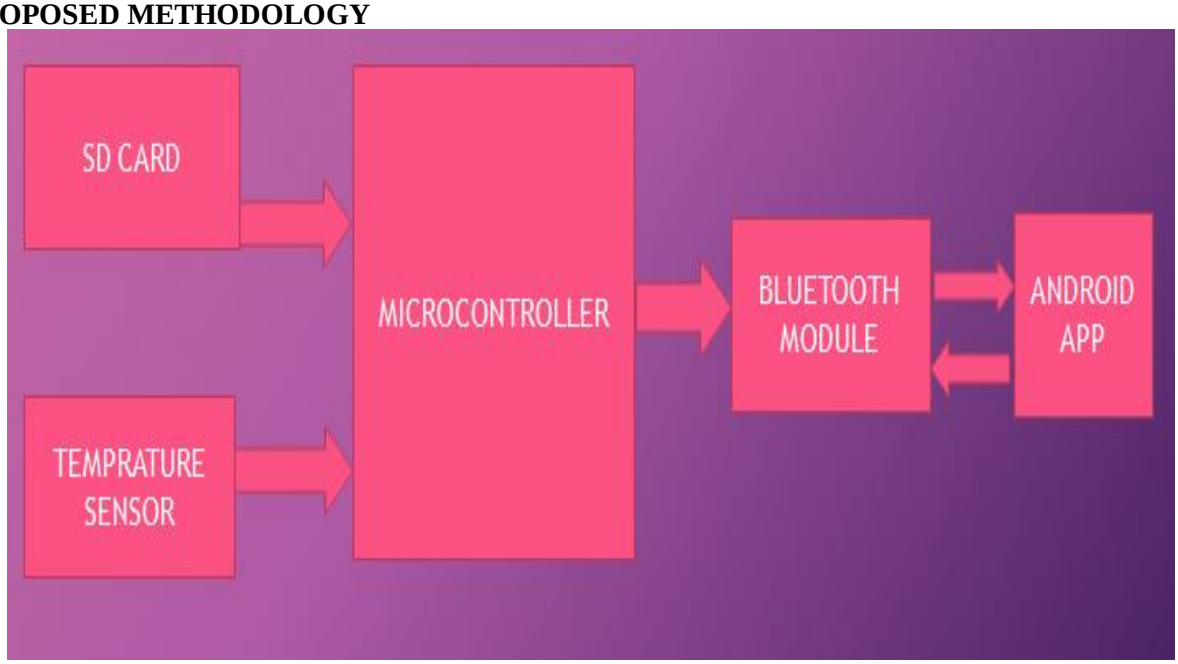

Fig 1. Block Diagram

The proposed system is designed to provide the necessary information to the user/traveller. The block diagram for the proposed system is shown in figure 1. The data we required for this system or the data we are going to represent the user is stored in the Sd card. SD card is attached to the Arduino microcontroller with the help of SD card module interface. The pinout is directly compatible with the Arduino. The mobile application named TRACO is when first opened, it checks if Bluetooth is supported by the device and whether the Bluetooth is enabled or not. And then it finds out Arduino Bluetooth module paired with android and then it forms a connection between mobile and Arduino. Socket is created through this connection which we used for transmitting and receiving the data. The rate by which data is transfer is 9600 symbols/sec. whenever the connection is made the Arduino microcontroller will send data to user serially using Bluetooth module. The data contains the information about emergency contacts numbers, nearby places and also vital information about nearby places. The information about user is saved in SD card when the user forms the connection to track the user. The information includes user name, date and time.

The temperature sensor embedded into system will provide user the current temperature of the location. An android app is developed to store the data that the mobile receives into the memory of mobile phone.

4. DEVELOPMENT OF APP (TRACO)

TRACO acts as an interface between user and the system. It supports all the android devices.it allows to transmit the data from Arduino and user's device and vice versa. TRACO allows user to store all the data in memory. It also has the trace back feature. In which it provides the route back to the last GPS location recorded from current location. It also provides information of nearby places, emergency contacts, details of nearby hospital and police stations all.

5. REQUIREMENT ANALYSIS

5.1 Software Requirement:

To implement the software solutions for tourist assistant system the following are required

- Arduino IDE Platform
- Android Studio

5.2 Hardware Requirement:

We needed these components to assemble to develop hardware infrastructure that ensures the services.

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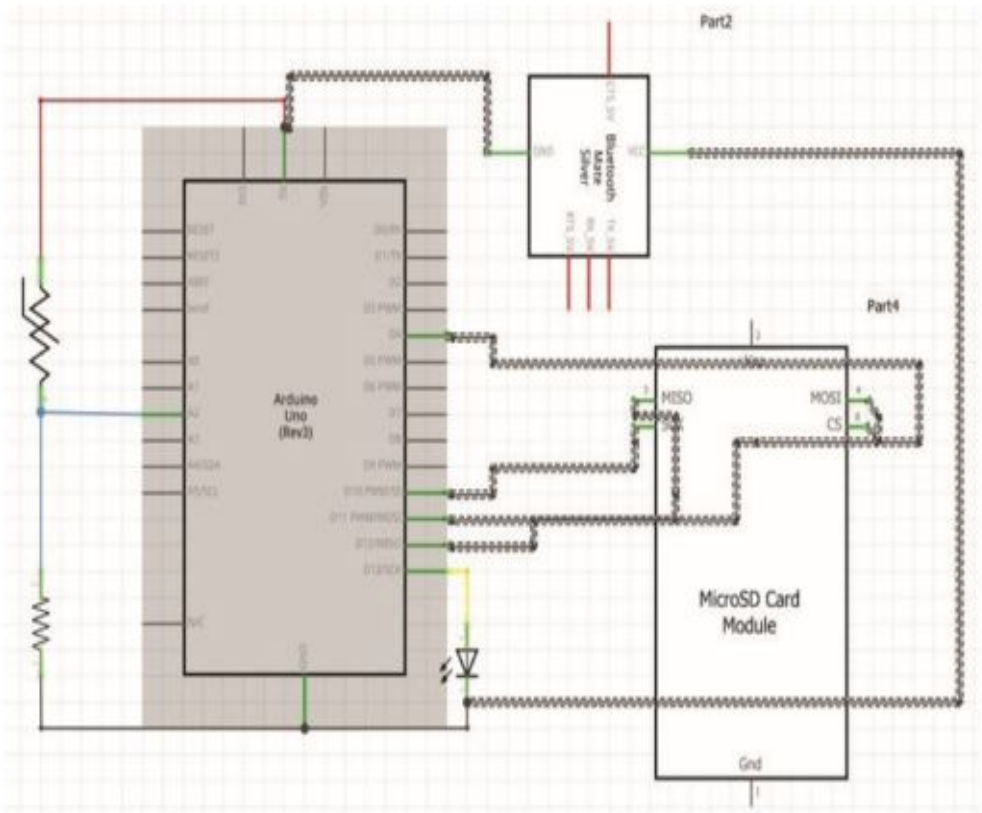

Fig 2: Hardware Meshing

- Android mobile
- Arduino UNO Microcontroller
- Bluetooth Module
- SD card & SD card Sheild
- Temperature Sensor

6. RESULTS

Fig 3. Home Page

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Fig 4. Retrace

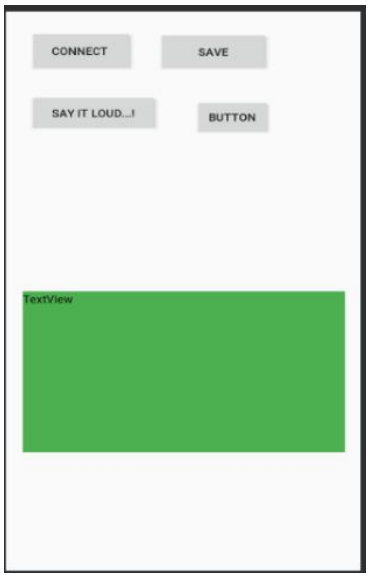

Fig 5. Offline Help

Fig 6. Rescue

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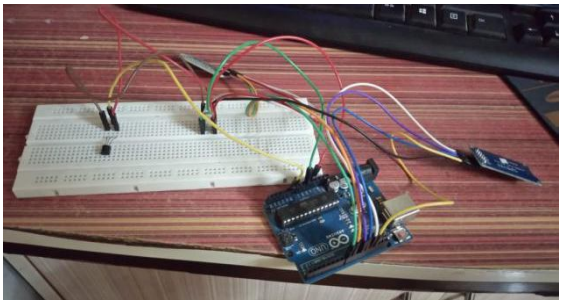

Fig 7. Real Time Implementation of system

7. CONCLUSION

This paper presents a module for mobile tourist assistance along with the development of app (TRACO) to facilitate the tourist anywhere in world. This TA system provide cost efficient and power efficient solution for making the journey of traveller less troublesome and gives convenience to them. This system does not require any extra hardware and software aid for use this system effortless. The tracking of traveller makes the journey safer and more trouble-free.

8. FUTURE SCOPE

This tourist assistant system requires power supply from battery which needs to be changed regularly. The energy source could be changed to the renewable energy source i.e. solar panels.

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WEB BASED EXAMINATION SYSTEM WITH SMART ASSESSMENT USING NATURAL LANGUAGE PROCESSING

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Student[2,3,4], Computer Engineering Department, SSJCOE, Maharashtra

ABSTRACT
The project designs a website where students can attempt exams created by their teachers with various types of questions like single choice, multiple choice, text or even subjective questions. Teacher can make the exam publicly accessible or password protect it and share with only students of some class. A student can attempt an exam as many times as he likes for practice, only the first attempt result is sent to teacher if it's a part of real grading. A teacher starts with inputting the exam meta data and adds as many questions as needed in the web portal. Exam id and password, if any, is shared with the student and he can attempt the exam with them. Answers are automatically evaluated and results saved to database for teachers to see. We have developed a Web-based system which can create exam competitively and collaboratively for students for the purpose of reducing the load required for a teacher to manually assess subjective answers using various natural language processing tools for php and manage paper based examinations.

Keywords: Cosine Similarity, Natural Language Processing-NLP, Online Results, Subjective Answers Assessment, Web Based Examination System.

1. INTRODUCTION

The online examination system could be a web application to require online test in an efficient manner and no delay for assessing the exam. The primary objective of online examination system is to efficiently evaluate the candidate thoroughly through a completely automated system that not only saves lot of your time but also gives fast and doubtless most accurate results. This will be utilized in educational institutions moreover as in corporate world. It can also be used anywhere any time because it's an online based application (user location doesn't matter). No restriction that examiner should be present when the candidate takes the test. It's very essential for an institute to handle the examinations and their results. It's very useful for an institute to check its student's ability continuously for his or her mutual development.

Existing system was manual entry of up keeping records of the students who are registered already. And it's very difficult for each student to come back to the examination centre. Online examination system is required to organize Registration form, question paper for the users and want to print much number manually. For calculating what quantity students registered, and verifying details of each students during a month by hand is incredibly difficult and time consuming. It's not only requires time but also wastage of cash because it requires quite lot of manpower to try and do that another component that takes into consideration that's the chance of mistakes. It cannot be used for private and immediate reference. Even the staff members can make quick entries if the responsible person is absent. Long duration is required for creating question paper. [1]

In our system there are separate dashboards for student and teacher. Student's dashboard will feature past exams attempted by him with result and teachers dashboard will feature exams created by him and also feature who has attempted particular exams with result of it.Using our project teacher can crate exams which are of two types mainly such as public and private. Private exams requires exam id and exam password to attempt whereas public exams can be attempted any of the registered student. There are three types of questions can be added in an exam such as single choice (only single option from multiple options is true), multiple choice (multiple options can be true), subjective (student must write multiple sentences to describe answer).After attempting exam student will get instant result of that exam and later at student dashboard the results will be featured for reference.

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2. METHOD

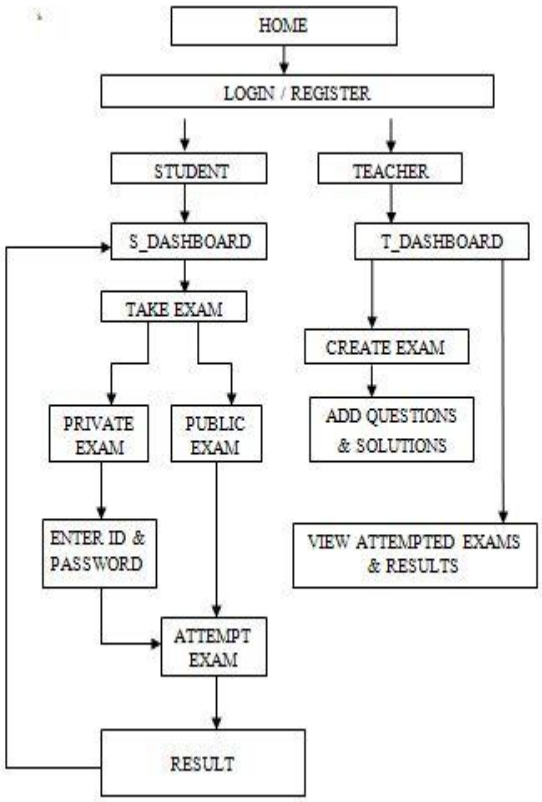

Fig. 1: System Architecture

The aim of this system is to mainly reduce the work of teacher for assessing the subjective answers which contains various sentences. This system uses similarity functions of natural language processing for comparing answer given by student and answer expected by teacher. We have used natural language processing which offers various tools and packages for the similarity finding between sentences. We have used some functions provided by NLP tools of PHP for our projects such as follows:

2.1 COSINE SIMILARITY

Cosine similarity could be a measure of similarity between two non-zero vectors of an real space that measures the cosine of the angle between them. The cosine of 0° is 1, and it's below 1 for any angle within the interval (0, π) radians. It's thus a judgment of orientation and not magnitude: two vectors with the identical orientation have a cosine similarity of 1, two vectors oriented at 90° relative to every other have a similarity of 0, and two vectors diametrically opposed have a similarity of -1, independent of their magnitude. The cosine similarity is especially employed in positive space, where the result is neatly bounded in [0,1]. The name derives from the term "direction cosine": during this case, unit vectors are maximally "similar" if they're parallel and maximally "dissimilar" if they're orthogonal (perpendicular). this can be analogous to the cosine, which is unity (maximum value) when the segments subtend a zero angle and nil (uncorrelated) when the segments are perpendicular. These bounds apply for any number of dimensions, and also the cosine similarity is most typically employed in high-dimensional positive spaces. for instance, in information retrieval and text mining, each term is notionally assigned a special dimension and a document is characterized by a vector where the worth in each dimension corresponds to the amount of times the term appears within the document. Cosine similarity then gives a useful measure of how similar two documents are likely to be in terms of their material. [2]

The term cosine distance is commonly used for the complement in positive space, that is:

DC (A, B) =1-Sc (A, B)

Where DC is that the cosine distance and Sc is that the cosine similarity. The cosine of two non-zero vectors is derived by using the Euclidean real formula:

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A.B = || A || || B || cos Ø

Given two vectors of attributes, A and B, the cosine similarity, cos(θ) is represented employing a real and magnitude as:

$$\text{Similarity} = \frac{A \,.\, B}{\| A \| \, \| B \|} = \sum_{i=1}^{n} AiBi$$

Where Ai and Bi are components of vector A and B respectively.The ensuing similarity ranges from −1 that means specifically opposite, to 1 that means exactly an equivalent, with zero indicating orthogonality or décor relation, whereas middle values indicate intermediate similarity or unsimilarity. For text matching, the attribute vectors A and B ar typically the term frequency vectors of the documents. Cosine similarity is seen as the simplest way of normalizing document length throughout comparison.

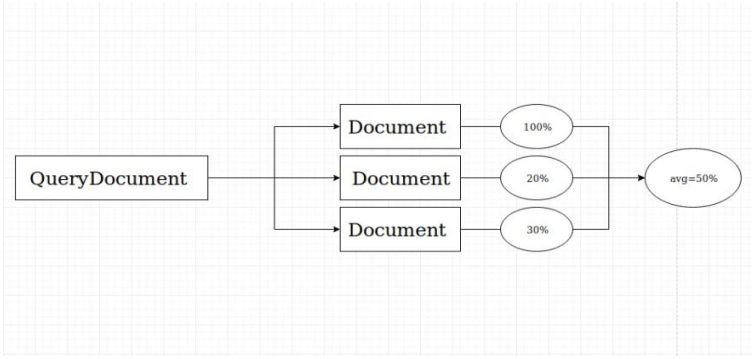

Fig. 2: Calculating average similarity for multiple documents

In the case of knowledge retrieval, the cos similarity of 2 documents can vary from zero to one, since the term frequencies (using tf–idf weights) cannot be negative. The angle between 2 term frequency vectors cannot be larger than 90°. If the attribute vectors are normalized by subtracting the vector suggests that (e.g. A-A), the live is called the targeted cos similarity and is care for the Pearson correlation. [2]

2.2 JACCARD INDEX

The Jaccard index, conjointly noted as Intersection over Union and conjointly the Jaccard similarity constant (originally given the French name constant First State comminute by Paul Jaccard), may well be a datum used for gauging the similarity and type of sample sets. The Jaccard constant measures similarity between finite sample sets, and is outlined as a result of the dimensions of the intersection divided by the size of the union of the sample sets The Jaccard distance, that measures unsimilarity between sample sets, is complementary to the Jaccard constant and is obtained by subtracting the Jaccard constant from one, or, equivalently, by dividing the distinction of the scales of the union and conjointly the intersection of 2 sets by the dimensions of the union.**3.**

3. RESULTS

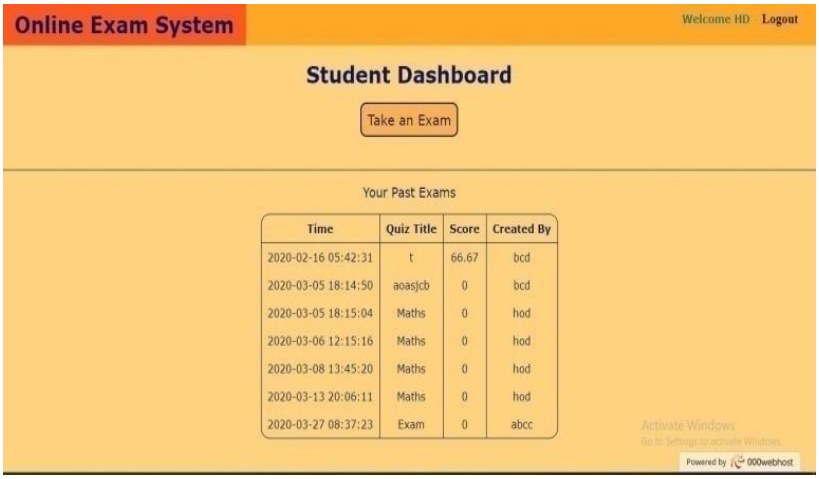

Fig. 3: Student Dashboard

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Fig. 3 shows the dashboard for student where he can see the past exams given by him and also result of exams.

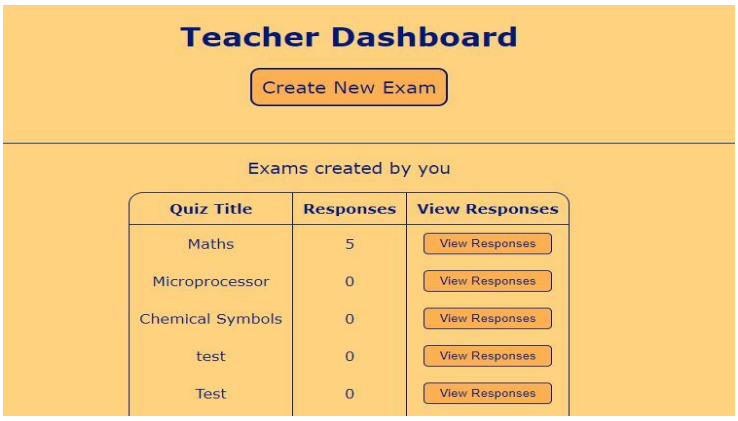

Fig. 4: Teacher Dashboard

Fig. 4 shows the dashboard for teacher where teacher can see the results of exams created by them.

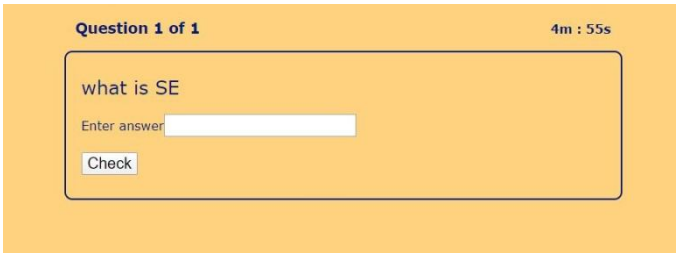

Fig. 5: Subjective Answering

After submission of text answer the script will compare the answer by student with the predefined answer of the teacher. In this assessment the keywords are used to assess the answer of student; certain keywords which are the most related to the answer must be inserted in students answer to get maximum marks for that text answer. Script not only computes the similar elements but also gives us the most accurate result for the similarity between students answer and teachers expected answer.

4. FUTURE SCOPE

The assessment of text answers in current implementation is script based which are analyzed by python tools. The future scope of this implementation is to automate the process of scripting the assessment process automatically. Also integration of webcam can also be implemented for the genuine authenticity of the user who attending the exam.

5. CONCLUSION

This paper reports our on-going work on developing assessment of subjective answering with using of NLP tools. We also implemented web based examination system using php language. This system is used to conduct online exams and get most accurate results regarding subjective answering.

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MANUSCRIPT SUBMISSION

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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.

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2Author Designation, Department, Organization, City, email id

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:**

Khan, M. R., Islam, A. F. M. M., & Das, D. (1886). A Factor Analytic Study on the Validity of a Union Commitment Scale. *Journal of Applied Psychology*, *12*(1), 129-136.

Liu, W.B, Wongcha A, & Peng, K.C. (2012), "Adopting Super-Efficiency And Tobit Model On Analyzing the Efficiency of Teacher's Colleges In Thailand", International Journal on New Trends In Education and Their Implications, Vol.3.3, 108 – 114.

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S. Neelamegham," Marketing in India, Cases and Reading, Vikas Publishing House Pvt. Ltd, III Edition, 2000.

- **Edited book having one editor:**

Raine, A. (Ed.). (2006). *Crime and schizophrenia: Causes and cures.* New York: Nova Science.

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Greenspan, E. L., & Rosenberg, M. (Eds.). (2009). *Martin's annual criminal code:Student edition 2010.* Aurora, ON: Canada Law Book.

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- **Electronic sources should include the URL of the website at which they may be found, as shown:**

Sillick, T. J., & Schutte, N. S. (2006). Emotional intelligence and self-esteem mediate between perceived early parental love and adult happiness. *E-Journal of Applied Psychology, 2*(2), 38-48. Retrieved from http://ojs.lib.swin.edu.au/index.php/ejap

- **Unpublished dissertation/ paper:**

Uddin, K. (2000). A Study of Corporate Governance in a Developing Country: A Case of Bangladesh (Unpublished Dissertation). Lingnan University, Hong Kong.

- **Article in newspaper:**

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7. The submission implies that the work has not been published earlier elsewhere and is not under consideration to be published anywhere else if selected for publication in the journal of Indian Academicians and Researchers Association.

8. Decision of the Editorial Board regarding selection/rejection of the articles will be final.