

“DISABILITY SCHEME SUVIDHA”

‘One-point solution to avail your Disability Benefits! Cause you are not disabled; you are just Differently-abled.’

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Abstract - India has various disability schemes in place to support persons with disabilities, including financial assistance, education, employment, and accessibility measures. These schemes are implemented by the Ministry of Social Justice and Empowerment and are aimed at promoting the welfare and social inclusion of persons with disabilities. The current method of handling disability schemes in India has been criticized for being inadequate and inefficient, with many eligible individuals not receiving the benefits they are entitled to. There are also concerns about the lack of accessibility and awareness of these schemes among the disabled population, leading to underutilization of the available resources. Efforts are being made to address these issues and improve the implementation of disability schemes in the country. Our aim is to create a comprehensive application that integrates all the disability schemes processes into one platform and be a useful solution to improve the accessibility and efficiency of these programs and schemes in India. Additionally, efforts are made to ensure the security and privacy of user data and necessary support to individuals who may require assistance in using our application.

1. Introduction

Disability is not just a result of an individual's impairment but also the societal and environmental barriers that prevent their full and equal participation in society. According to Census 2011, 2.21% of India's population comprises disabled individuals. India signed and ratified the United Nations Convention on Rights of Persons with Disability in 2007 and subsequently enacted the Rights of Persons with Disabilities Act 2016, which expanded the number of recognized disabilities from seven to twenty-one. The implementation of government schemes is essential for ensuring the socio-economic welfare of citizens. However, the conventional practice of manually administering these schemes poses significant challenges for the differently-abled individuals who have to physically visit government offices and often lack adequate knowledge to fill the required forms. This results in delays in receiving the benefits, causing undue stress and financial strain. Smartphones have become an integral part of people's lives, and they can be especially beneficial for individuals with disabilities. With the help of various applications, disabled individuals can carry out daily activities more easily. However, the availability of applications specifically designed for the disabled community is limited. There is a need for more developers to focus on creating applications that can assist and guide disabled individuals in their daily lives. Such applications can help with various aspects, including communication, mobility, and accessibility. Additionally, the use of assistive technologies such as voice recognition and touchscreens can be beneficial for individuals with disabilities. By developing more applications and integrating assistive technologies, smartphones can become even more useful for disabled individuals and help them to live a more independent and fulfilling life.

Scheme Suvidha is an all-encompassing app that simplifies the process of registering and availing government benefits. It offers a streamlined process from registration to verification and benefit disbursement. The app is specifically designed to cater to the needs of disabled individuals, who don't have to even worry about the login

process as certified agents handle their login credentials and registration. With Scheme Suvidha, disabled individuals can easily access government schemes and benefits, improving their quality of life and easing financial strain.

2. Proposed Idea

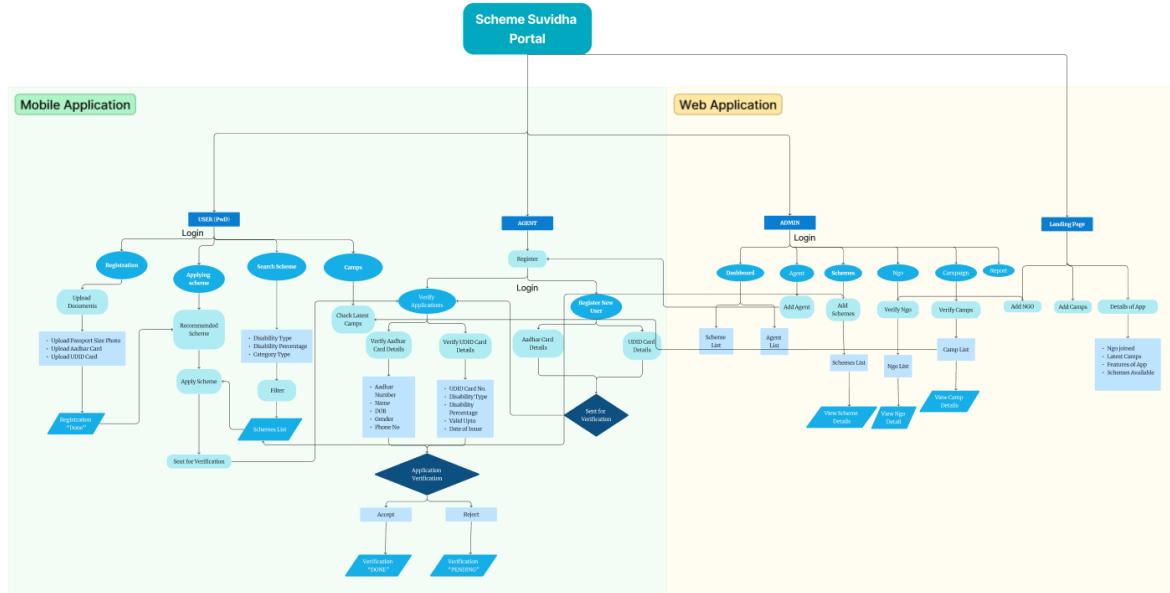


Figure 1 – Project Flowchart

Our application offers both a mobile and web-based platform, but for now, let's focus on the features and benefits of our mobile application. Our mobile application consists of two categories: users (people with disabilities) and agents. Users can have a family member as a support person who can log in to our app on their behalf. After successful login and OTP verification, the support person can use the app to access benefits for the user. This feature enables seamless access to our services, ensuring users can easily receive the support they need. After successful login, the user can access our app's services. These include Registration, Scheme Application, Scheme Search, and Camps Info. The app provides a one-stop-shop for users to access all these features flawlessly. Our goal is to make it easy for users to find and apply for schemes that can benefit them. By offering these services, we hope to make a positive impact on the lives of people with disabilities.

Under the registration process, the user is required to upload certain documents such as a passport size photo, their Aadhaar card, and their UDID card (if available). UDID basically stands for Unique Disability ID-entity, which is a unique ID card issued to persons with disabilities in India. The UDID card serves as a single document that contains comprehensive information about the individual's disability and can be used to access various government schemes and benefits. After uploading the required documents, the user's details will be fetched from our database and automatically filled in the relevant fields. Users can also verify the details and make any necessary changes if required. Once the user verifies and submits their details, they can click the submit button in the application. A prompt will then confirm that the registration process is complete. By receiving this prompt, the user can be assured that their registration details have been successfully submitted and they can move on to the next step applying for the schemes, which is offered by our application.

Thus, to summarize, the registration process involves uploading necessary documents, auto-filling user details, verifying and submitting them, and receiving a prompt upon completion.

Our recommendation system utilizes the user's details from the registration phase to suggest the best-suited government schemes based on all relevant clauses, and presents the top three matches to the user. Once the user selects a scheme to apply for, their details are forwarded for verification of eligibility for that particular scheme.

Our application also offers the ability for users to search for specific disability schemes based on their disability type, disability percentage, and category type through our search filters. Once the user sets the filters, the application displays a list of schemes that match the user's criteria, making it easier for them to find the appropriate scheme.

Under the "Camps" service, users can access the latest information on camps relevant to their disability, including the location, timing, and services provided, enabling them to participate in these camps and benefit from the facilities and resources available.

In our mobile application, we have a category for Agents who can register themselves by providing the necessary details and undergo a verification process to ensure their authenticity. Once verified, they can log in to the app and access two main services: registering new users and verifying user applications.

To register new users, Agents can input the Aadhar card and UDID card details of the users and send the applications for verification. Upon receiving the application, the certified Agent can verify the user's information and determine whether it is authentic or not. If the application is verified, the Agent can prompt the app that the verification is done. However, if the application is rejected due to incorrect information, the Agent can reject the application. Apart from registering new users, Agents can also verify user applications. This involves checking the information provided by the user and ensuring that it is correct and matches their Aadhar and UDID card details. Once the Agent is 100% sure that the application is genuine, they can send the prompt that the verification is done. This helps to prevent fake applications and ensures the security of our platform.

Our web application features an informative landing page that provides users with a wealth of information. Firstly, the page displays detailed instructions about the latest verified NGOs and the ongoing camps that they are conducting. This information helps users stay up-to-date on the latest social events and charitable activities in their area.

Secondly, the landing page highlights the advantages of our mobile application. Users can learn about the various features of the app, including the ability to register new users and verify user applications. By showcasing the benefits of our mobile app, we hope to encourage more users to download and use it.

Finally, the landing page provides users with an overview of all the disability schemes that are available. This information is helpful for those who are looking for support and assistance for themselves or their loved ones who are living with disabilities. By presenting this information in a clear and accessible manner, we hope to make it easier for users to access the resources they need. Overall, the landing page of our web application is designed to be informative and user-friendly, providing users with the information they need to make the most of our platform.

The admin portal is the most crucial part of our web application and is accessible only to government officials from the disability department. Upon logging in with their credentials, the admin is presented with a dashboard that displays a list of schemes and agents. The admin has several key functions, including the ability to add agents and schemes to the system. Additionally, the admin is responsible for verifying NGO and camps applications and updating the relevant lists. This ensures that only genuine NGOs and camps are featured on our platform, thereby increasing the overall trust and reliability of the system.

Furthermore, the admin is also responsible for generating reports and keeping an active check on the entire system. This includes monitoring user activity, ensuring compliance with regulations and policies, and promoting awareness to increase the number of users. Overall, the admin plays a vital role in maintaining the integrity and success of our platform.

3. Results

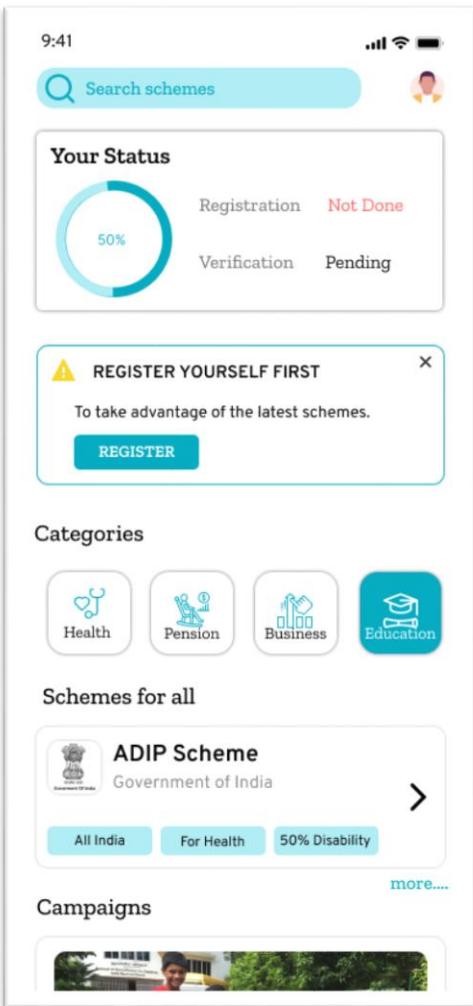


Figure 2 – User HomePage

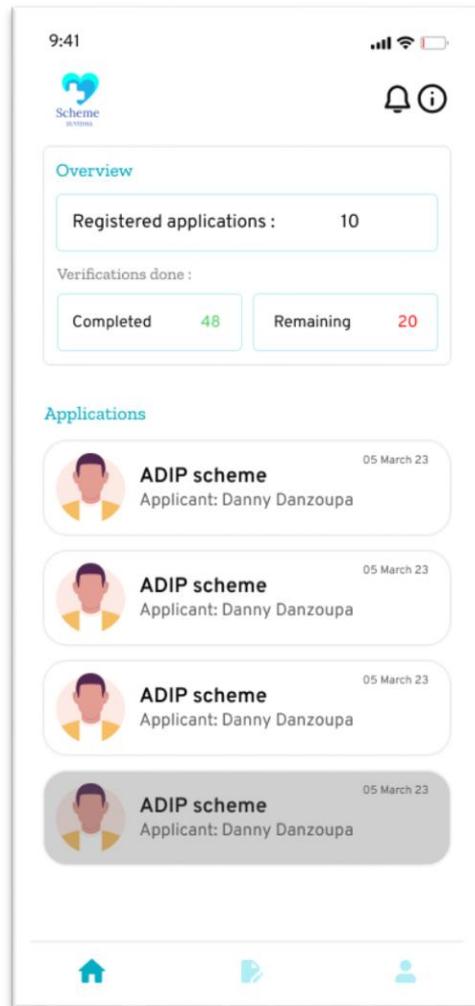


Figure 3 – Agent HomePage

When a user logs into the mobile application, they are presented with the homepage (Fig.2). This serves as a starting point for the user's journey through the app. The homepage is designed to provide users with quick access to important information and features. It is typically divided into different sections, each with a specific purpose. One of the most prominent sections on the homepage is the Status section. Here, users can see their registration and verification status. This information is critical, as it determines the user's eligibility for various services and features within the app. For new users, this section will display 'Not done' until they complete the registration process. Another section of the homepage is the Categories section. This provides users with an overview of the various schemes offered by the app. Each scheme is listed with its name and specific criteria. This allows users to easily browse through the available options and determine which ones they may be eligible for. Overall, the homepage serves as a central hub for the mobile application, providing users with a quick and easy way to access important information and features. By presenting information in a clear and organized manner, the homepage helps users navigate the app more efficiently and effectively.

The Agent HomePage (Fig.3) is designed to provide agents with quick and easy access to the various services and features required of them. Upon logging into the mobile application, agents are presented with a dashboard that serves as a central hub for their activities. The first section on the Agent HomePage is the Overview. Here, agents can quickly see the total number of users they have registered, as well as the total number of users whose

verification is complete. Additionally, agents can view the number of users who still require verification. This information is critical for agents, as it allows them to track their progress and ensure that they are meeting their goals. The second section on the Agent Homepage is the Applications section. Here, agents can view a list of users who have registered through the app. Each applicant's name is displayed, along with additional information such as their registration status and verification status. This allows agents to quickly identify users who require further attention or follow-up. Overall, the Agent Homepage is designed to be intuitive and user-friendly, allowing agents to easily access the information they need to perform their duties. By providing agents with real-time data and insights, the Agent Homepage helps to streamline the registration and verification process, ensuring that users receive the services they need in a timely and efficient manner.



Figure 4 – Upload UDID Card

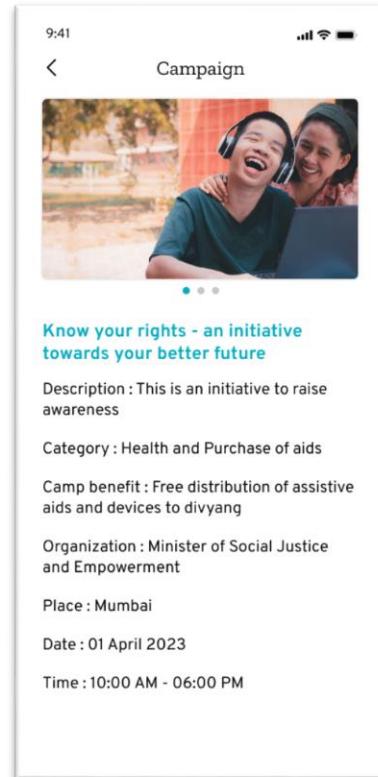


Figure 5 – Scheme Details

The Upload UDID Card page (Fig.4) is an important part of the registration process for users of the mobile application. This page allows users to upload their UDID card, which is a unique 18-digit alphanumeric identifier that is used to verify their identity. When a user uploads their UDID card, the app automatically fetches the corresponding details from its database. These details are then auto-filled into the appropriate fields on the page, making it easier for users to complete the registration process. After the details have been auto-filled, users can double-check to ensure that they are correct. If there are any errors, the user can make changes as necessary. Once the details have been verified and are accurate, the user can then submit the information and complete the registration process. Overall, the Upload UDID Card page is a critical component of the mobile application's registration process. By automating the process of filling in user information, the page helps to streamline the registration process and make it more user-friendly. This, in turn, helps to ensure that users are able to complete the registration process quickly and efficiently, allowing them to access the various features and services offered by the app.

The Campaign Awareness page (Fig.5) is an important feature of the mobile application, designed to keep users informed about the various campaigns and events happening in their local community. This page displays all the necessary information about upcoming campaigns, including the time and location of the event, as well as the purpose and goal of the campaign.

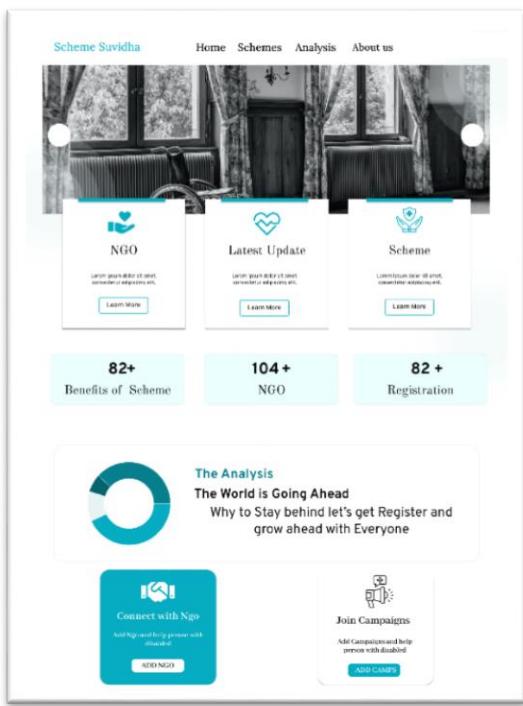


Figure 6 – Landing Page

Figure 7 – Add New Scheme Page

The web interface (Fig.6) is designed to be user-friendly, allowing authorized personnel to easily add and manage information about new NGOs and camps with minimal hassle. This feature also ensures that our platform remains flexible and adaptable to changing circumstances, allowing us to quickly add new information as needed. By empowering authorized personnel to update the platform, we can ensure that our users always have access to the most comprehensive and accurate information possible.

Our web application offers a range of services to users, primarily focused on their welfare. Our platform provides users with easy access to information about the services, programs, and activities offered by these NGOs. We aim to promote transparency and accountability by only featuring verified and active NGOs that are recognized by the Government. We aim to keep users up-to-date with the latest campaigns and information about agents, as well as with the information about the schemes available. Our users can easily access details about all the schemes and programs available, as well as information about the number of people who have benefitted from these programs. Additionally, we provide statistics on the number of registered users on our platform, ensuring that users are informed about our impact and the reach of our services. Our web project also provides an intuitive and easy-to-use administrative interface, allowing authorized personnel to add information about new NGOs and camps.

Our web project includes an "Add New Scheme" page (Fig.7) that enables authorized personnel to easily add new schemes to our database. The page includes fields for organization details, including the name and contact information for the organization offering the scheme. Users can also provide detailed information about the scheme itself, including its name, category, and other relevant details. Additionally, users can enter criteria details, outlining the eligibility requirements for the scheme. By providing a user-friendly interface for adding new schemes to our database, we aim to ensure that our platform remains comprehensive and up-to-date, providing users with access to the most relevant and useful information possible.

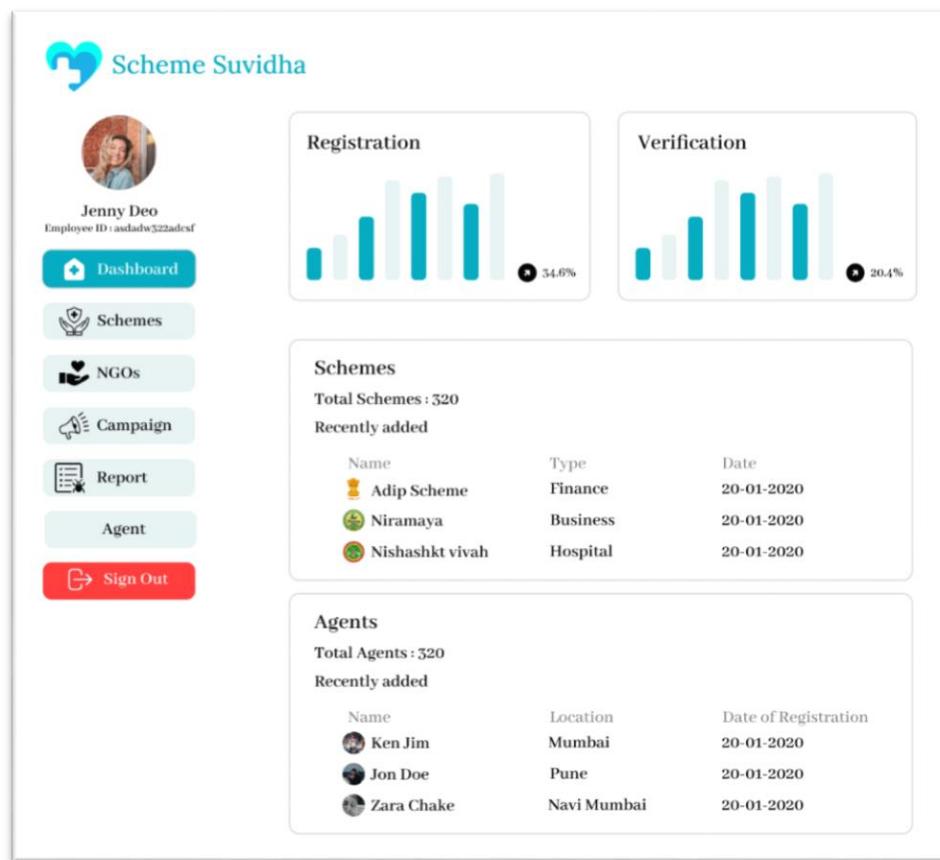


Figure 8 – Admin Dashboard

The Dashboard page is the first page that the admin sees after logging into the portal using their credentials. This page provides an overview of all the functions and services offered by the mobile application, and is designed to be user-friendly and easy to navigate. The first section on the Dashboard page is the Registration and Verification section, which provides an overview of the total number of registered and verified users over a specified time frame. This information is presented using data visualization, making it easy for the admin to understand and analyse the data. The next section on the Dashboard page is the Schemes section, which displays a list of all the available schemes in the mobile application. Each scheme is presented in brief, with details about its eligibility criteria and other important information. The final section on the Dashboard page is the Agents section, which provides an overview of the total number of agents and a list of recently added ones. This section is designed to give the admin a quick and easy way to keep track of the agents who are working on behalf of the mobile application. Overall, the Dashboard page is an important feature of the admin portal, providing an at-a-glance view of all the key functions and services offered by the mobile application. By presenting this information in a clear and organized manner, the Dashboard page helps to streamline the admin's workflow and make it easier for them to manage the various aspects of the mobile application.

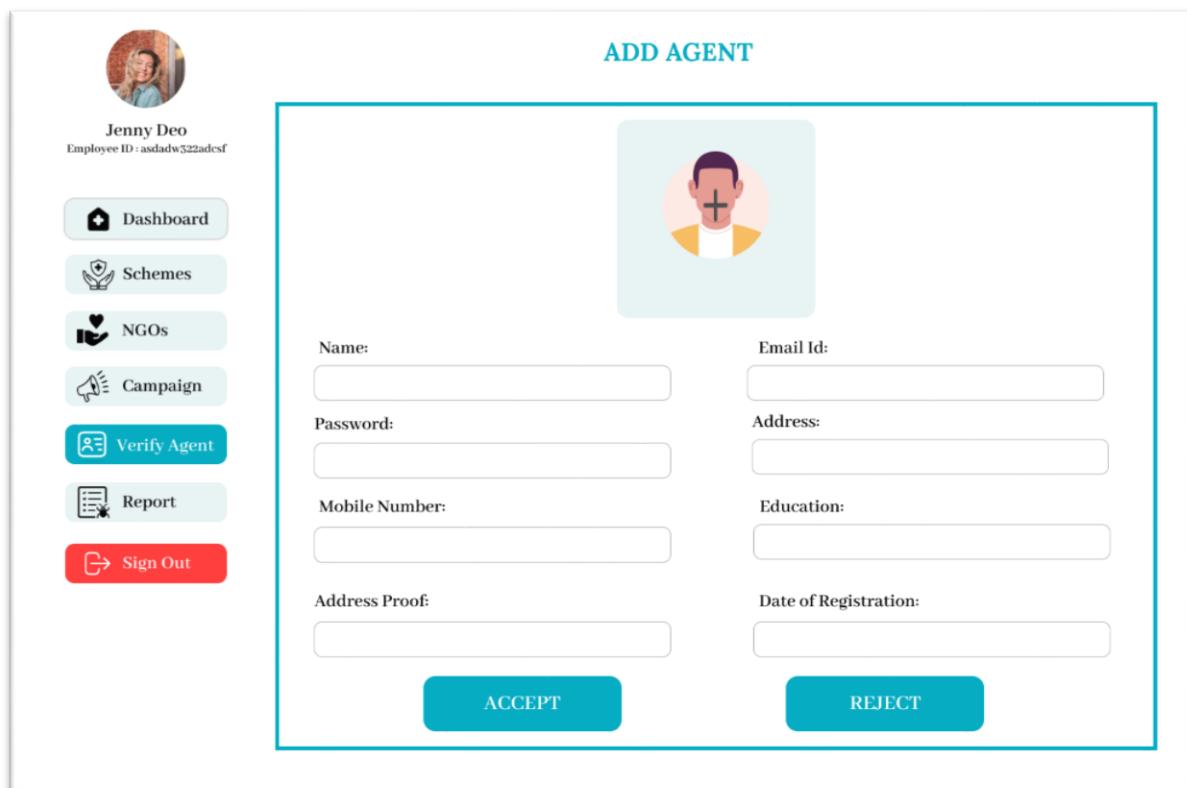


Figure 9 – Add Agent

One of the key responsibilities of the admin is to manage the list of agents who are authorized to use the mobile application. When an agent submits an admission request, the admin is responsible for reviewing the request (Fig.9), verifying the agent's details, and either accepting or rejecting the request. The process of admitting an agent typically involves several steps. First, the agent submits an application request, providing details such as their name, contact information, and other relevant information. The admin then reviews the application and verifies the agent's details, ensuring that they meet the necessary criteria for admission. Once the admin has verified the agent's details, they can then make a decision about whether to accept or reject the agent's request. If the agent meets all the necessary criteria and has provided accurate and complete information, the admin will typically approve their application and grant them access to the mobile application. On the other hand, if the agent has provided incomplete or inaccurate information, or if they do not meet the necessary criteria for admission, the admin may reject their application. In such cases, the admin will typically provide feedback to the agent, explaining the reasons for the rejection and outlining any steps the agent can take to improve their chances of being admitted in the future. Overall, the process of admitting agents is an important part of the admin's role in managing the mobile application. By carefully reviewing and verifying the details of each agent, the admin can ensure that only qualified and trustworthy agents are granted access to the application, helping to maintain the integrity and security of the system.

4. Conclusion

In conclusion, our project aims to provide disabled people with easy access to the benefits and services they need. By developing a mobile application that is user-friendly, accessible, and intuitive, we hope to make it easier for disabled people to apply for and receive the support they need to live full and independent lives. Our application is designed to be inclusive and responsive to the needs of all users, regardless of their level of ability. By incorporating features such as voice-activated commands, larger fonts, and simpler navigation, we have created a platform that is both accessible and intuitive. We believe that our project has the potential to make a real difference in the lives of disabled people, by helping them to navigate the often complex and confusing world of benefits and services. By providing a simple and effective way to access the support they need, we

hope to empower disabled people to live full and meaningful lives, free from the barriers and obstacles that can sometimes stand in their way.

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Psych Match: A Mental Health Tracker

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Abstract—The project focuses on building a mental health tracker. You will try to get an overall estimate of the mental state of your user , find out if they are suffering and then suggest remedies they can take to get out of their mental condition. A user is given some questions in the form of few questionnaires and based on the answers that they provide, you will suggest tasks to them and maintain a record of their mental state for displaying on a dashboard. Mental disorders are widespread and prevalent in countries all over the world. Our paper aims to propose a system design, which is based on the web app “PsychMatch”, which identifies the mental health of the user. According to our survey, the application must have an authentication system, so that the data will remain secure. An application should be easy to use and include options that allow the user to customize it, and goals and memories can be saved. The system uses Natural Processing Language, Machine Learning (algorithm random forest), and MySQL for sentiment analysis, questions must be shuffled. A graph will be generated based on the weekly and daily data entered by the user, and you will see a graph of the weekly improvement. Using this application can help a person overcome their mental illness in order to live a happier life by suggesting some tasks or activities by a doctor that they can do to accomplish their goals.

Keywords—Anxiety, Depression, Mental Health, Deep learning, Questionnaire, Depression, common mental disorders, approaches to mental wellbeing

1. INTRODUCTION

Mental health reflects a person's emotional, psychological, and social well-being. According to the World Health Organization (WHO), out of four people, one suffers from some sort of mental or neurological disorder and currently, about 450 million people are in the clamp of mental illness. Globally 332 million people were found to be a victim of depression in 2015, 7.5% of Indians suffer from major or minor mental illness. Hence, the idea is to develop an end-to- end solution for identifying and treating mental health issues. In today's world, with the education systems being more stressful than ever, it has become very important to focus on the mental health of the students, especially in professional colleges. Traditionally, the model for assisting people with mental disorders has been finished via face-to face conferences with specialized health professionals, usually psychologists and psychiatrists, at a frequency that can vary relying on the assessment of the case, but is generally once a month to 3 times a week. However, because the number of

individuals tormented by a mental situation continues to rise, it is crucial to address the project of lowering or, at least, slowing the rate of growth. One of the proposed alternatives is to apply diverse patient resource strategies to be had via mobile gadgets and software. Such methods may be used to gather mental fitness facts, prompt individuals to reply to questions about what they may be doing and/or experiencing in their everyday habitual. In order to undertake mental health interventions remotely and offer access to health resources, which include the construction of conversation channels with mental health experts such answers are being developed in the context of mobile health research.

The outcome of being in a depressed state can be very depressing to hear. People generally react in very unusual ways. They might show symptoms like getting angry on little things, overeating or less eating, overthinking, deprived of sleep, or even in extreme conditions committing suicide. There are medications prescribed by psychologists like antidepressants, anxiolytics, etc. Even patients can talk to their psychiatrist regarding the problem they are facing on one-on one physical interactions. Depression can happen to anyone. Usually, this can happen to people of age between 15-29 years but this is not always true. Depression can strike any person deprived of their age whether it is a school going 16-year-old kid or a famous movie star or an energetic and healthy sportsperson, this can be caused to anyone. Speaking of the infamous athlete Michael Philips, speaking to a recent episode of the Axe File Podcast on CNN, he stated the "I straight wanted to die". Later on, he joined the 23-year-old company named Medibio for his treatment. Not only alone Michael Philips suffered from depression but there are other famous personalities like Dwayne Johnson, J.K. Rowling, Shah Rukh Khan, Deepika Padukone, etc. suffered this illness once throughout their lifetime. Nowadays, mental illness is increasing day by day. Every other person is suffering from some kind of mental health issues. But there has been a failure in curing some sections of individuals across the globe. In high-income countries, only 35-50% of people in need receive basic treatment. Low and middle-income states record the shocking gap of 76-85% untreated individuals. The reason for this imbalance varies because there is limited access to diagnostics treatment and inability to identify the problem in the first place.

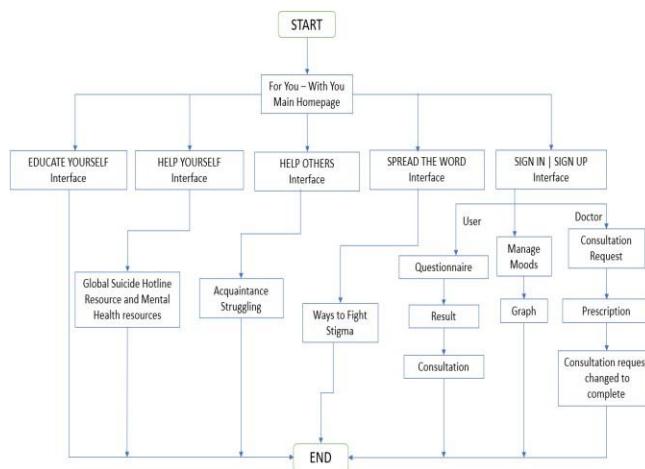
This paper aims to develop an application to keep track of user's behavior, both online and offline, to understand and identify the possible mental health issues using various analytical and psychological methodologies. In this paper, we intend to develop an end-to-end solution for identifying the possibility of a mental illness, as well as, provide our user with a platform to deal with his/her condition and live a better life every day.

2. LITERATURE SURVEY

In [1] this paper is based on comparison of different machine learning algorithms. Machine learning was applied to determine five different severity levels of anxiety, depression and stress. Data were collected using standard questionnaires measuring the common symptoms of anxiety, depression and stress. The accuracy of naïve Bayes was found to be the highest, although Random Forest was identified as the best model. In [2] in this model, mental screening questionnaires were there for tracking mood and mental condition. This model helps rationalize negative thoughts, meditation guide and have activities and games for improving attention, memory etc. The technology used for this model was Machine Learning and AI. The programming language used was python. In [3] the focus on the text entry pattern to track multiple emotions. The model is based to design, develop and implement an android based smartphone keyboard Emokey, which monitors user's typing pattern and determines four emotion states (Happy, Sad, Stressed, and relaxed) by developing an on device personalized machine learning model. The technology used for this model was machine learning and the programming language was python. In [4] SituMan logic uses LTA (Location, Time, and Activity) logic. The location, time and activity were directly obtained from the device and a

notification were sent by the mood Buster. This notification typically requests patients to rate their levels of mood, anxiety, and sleep quality. From these situation aware notifications, the mood buster may be able to correlate the patient's status with their situations. The technology used for this model was Machine learning. In [5] smartphone will access and monitor sleep, depression and anxiety. Show early associations between behaviors and sleep parameters and agreement between clinic-based assessments, active smartphone data capture and passively collected data. The technology used in this model was AI, Machine Learning and java. In [6] this model aims to identify, analyze and characterize the current state of a person by mood tracker, Chatbot, test was provided. Python and machine learning technology was used for this model. In [7] this model develops various systems for mental health monitoring virtual counseling, precision therapy and diagnostic systems by reviewing Chatbot and virtual counseling. The technology used was AI, Machine Learning and Neural Processing Language for text analysis.

3. PROPOSED SYSTEM

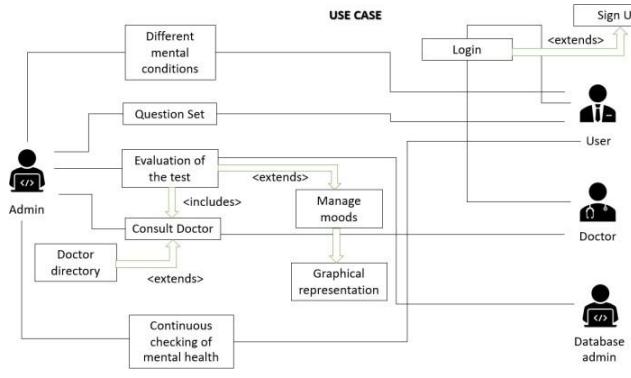


The users will have free access to the website and can create an account to use all the features of the website. Users that don't have login , can sign up and continue further. After that, some questions will be asked to the user. According to the answer given by the user, current mental state and current mood will be identified and the result will be shown to the user. Users can see their mental progress in terms of a graph. According to the report, some activities will be suggested to the user to improve their mental health condition.

The questionnaire forms the part of rule based learning technique where 10 questions were selected after research which is mostly used by Psychological doctors to check the state of mind of an individual. The questions are in an MCQ format and have three answers. The answers have been given a predefined range from (0-3) . Based on the answers to the question by an individual, the value is given. The sum of values from 10 questions is then averaged to get the final result.

Based on the questionnaire , an issue such as anxiety , depression , post-traumatic stress disorder or other illness will be detected . We will further , try to evaluate the intensity of the illness and then accordingly suggest therapy or meditationor suitable psychiatrists for treatment.

- The users will have the option to choose the specific mental health assessment test and will get questions based on that health issue . This would help to evaluate the intensity of the health issue and the doctors can accordingly give the prescription .
- The questionnaire forms the part of rule based learning technique where 10 questions were selected after research which is mostly used by Psychological doctors to check the state of mind of an individual.



Manage Moods:-

- We can enter daily data regarding our anxiety , depressed mood , elevated mood , talk therapy , psychotic thoughts and sleeping pattern .
- Along with this , we also have implemented the graphical representation of the daily records to determine the growth and improvement

Doctor's Interface:-

- One of the major factor of this website is the doctor's interface . As soon as a patient has sent a request for consultation , the doctor receives the request .
- The doctor will be able to see the assessment taken bythe patient .
- The doctor can analyze the answers and then give a suitable prescription or habit for the user to follow .

Deployment :-

- We deployed our website via Visual Studio on Windows platform and with the help of Google Chrome as the main browser.

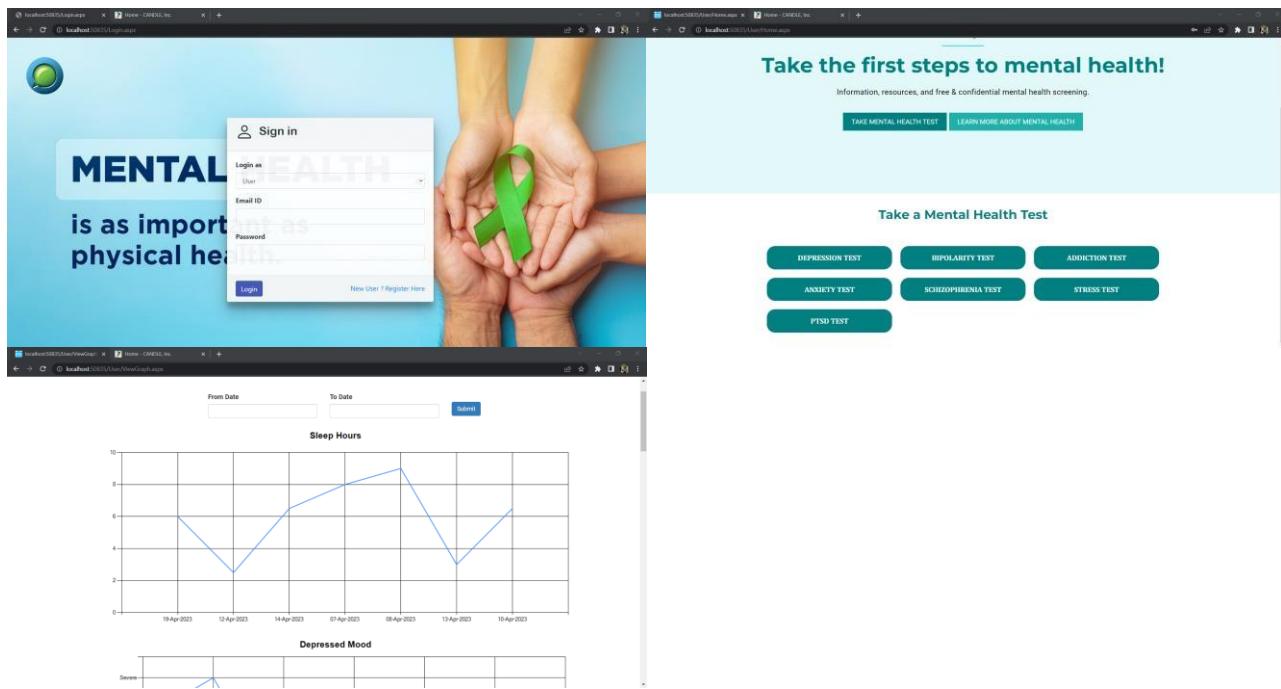
To understand human language by the computer, we need a process called NLP. NLP means natural language processing. NLP helps to communicate with humans in their own language and also makes it understandable to computers.In short, it is a communication medium between humans and computers. Sentiment analysis is a subfield of NLP and with the help of machine learning techniques, it tries to identify theexact insights.

- One of the most prominent and easy to use libraries is textBolb. txtBolb is a library provided by NLP. TextBlob actively used the Natural Language Toolkit (NLTK) to achieve its tasks. NLTK is a library which gives an easy access to a lot of lexical resources and allows users to work with categorization, classification and many other tasks. TextBolb is a simple library which supports complex analysis and operations on textual data. TextBolb returns the polarity and subjectivity of a sentence. Polarity lies between [-1,1], -1 defines a negative sentiment and 1 defines a positive sentiment . This will help us to identify the intensity of the person's emotions and how much they are suffering .

4. RESULT AND CONCLUSION

According to a WHO research, depression will be a major cause of mental disease throughout the world, and individuals must pay more attention to their mental health inorder to live a healthy social and professional life. Online predictors for outcomes can be used by those who are afraidto contact humans for diagnosis. Mental health directly affects the way we think, feel and act. It also has a tremendous effect on our physical health. Unfortunately, recognizing mental health concerns is a challenging undertaking, and mistakes can lead to significant consequences. More so, many taboos have developed around mental sickness and thus people prefer avoiding the issue rather than consulting professionals. Hence, through this paper, we would like to help our community by developing a user-friendly android application which would allow them to easily diagnose their mental health problemsand will also help and support them to improve their mental health, right from the user's home. We are overcoming the drawback of the existing system, and

providing a smart system that will not only monitor user mental health with security but also show recommendations whenever necessary.



6. FUTURE SCOPE

In future work, the aim is to develop a android application to provide an end-to-end solution for the diagnosis of possibility of mental health illness and treating it.

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RENT4FARM – A PLATFORM FOR RENTING FARM EQUIPMENTS

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Abstract— *India is an Agriculture based country and over 50% of India's population is engaged in agriculture. Since some farming equipment is expensive, not everyone is capable of owning them. We come up with a platform through which farmers can generate passive income. Rent4Farm is a platform for farmers to lend and borrow equipment and items. Farmers can exhibit their unused equipment using our map. Communicate with borrower's and lander's using inbuilt chat.*

1. INTRODUCTION

At present, farmers need to travel to a place to borrow all the essential needs, which is tiresome and not a cost effective work. So smart digital farming is listed as the highest ranking technology opportunity in the latest Global Opportunity report in terms of its expected positive impact on society. This web based project is on digitizing the process of renting the agricultural equipments by the farmers .We aim at developing an application that farmers can use to get their equipment on rent and also check the availability and renting .We also allow them to book the equipment's in advance .It also helps us to get the track of equipments that are on rent .We also aim at developing analytic for the state heads to make better availability of equipments and to keep track of the equipment's as well, which could help in providing better support for farmers.

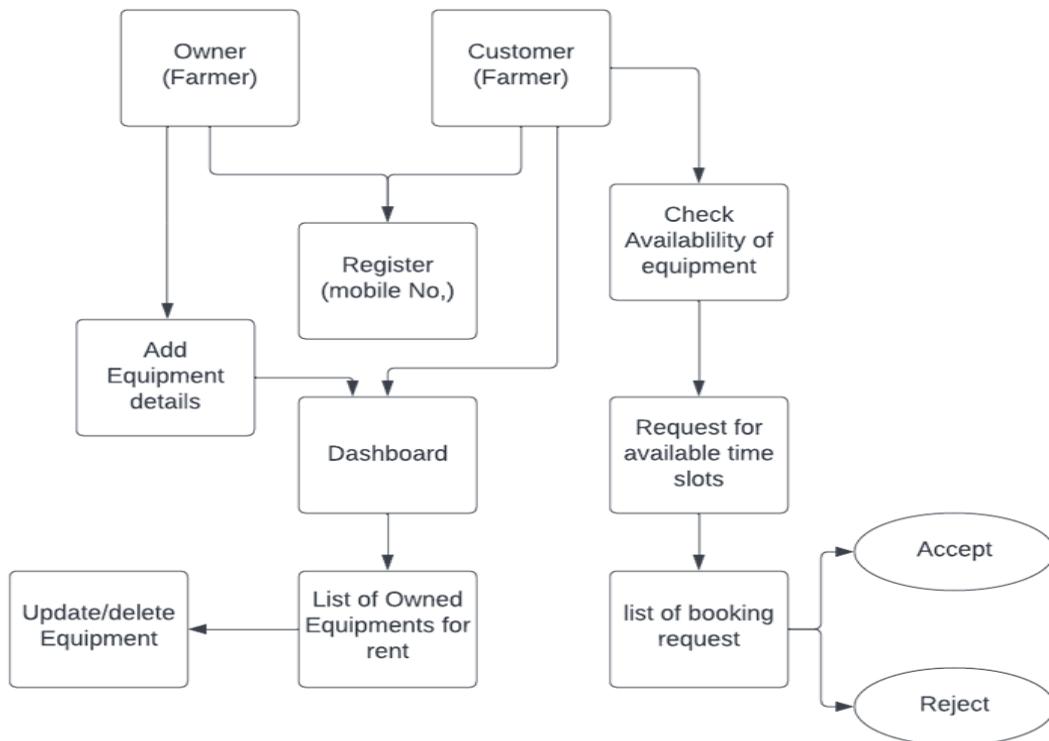
2. LITERATURE SURVEY

Sr. No.	Year	Title	Conclusion
1	2022	Farming Guru: - Machine Learning Based Innovation for Smart Farming	This paper describes an app “Farming guru”“ which will help farmers in effective farming, by making them smarter. The current paper anticipates a model and system design to not only analyse crops and weather but also help the farmers in managing finances by providing an opportunity to trade their tools for extra income as well as manage their income by providing a budget calculator.
2	2019	Smart Farming Education Service based on u-	Smart farming education service focuses on the dissemination of farming information. This farming information is supposed from current activities, farming products and from the experience of

		learning environment	farmers on the field. If the information is not available, or if available and not in a form that is amenable to being brought to the end producer then the process stalls at this point.
3	2020	Intelligent Farming using Delta Robot	In this paper, Machine Learning technique is used to train the drone for decision making and to spray the pesticides automatically. Finally the harvested vegetables and fruits are freshly packed with the help of delta robots and robotic arms. This prevents processing stage and adulteration, thus it retains 100% of nutrition. This method will revolutionize the impact of organic farming in the future.
4	2022	An Analytical Study of the Types of Implements used by Farmers in Mechanised Agriculture	In this paper, the mechanization of agriculture is defined in various ways. This involves the use of tools, implementations, and powered machines in agricultural operations. Mechanical power, draught animal power, and human power are the three basic energy sources in agricultural mechanization.

3. DESIGN SYSTEM

3.1 BLOCK DIAGRAM



Once the Web application is complete it will function in the following way:

Farmers create a profile using Mobile No. They can register as Owner or a rental account. The owner can add equipment along with the description, details, and available time.

Farmers can browse, filter, and send requests, for the available time slot. Farmers can communicate

using in build chat and calling ,with owner for any booking discussions the owners booking discussions. At a given time, farmer equipment is idle during non-seasons. A platform that allows farmers to rent farming equipment for less during the off-season. A simple aggregation platform with call centre support can function as booking equipment will help farmers make additional income. We aim at developing an application that farmers can use to get their equipment on rent and also check the availability .

- It reduces the cost of visiting the nodal centres to check the availability and renting.
- We also allow them to book the equipment in advance.
- It also helps us to get the track of equipments that are on rent
- We also aim at developing analytic for the state heads to make better availability of equipments and to keep track of the equipment's as well which could help in providing better support for farmers

4. COMPONENTS LIST AND SPECIFICATION.

Hardware Requirement –

- Ram: 8GB or above
- Wireless communication technology: Wi-Fi, Internet

Software Requirement –

- OS: Any OS
- Browser: Any latest version of browser
- Frontend: React, Redux
- Backend: Django, Django Rest Framework
- IDE: VS Code, PyCharm
- Version Control: Git and GitHub
- Machine Learning: Python, Jupyter Notebook
- Database: PostgreSQL

5. RESULT AND CONCLUSION

We are proposing a platform for easy borrowing and lending of farming equipment using Django as backend framework and react as frontend framework and using machine Learning methods for advanced searching and recommendation of tools. This platform will prove to be profitable for farmers as it provides a passive earning method to the owners of the equipment.

6. FUTURE SCOPE

Functionality for selling and buying of old farming equipment will be added. Future scope will include content of websites in other regional languages like marathi, hindi and Gujrathi. There are a lot more challenges in the farming industry starting with labour requirements which will be covered.

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Power Line Communication

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Abstract — Power line communication (PLC) presents an interesting and economical solution for Automatic Meter Reading (AMR). If an AMR system via PLC is set in a power delivery system, a detection system for illegal electricity usage may be easily added in the existing PLC network. In the detection system, the second digitally energy meter chip is used, and the value of energy is stored. The detector and control system are proposed. The architecture of the system and their critical components are given. The measurement results are given. The target of this study is to discover new and possible solutions for this problem.

I. INTRODUCTION

Power line communication (PLC) presents an interesting and economical solution for Automatic Meter Reading (AMR). If an AMR system via PLC is set in a power delivery system, a detection system for illegal electricity usage may be easily added in the existing PLC network. In the detection system, the second digitally energy meter chip is used, and the value of energy is stored.

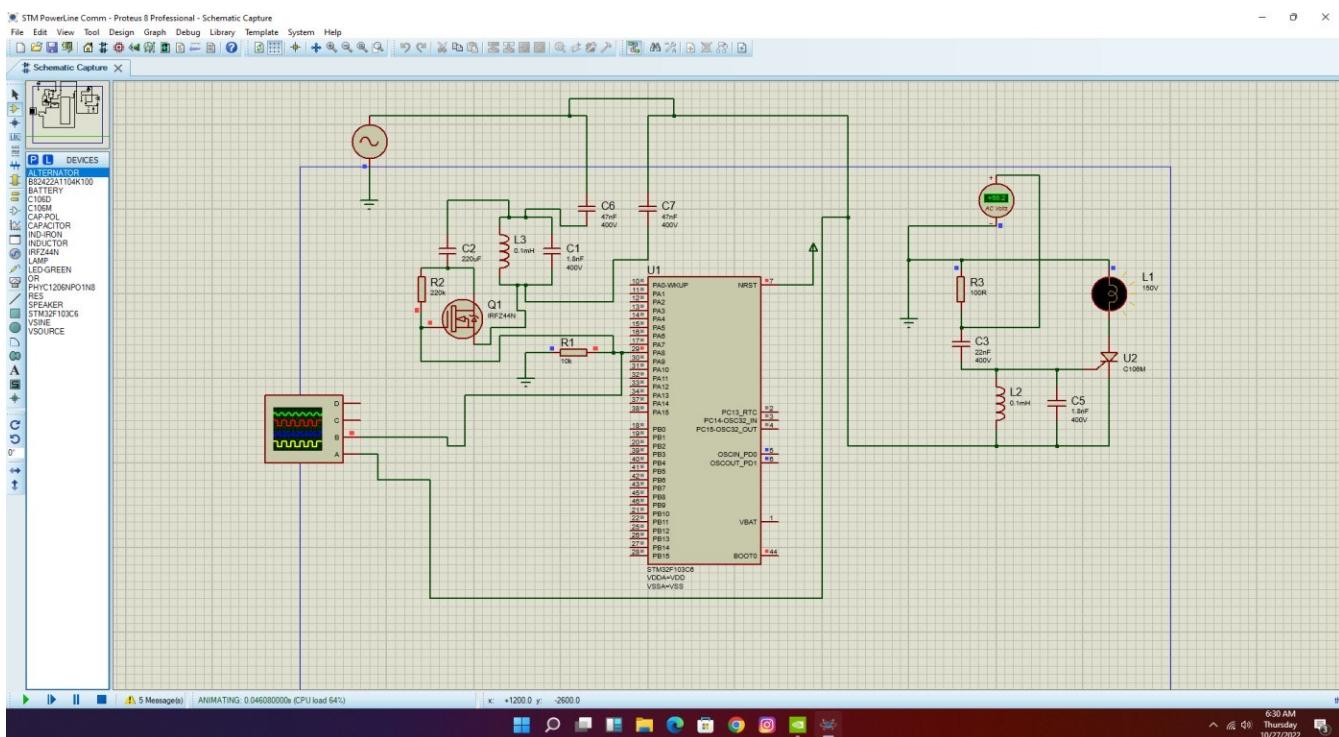
The detector and control system are proposed. The architecture of the system and their critical components are given. The measurement results are given. The target of this study is to discover new and possible solutions for this problem. It provides broadband data communications on conductors which are already in use for the transmission of electric power using a modular signal. The wide range of power-line communication technologies are needed for different applications, ranging from home automation to Internet access which is often called broadband over power lines (BPL).

II. LITERATURE SURVEY

According to Jovita Serrao et al. (2012) paper serves as a general and technical reference to transmission of data using a power line carrier communication system which is a preferred choice over Wireless or other Home Networking technologies due to the ease of installation, availability of AC outlets, higher throughput, low cost, reliability, and security.

Abdul Mannan et al. (2014): In this paper, we give an overview of the power line communication (PLC) technology. This paper presents an overview of the research, applications, standards and importance of the power line communication. Power line communication is an emerging home network technology that allows consumers to use their already existing wiring system to connect home appliances to each other and to the Internet. Noise in power line communication and impulsive noise are presented in this paper.

III. CIRCUIT DIAGRAM



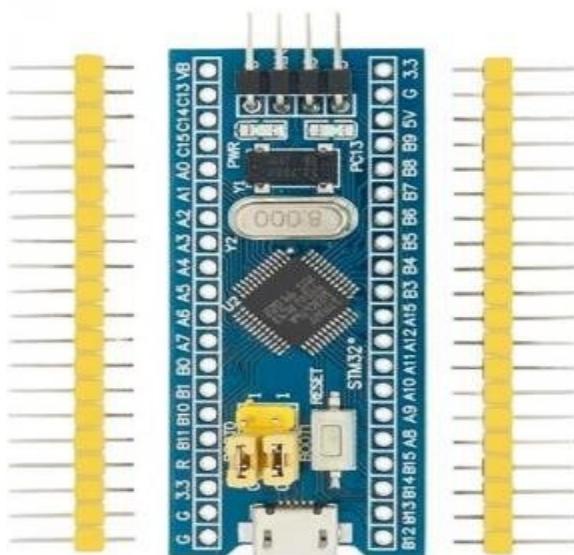
We are using STM32 board for generation of PWM signal. The PWM signal is then applied to the Line tuner. Line tuner is suitable matching unit. The signal is then transmitted through the coupling capacitor. It protects the PLC equipment from low frequency, high voltage signal by acting as a High Pass filter. But it allows high frequency power signals to pass through it. Signal is transmitted through the power line to the receiver end. In this process wave trap protects the electrical substances from high frequency communication signals by acting as a low pass filter. It opposes the signal to enter into the switch yard. At the receiver, the coupling capacitor acts as High pass filter, it allows high frequency power signals to pass through it.

The high frequency signal transmitted by the transmitter is received to the receiver. Receiver has LC circuit, which starts resonating when high frequency signal is received. When the Gate of the C106M gets some triggered voltage, it starts working as a short circuit. Because of high frequency signal, LC circuit triggers the gate of the C106M, and the load is turned on. When signal is not received the gate of C106M is not triggered and the load remains in off condition

IV. COMPONENTS LIST AND SPECIFICATION

IV.1. STM 32 F103C6

STM32F103C6 is an ARM 32-bit Cortex-M3 Microcontroller, 72MHz, 32kB Flash, 10kB SRAM, PLL, Embedded Internal RC 8MHz and 32kHz, Real-Time Clock, Nested Interrupt Controller, Power Saving Modes, JTAG and SWD, 2 Synch. 16-bit Timers with Input Capture, Output Compare and PWM, 16-bit 6-ch Advanced Timer



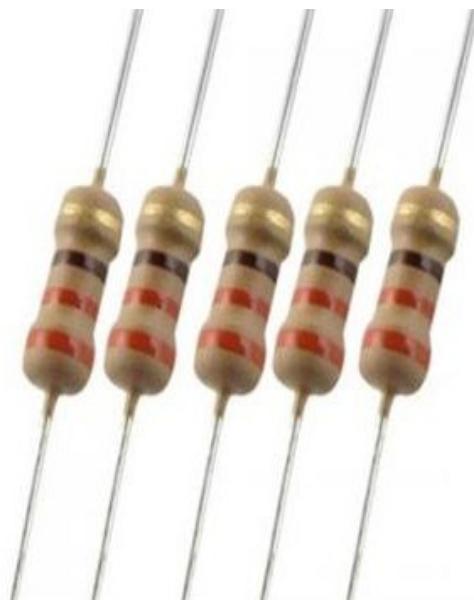
IV.2. Capacitor

A capacitor is a device that stores electrical energy in an electric field. It is a passive electronic component with two terminals. The effect of a capacitor is known as capacitance. While some capacitance exists between any two electrical conductors in proximity in a circuit, a capacitor is a component designed to add capacitance to a circuit. The physical form and construction of practical capacitors vary widely, and many types of capacitors are in common use. Most capacitors contain at least two electrical conductors often in the form of metallic plates or surfaces separated by a dielectric medium.



IV.3. Resistor

A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses. High-power resistors that can dissipate many watts of electrical power as heat may be used as part of motor controls, in power distribution systems, or as test loads for generators. Fixed resistors have resistances that only change slightly with temperature, time, or operating voltage. Variable resistors can be used to adjust circuit elements or as sensing devices for heat, light, humidity, force, or chemical activity.



IV.4. IRFZ44N

The IRFZ44N is a N-channel MOSFET with a high drain current of 49A and low R_{ds} value of 17.5 mΩ. It also has a low threshold voltage of 4V at which the MOSFET will start conducting. Hence it is commonly used with microcontrollers to drive with 5V. However, a driver circuit is needed if the MOSFET must be switched in completely. Gate Controls the biasing of the MOSFET. Current flows in through Drain. Source Current flows out through Source.



IV.5. C106M Thyristor

The Max off stage voltage is 600V. Max load current is 4A. Load current is 2.5A. Gate current is 50 μ A.



V. SOFTWARE USED

Proteus 8 Professional is a software which can be used to draw schematics, PCB layout, code and even simulate the schematic. It is developed by Lab center Electronic. Drawing the schematic is very easy using Proteus.

STM32CubeIDE is an advanced C/C++ development platform with peripheral configuration, code generation, code compilation, and debug features for STM32 microcontrollers and microprocessors. It is based on the Eclipse®/CDT™ framework and GCC tool chain for the development, and GDB for the debugging.

STM32CubeIDE integrates STM32 configuration and project creation functionalities from STM32CubeMX to offer all-in-one tool experience and save installation and development time.

STM32CubeIDE includes build and stack analyzers that provide the user with useful information about project status and memory requirements.

STM32CubeIDE also includes standard and advanced debugging features including views of CPU core registers, memories, and peripheral registers, as well as live variable watch, Serial Wire Viewer interface, or fault analyzer.

VI. FUTURE SCOPE

1. Results from the validation should lead to improved design, in terms of cost, performance, and energy requirements for the PLCC receiver and continuous carrier transmitter, as well as detailed simulation of carrier propagation in a number of different environments and scenarios.
2. Greater research in transmission of digital signals over power lines will enable us to come up with various applications of the concept.
3. This will of course require us to update the hardware associated with the power lines as now we will have to include routers at transformer sections.
4. Protocols and standards for the same will have to be developed if this technology has to be implemented on a commercial scale.
5. Internet access could also be made possible by the setting up of Wi-Fi Routers at areas close to transformers.

VII. CONCLUSION

No separate wires are needed for communication purposes, as the power lines themselves carry power as well as communication signals. Hence the cost of constructing separate telephone lines is saved.

When compared with ordinary lines the power lines have appreciably higher mechanical strength. They would normally remain unaffected under the conditions, which might seriously damage telephone lines.

Power lines have large cross-sectional areas resulting in very low resistance per unit length. Consequently, the carrier signals suffer much less attenuation than when they travel on usual telephone lines of equal lengths.

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RFID BASED ATTENDANCE SYSTEM USING STM32

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Abstract — Radio Frequency Identification based attendance system is an automatic attendance system which consists of a microcontroller system which of a micro controller, RFID reader, RFID tag and a data base as its primary components. An RFID based attendance system can be a great solution to overcome such challenges as it automates the students' attendance process & enables teachers and parents to track & monitor students' activities effortlessly.

I. Introduction

Traditional Doorbell is wired devices and is usually fixed at one place. These types of wired doorbells were not very much reliable as this bell used to stop working at the time of electricity failures. The installation of wired doorbells is much complex when compared with the wireless doorbells. They are becoming obsolete because of these reasons wired doorbells are gradually being replaced by advanced Wireless Doorbell Device. By this type of bells, the installation and change for the position of bells will be easier and safer.

In this project, we are going to build a Wireless Doorbell using Arduino. We all know of the wired doorbell systems which require wires and suitable outlets for it to work satisfactorily. As the wired doorbell system needs complicated wiring. When it comes to installation, wireless doorbell system is very simple to install and requires no experience person for installation. By this type of devices there will be less consumption of electricity and it will be helping us in contribution of one of the major agenda in current time.

II. LITERATURE SURVEY

RFID web system also provides higher security than paper-based system in light of the RFID, microcontroller and also web server application which are normally provides higher security features. Though with the higher security, it shows unreliable output since failure of second step verification. The system shows higher performance comparably since the MySQL database and sever which provide higher storage with high speed performance, thus thousands of students can be hooked in this system in a few minutes..

RFID with fingerprint system is very similar to RFID with facial system. Each and every characteristics of table are providing similar concepts except the cost. Fingerprint biometric system provide very lower cost in compare to Retina, Iris and etc.

#	Attendance Systems	Security	Reliability	Performance	Cost
A	RFID Bases attendance system	High	Low	Medium	High
B	RFID and web-based system	High	Low	High	High
C	RFID with Face verification system	High	High	High	Medium
D	RFID with Fingerprint system	High	High	High	High
E	Arduino based RFID attendance system	High	Medium	High	High
F	Microcontroller based RFID and GSM	High	Low	Ultra High	Low
G	RFID and GSM	High	Low	High	Low
H	RFID four tire system with biometrics	Ultra High	Ultra High	Medium	Low
I	RFID attendance management system	High	Low	High	High
K	RFID with telegram messenger	High	High	Low	Low

III. Block Diagram

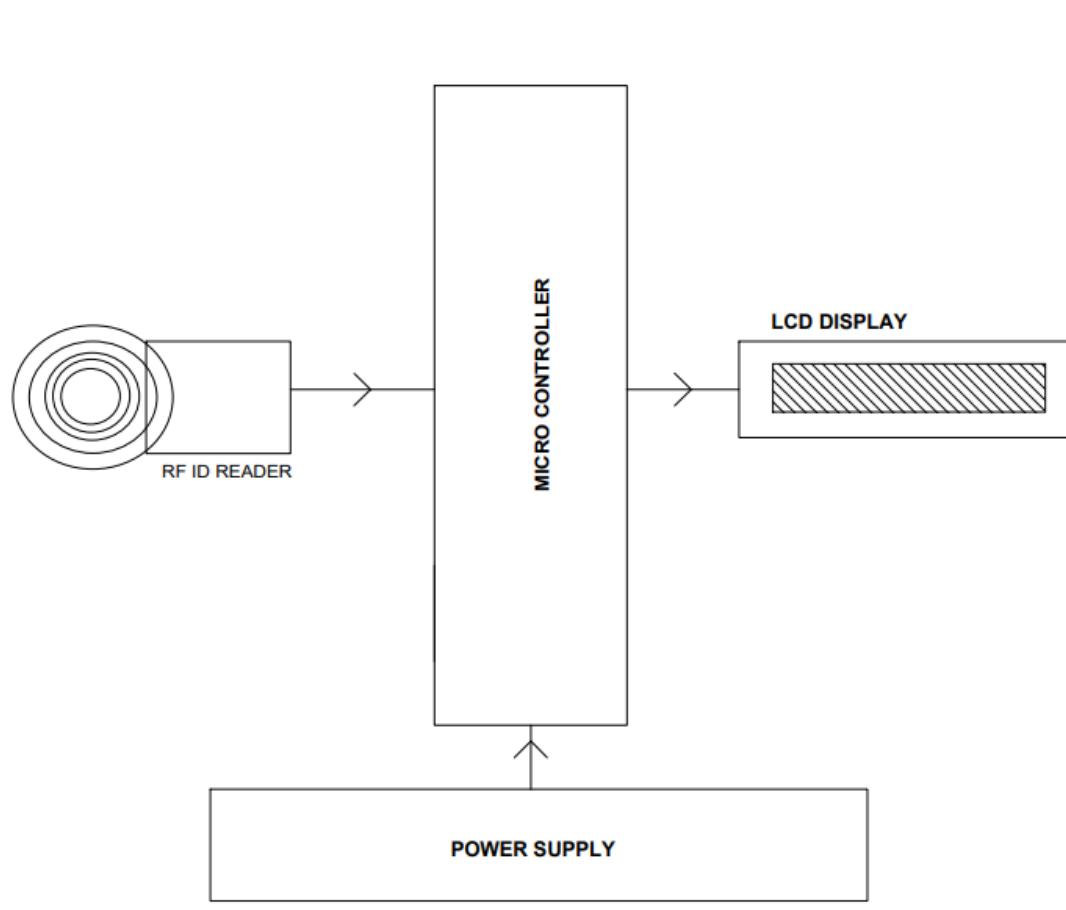


Figure 1- Block diagram of RFID Based attendance system

the above figure. Mainly this block diagram consists of the following essentials blocks.

- (1) Power Supply.
- (2) Entry and Exit sensor Circuit.
- (3) STM 32 and RFID Reader Module.
- (4) RFID tag.
- (5) LCD
- (6) Display

IV. COMPONENTS LIST AND SPECIFICATION

1) **RFID Reader:-**

A radio frequency identification reader (RFID reader) is a device used to extract information from an RFID tag, which is used to track individual objects. Radio waves are used to transfer data from the tag to a reader. Reader does not require line of sight communication with tags. It means that Reader detects the RFID tag even if there is some object between Card and Reader.



Figure 2- RFID Reader

2) **RFID tags:-**

An RFID tag consists of two parts – an antenna for transmitting and receiving signals, and an RFID chip (or integrated circuit, IC) which stores the tag's ID and other information. RFID tags are affixed to items in order to track them using an RFID reader and antenna.



Figure 3- RFID tag

3) STM 32:-

STM 32 is a 32-bit microcontroller integrated circuits by STM electronics. The STM32 chips are grouped into related series that are based around the same 32-bit ARM processor core such as the Cortex-M33, CortexM7f, Cortex-M4f, Cortex-M3, Cortex-M0+, or Cortex-M0. Internally, each microcontroller consists of the processor core, static RAM, flash memory, debugging interface, and various peripherals.

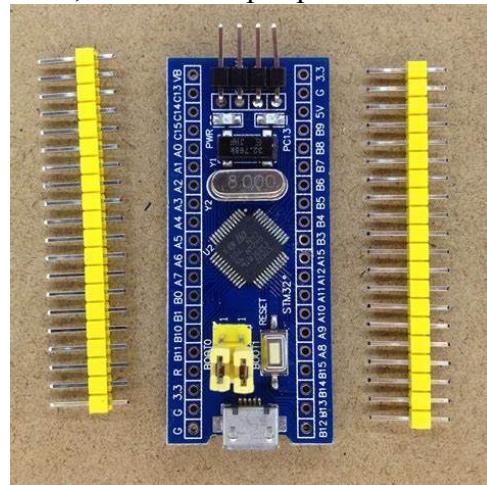


Figure 4- STM32 Microcontroller

4) Liquid Crystal Display:-

It is used to show current time and various messages. These messages are Invalid card, valid card, attendance of student. We have used 20 * 4 alphanumeric display.



Figure 5- LCD

V. EXPECTED RESULTS

The reader coil generates an electromagnetic field, which couples into the coil on the RFID tag (“transponder”).

Once the data from EM-18 RFID Reader Module (Tag ID) is available at the serial pin of STM32F103C8 the character is stored bit by bit and displayed one by one on LCD display. Now just upload the complete code in STM32 and your system is ready to work. Just place any RFID tag over RFID reader and you will see the Tag ID appearing on the 16x2 LCD display.

Output which we are getting, that is being because of we are fetching data from our database.

If particular id no. is there in database then output will be present & if not then output will be absent.

VI. FUTURE SCOPE

- I. Range of the RFID reader can be increased, so the reader can detect the tag from far distance.
- II. The transferred data can be save and store in computer as a database using specific software.
- III. This attendance system's data base can be linked with college website and can be shared and monitored by the student's parents.
- IV. We can send this data through internet to user. So that user can access it remotely via internet.
- V. We can implement GSM technology.

VII. CONCLUSION

Attendance in school colleges happens manually so it consists of lot of time & paper wastage. We can overcome this inefficiency and address the problem adopting RFID based attendance. RFID is being used actively in retail, healthcare, and other sectors to monitor workers. Since the workers in these sectors are large in number, hard to handle and their work can be performed by others in case of absenteeism; there the attendance mechanism is of trivial significance.

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CUSTOMER SENTIMENT ANALYSIS

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Abstract - Sentiment analysis or opinion mining is the computational study of people's opinions, sentiments, attitudes, and emotions expressed in written language. It is one of the most active research areas in natural language processing and text mining in recent years. Its popularity is mainly due to two reasons. First, it has a wide range of applications because opinions are central to almost all human activities and are key influencers of our behaviors. Whenever we need to make a decision, we want to hear others' opinions. Second, it presents many challenging research problems, which had never been attempted before the year 2000. Part of the reason for the lack of study before was that there was little opinionated text in digital forms. It is thus no surprise that the inception and the rapid growth of the field coincide with those of social media on the Web. In fact, the research has also spread outside of computer science to management sciences and social sciences due to its importance to business and society as a whole. In this talk, I will start with the discussion of the mainstream sentiment analysis research and then move on to describe some recent work on modeling comments, discussions, and debates, which represents another kind of analysis of sentiments and opinions.

I. INTRODUCTION

Sentiment is an attitude, thought, or judgment prompted by feeling. Sentiment analysis, which is also known as opinion mining, studies people's sentiments towards certain entities. From a user's perspective, people are able to post their own content through various social media, such as forums, micro-blogs, or online social networking sites. From a researcher's perspective, many social media sites release their application programming interfaces (APIs), prompting data collection and analysis by researchers and developers. However, those types of online data have several flaws that potentially hinder the process of sentiment analysis. The first flaw is that since people can freely post their own content, the quality of their opinions cannot be guaranteed. The second flaw is that the ground truth of such online data is not always available. A ground truth is more like a tag of a certain opinion, indicating whether the opinion is positive, negative, or neutral. "It is quite a boring movie..... But the scenes were good enough." The given line is a movie review that states that "it" (the movie) is quite boring but the scenes were good. Understanding such sentiments requires multiple tasks. Hence, Sentiment analysis is a kind of text classification based on Sentimental Orientation (SO) of opinion they contain. Sentiment analysis of product reviews has recently become very popular in text mining and computational linguistics research. Firstly, evaluative terms expressing opinions must be extracted from the review. Secondly, the SO, or the polarity, of the opinions must be determined. Thirdly, the opinion, strength, or the intensity, of an opinion should also be determined. Finally, the review is classified with respect to sentiment classes, such as Positive and Negative, based on the SO of the opinions it contains.

2. LITERATURE REVIEW

Here we provide you insight of some of the research work which helps us to understand the topic deeply. Customer sentiment analysis is an important aspect of customer relationship management that involves analyzing the opinions and feelings of customers towards a product or service.

We have referred to different international papers and journals in which we came to know that various methods were used by different authors. With the help of the previous work from the above papers we were able to build this project. Below are some authors and their proposed methodology and their limitations.

In order to classify text by overall sentiment and not just by text [1] P. Pang, L. Lee, S. Vaithyanathan et al applied machine learning algorithms on movie review databases which gave results that these algorithms outperform human produced algorithms. The machine learning algorithms they use are Naïve-Bayes, maximum entropy, and support vector machines. They also conclude by examining various factors that classification of sentiment is very challenging. They show supervised machine learning algorithms are the base for sentiment analysis.

[2] H. Wang, D. Can, F. Bar, S. Narayana et al were the researchers who proposed a system for real time analysis of public responses for 2012 presidential elections in the U.S. They collected the responses from Twitter, a micro blogging platform. Twitter is one of the social network sites where people share their views, thoughts and opinions on any trending topic. People's responses on Twitter for election candidates in the U.S. created a large amount of data, which helped them to create a sentiment for each candidate and also to create a prediction of who would win.

[3] O. Almatrafi, S. Parack, B. Chavan et al are the researchers who proposed a system based on location. According to them, Sentiment Analysis is carried out by Natural Language Processing (NLP) and machine learning algorithms to extract a sentiment from a text unit which is from a particular location. They study various applications of location based sentiment analysis by using a data source in which data can be extracted from different locations easily. In Twitter, there is a field of tweet location which can easily be accessed by a script and hence data (tweets) from particular locations can be collected for identifying trends and patterns.

3. PROPOSED METHOD/SYSTEM

Sentiment Analysis is a process of extracting features from user's thoughts, views, feelings and opinions which they post on any social network websites. The result of sentiment analysis is classification of natural language text into classes such as positive, negative and neutral. The amount of data generated from social network sites is huge; this data is unstructured and cannot give any meaningful information until it is analyzed. Thus, to make this huge amount of data useful we perform sentiment analysis, i.e. extracting features from this data and classify them. The problem at hand is to perform customer sentiment analysis to understand the opinions, feelings, and attitudes of customers towards a product, service, or brand. This information can be used to make data-driven decisions on improving the product, service, or brand's overall customer experience. Hence the methodology that we have followed involves four major steps particularly i.e. Data collection, Data Processing, Sentiment Analysis and Data visualization.

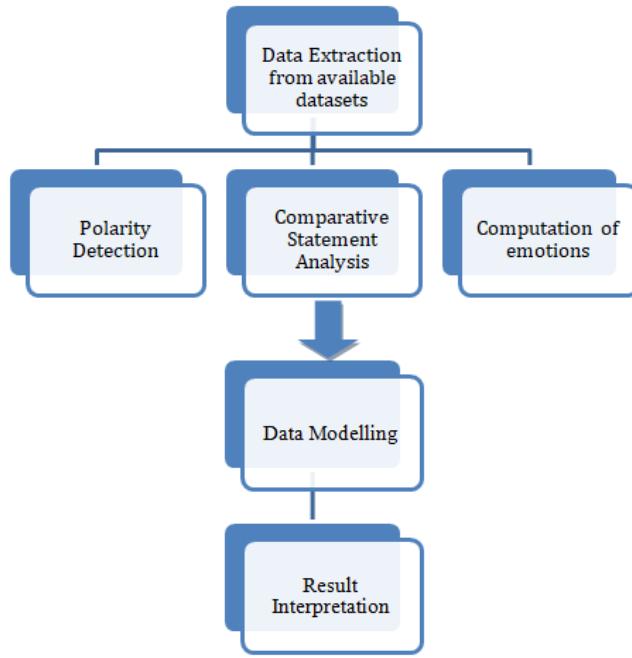


Fig 3.1 Proposed Architecture using Multinomial Bayes Classifier

As shown in Figure 3.1 the first step i.e. Data collection refers to Gathering customer feedback from various sources such as social media, customer reviews, surveys, and customer service interactions. Data collection is not a simple task, as it may seem. Various decisions have to be made for collecting data. For our thesis we maintain dataset for training, testing and for Datasets sentiment analysis while Data Processing deals with Cleaning the data, removing irrelevant information, and formatting the data to be analysed. The next step is using natural language processing techniques to classify the text as positive, negative, or neutral sentiment and the last step is visualizing the data to gain insights and identify patterns.

4.. CLASSIFIERS USED

MultinomialNB expands the use of the NB algorithm. It implements NB for data distributed multinomial, and also uses one of its versions for text classification (in which word counts are used to represent data, and also tf-idf works extremely well in regular practice). We parameterized the distribution data by vectors for every , where ‘n’ gives the total features (which means, the size of vocabulary for text classification) and probability of each that appears in the sample of class ‘y’ is We use smoothed version of maximum likelihood for estimation of parameters , which is relative frequency of counting: where N_{yi} represents number of times ‘i’ appeared in any sample of class ‘y’ which belongs to training sample , and gives the total number of 4 features in class ‘y’. To prevent zero probabilities for further calculations, we add smoothing priors’ for features that are not present in any learning samples. If, smoothing is termed as Laplace and for the smoothing is termed as Lidstone.

Multinomial Naive Bayes classification algorithm tends to be a baseline solution for sentiment analysis tasks. The basic idea of Naive Bayes technique is to find the probabilities of classes assigned to texts by using the joint probabilities of words and classes. Assume you wish to categorize user reviews as good or bad. Sentiment Analysis is a popular job to be performed by data scientists. This is a simple guide using Naive Bayes Classifier and Scikit-learn to create a Google Play store reviews classifier (Sentiment Analysis) in Python. Naive Bayes is the simplest and fastest classification algorithm for a large chunk of data. In various applications such as spam

filtering, text classification, sentiment analysis, and recommendation systems, Naive Bayes classifier is used successfully. It uses the Bayes probability theorem for unknown class prediction.

The Naive Bayes classification technique is a simple and powerful classification task in machine learning. The use of Bayes' theorem with a strong independence assumption between the features is the basis for naive Bayes classification. When used for textual data analysis, such as Natural Language Processing, the Naive Bayes classification yields good results.

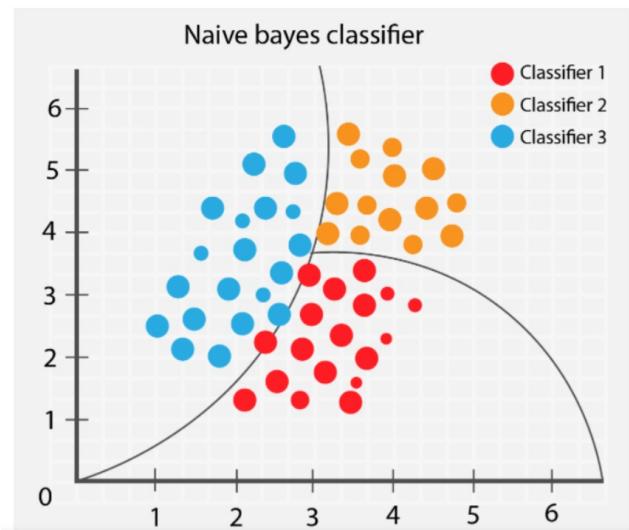


Fig 4.1. Naive Bayes Classification

Simple Bayes or independent Bayes models are other names for naive Bayes models. All of these terms refer to the classifier's decision rule using Bayes' theorem. In practice, the Bayes theorem is applied by the Naive Bayes classifier. The power of Bayes' theorem is brought to machine learning with this classifier. Let's have a brief look at maths.

Given the dependent feature vector (x_1, \dots, x_n) and the class C_k . Bayes' theorem is stated mathematically as the following relationship:

$$P(C_k | x_1, \dots, x_n) = \frac{P(C_k)P(x_1, \dots, x_n | C_k)}{P(x_1, \dots, x_n)}$$

According to the "naive" conditional independence assumptions, for the given class C_k each feature of vector x_i is conditionally independent of every other feature x_j for $i \neq j$.

$$P(x_i | C_k, x_1, \dots, x_n) = P(x_i | C_k)$$

Thus, the relation can be simplified to

$$P(C_k | x_1, \dots, x_n) = \frac{P(C_k) \prod_{i=1}^n P(x_i | C_k)}{P(x_1, \dots, x_n)}$$

Since $P(x_1, \dots, x_n)$ is constant, if the values of the feature variables are known, the following classification rule can be used:

$$P(C_k | x_1, \dots, x_n) \propto P(C_k) \prod_{i=1}^n P(x_i | C_k)$$

$$\hat{y} = \arg \max_k P(C_k) \prod_{i=1}^n P(x_i | C_k)$$

To avoid underflow, log probabilities can be used.

$$\hat{y} = \arg \max_k (\ln P(C_k) + \sum_{i=1}^n \ln P(x_i | C_k))$$

The variety of naive Bayes classifiers primarily differs between each other by the assumptions they make regarding the distribution of $P(x_i|C_k)$, while $P(C_k)$ is usually defined as the relative frequency of class C_k in the training dataset.

The multinomial distribution is parametrized by vector $\theta_k = (\theta_{k1}, \dots, \theta_{kn})$ for each class C_k , where n is the number of features (i.e. the size of the vocabulary) and θ_{ki} is the probability $P(x_i|C_k)$ of features appearing in a sample that belongs to the class C_k .

The parameters θ_k is estimated by a smoothed version of maximum likelihood, i.e. relative frequency counting:

$$\hat{\theta}_{ki} = \frac{N_{ki} + \alpha}{N_k + \alpha n}$$

where N_{ki} is the number of times feature i appears in a sample of class k in the training set T , and N_k is the total count of all features for class C_k . The smoothing priors $\alpha \geq 0$ accounts for features not present in the learning samples and prevents zero probabilities in further computations. Setting $\alpha=1$ is called Laplace smoothing, while $\alpha < 1$ is called Lidstone smoothing.

Thus, the final decision rule is defined as follows:

$$\hat{y} = \arg \max_k (\ln P(C_k) + \sum_{i=1}^n \ln \frac{N_{ki} + \alpha}{N_k + \alpha n})$$

5. RESULTS

The plot in Fig 5.1 typically shows a curve that starts at a low accuracy rate and increases as the number of training samples increases. At some point, the curve may start to level off, indicating that additional training data will not significantly improve the model's accuracy. This information can be valuable in determining the best trade-off between the amount of training data and the model's accuracy, particularly in cases where the training data is limited or expensive to acquire.

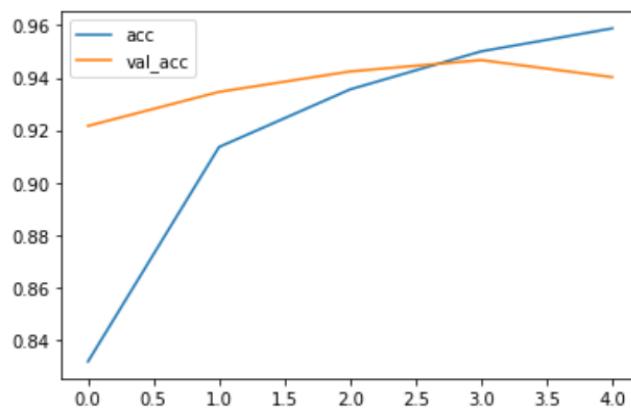


Fig 5.1. Accuracy Plot for Sentiment analysis

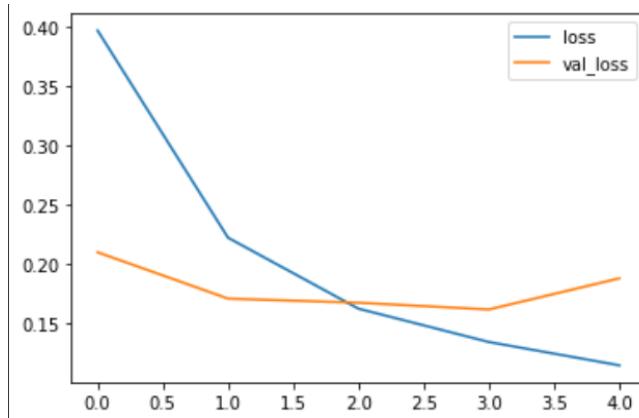


Fig 5.2 Accuracy Plot for Sentiment analysis

The plot in Fig 5.2 shows a curve that starts at a high value and decreases over time as the model learns to make better predictions. The shape of the curve can provide insights into the behavior of the model during training, such as whether it is overfitting or underfitting the training data. By analyzing the loss plot, machine learning practitioners can adjust the model's hyperparameters and make other changes to improve its performance.

```
predict_sentiment("This is the worst movie I have ever seen")
1/1 [=====] - 0s 38ms/step
Predicted label: negative
```

Fig 5.3 Output of Negative Statement

```
predict_sentiment("This was the best flight of my life")
1/1 [=====] - 0s 36ms/step
Predicted label: positive
```

Fig 5.4 Output of Positive Statement

The above Figures 5.3 and 5.4 demonstrate our sentiment analysis model in which we pass a sentence into a function named predict_sentiment, and it returns the predicted label of the sentence as positive or negative.

6. CONCLUSION

In conclusion, customer sentiment analysis is a valuable tool for businesses looking to understand their customers better and improve their products and services. By analysing customer feedback and sentiment, businesses can gain insights into customer needs, preferences, and pain points, which can help them make data-driven decisions that improve customer satisfaction, retention, and overall business performance. Customer sentiment analysis can also help businesses identify potential issues early and take proactive measures to address them, as well as improve their marketing and messaging strategies. Ultimately, businesses that prioritize customer sentiment analysis are better positioned to meet customer needs and expectations, differentiate themselves from competitors, and achieve long-term success.

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IRIS INPUT FOR COMPUTER INTERACTION

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Abstract— The goal of the project is to design and build a low-cost eye tracker, which will enable tracking of a subject's focus of gaze within his/her field of vision. The unit is significantly cheaper than existing units available in the market. Real-time eye and iris tracking are important for hands-off gaze-based computer usage, password entry, instrument control by paraplegic patients, Internet user studies, as well as homeland security applications. In this project, a smart camera and some open-source software tools are utilized to generate eye detection and tracking algorithms. Eye detection refers to finding eye features in a single frame. Eye tracking is achieved by detecting the same eye features across multiple image frames and correlating them to a particular eye. **Keywords**—Tracking, gaze, python, package, detection, IR camera, GUI, automation, mouse, video, user, technology, click, computer, software, accuracy, interface

I. INTRODUCTION

Eye tracking is the method of locating an eye across video frames to ascertain a person's gaze direction. Eye tracking is crucial in the fields of visual systems, psychological analysis, cognitive science, and product design research and development. An eye-tracking system combines a variety of tools and programmes for tracking the location and movement of the eyes while connecting the results to the same eye in a series of time-stamped photos.

A. OVERVIEW

The direction of a person's gaze can be ascertained in a variety of ways. The "pupil-center/corneal-reaction" technique is perhaps the most efficient and popular one. The approach is predicated on the notion that a person's gaze direction is directly tied to the relative positions of the pupil and the response of a corneal object. There is no need for direct physical contact with the user's eye or eye socket with this distant eye-tracking technique. It makes use of reactor trackers, which shoot a light beam into the eye. A sophisticated camera then detects the difference between the pupil reaction and predetermined reference points to determine what the user is looking at. So, this method involves some critical procedures.

B. RELATED RESEARCH

There are currently numerous eye-gaze tracking methods available. Some researchers used the Electro-Oculography tracking method to track person's eye movements. It makes use of the electrostatic field that surrounds the eyes and changes in response to eye movement. These minute variances can be measured using electrodes positioned on the skin surrounding the eyes. This method is complicated and unsuitable for routine use because electrodes are used. Multiple techniques have been created using contact lens tracking. Although they work quite well, these devices are intrusive, painful, and frequently call for a topical anesthetic. "Matin and Pearce (1964) created a scleral contact lens system with a resolution of 0.00028 within a range of 10 for all three dimensions using a pair of noncoplanar 4-mm-diameter mirrors placed in the surface of the lens on

III. PROPOSED SYSTEM

Video Based Eye Tracking:

- Connect the IR camera to the laptop using raspberrypi 3 B module.
- Open the pycharm IDE and run the code and wait for 3 seconds.
- The camera will now track and detect the movements of eyes and head and move the cursor accordingly.
- When the user will blink its left eye, the software will detect it and clicking function will be performed on the screen.
- After the click, the function desired is performed.

Eye images are captured using a IR video camera by eye tracking systems that employ video. Video-based eye tracking systems can be classified into two groups: head-mounted and remote, depending on where this "eye camera" is placed. While remote eye trackers frequently operate in conjunction with a computer monitor on which the subject is executing a task, head-mounted eye trackers frequently include an additional camera to photograph the scene the person is looking at. The optical module for head-mounted video-based eye trackers is mounted on the user's headgear. They give the observer more mobility but are, in some ways, more obtrusive than remote trackers. The eye camera and scene camera would not move with respect to the subject's eye, and any displacement of the pupil or CR within the eye images would only result from rotational eye motions if the headpiece were absolutely stable and moved exactly with the subject's head. This idealized scenario is unreal.

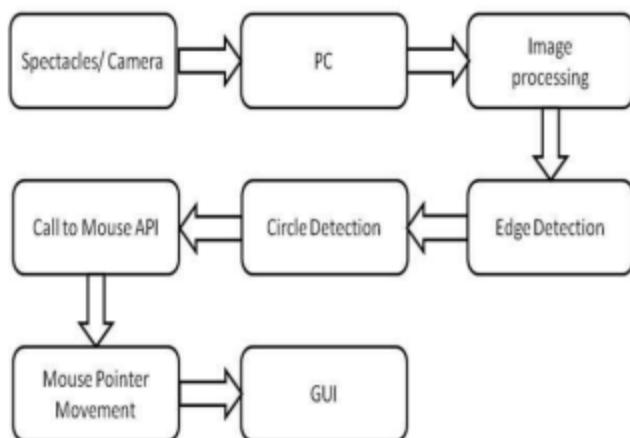


Fig.1. Block diagram of system

A. Eye gaze tracking algorithm

1) Facial Features Extraction This paper intends to present an eye tracking algorithm and facial features detection i.e. face and eyes extraction is an important task in this regard. i. Histogram Equalization: By altering image intensities in accordance with the image histogram, the technique of histogram equalisation allows for the normalising of contrast . It is a contrast-enhancing technique that makes use of histogram data and makes an effort to balance the histogram. Histogram equalisation offers a superior performance in terms of accuracy for face feature detection. ii. Face and eye patch extraction: The problem of classifying the obtained image into face and non-facial regions is a part of face detection. Face and eye extraction is carried out using a quick and reliable object detection system that uses machine learning as its foundation. For this a python package called as Mediapipe is used. This package tracks all the landmark points on the face and filters the landmark points down.

Face and eye patch extraction:

The problem of classifying the obtained image into face and non-facial regions is a part of face detection. Face and eye extraction is carried out using a quick and reliable object detection system that

uses machine learning as its foundation. For this a python package called as Mediapipe is used . This package tracks all the landmark points on the face and filters the landmark points down.

B. Eye Features Detection

The mediapipe python package traces a lot of landmark points on our entire face as shown below. As the system does not require all the landmark points other than that of eyes. Each of these landmarks has it's own number as shown in figures ahead. In the python code only those landmark numbers are entered which are dedicated to the eyes. As mentioned in the picture below, we can see that for the left eye the points numbers are 159 and 145 and for the right eye the point numbers are 474,475,476,477,478. The result will be highlighted circles on those landmark points in figure below.



Fig.2. Required landmarks traced

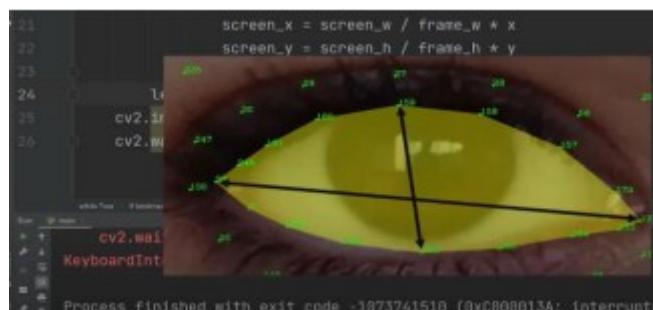


Fig.3. Landmarks point numbers

In this system we have used a IR camera and connected it to a laptop using raspberry-pi 3 B module and with the help of special python packages eye and head movement techniques have been implemented to control the cursor on the GUI. The packages used in python and its functions are explained below:

C. Open-cv2

OpenCV can also be used for video processing. With OpenCV, we can capture a video from the camera and it also lets us create a video capture object which is helpful to capture videos through webcam and then you may perform desired operations on that video. Besides this you can also play and perform operation on a video file and save them. OpenCV also provides the functionality to control and manage different types of mouse events and gives us the flexibility to manage them. As we know there can be different types of mouse events such as double_click, left button click, right button click, etc. For managing these events, we need to design callback functions for each of these mouse click events while the window or frame is opened by OpenCV. The callback function gives us flexibility to implement what type of functionality you want with a particular mouse click event.

D. Mediapipe

Mediapipe is an open-source cross-platform ML solution for live and streaming media. It is built on top of TensorFlow Lite and offers end-to-end acceleration, allowing for fast ML inference and processing on common hardware. It is used in leading ML products and teams, and offers low code APIs for customizing and deploying on-device machine learning solutions with only a few lines of code. It is also designed to be build once and deployed anywhere, working across Android, iOS, desktop/cloud, web and IoT.

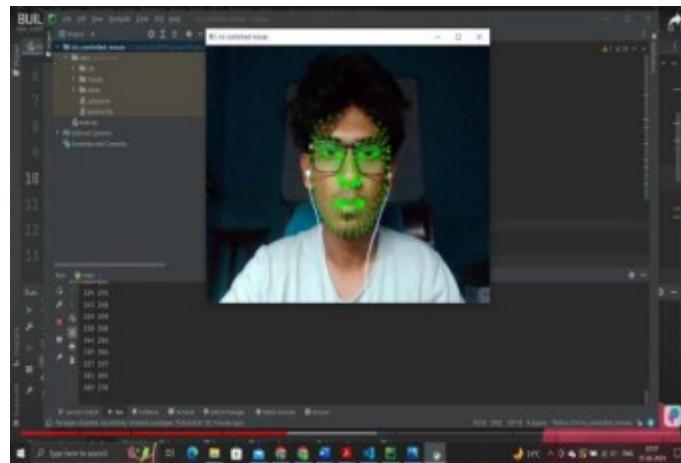


Fig.4. All landmark points

E. PyautoGUI

Python package pyautogui is a cross-platform GUI automation Python module for human beings. Pyautogui is an open source, free and easy to use library that allows you to automate the mouse and keyboard without any programming skills. It can be used for automating almost anything in your computer including web browsers, games, office applications, and much more it is also very powerful and flexible. It has many features that allow you to customize the automation process to fit your needs. Pyautogui is also cross-platform, which means it works on Windows, Mac and Linux. This makes it a very versatile tool that can be used by anyone regardless of their operating system. Overall, pyautogui is an excellent Python package for automating mouse and keyboard input. It is easy to use, powerful and flexible, and works on all major operating systems. If you need to automate any task on your computer, pyautogui should be your first choice. Pyautogui has many features including the ability to move the mouse, click and double-click, keystrokes, scrolling, etc. It also offers support for customizing the action of the mouse and keyboard based on specific conditions.

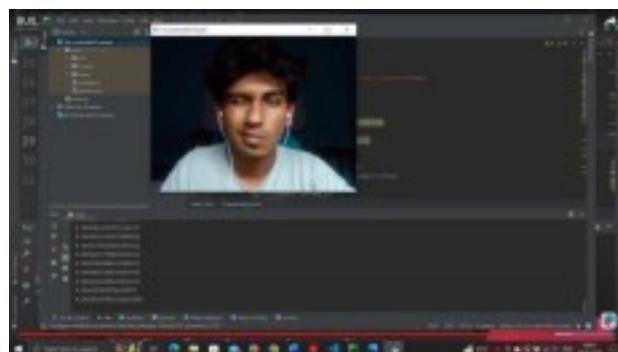


Fig.5. Click function performed

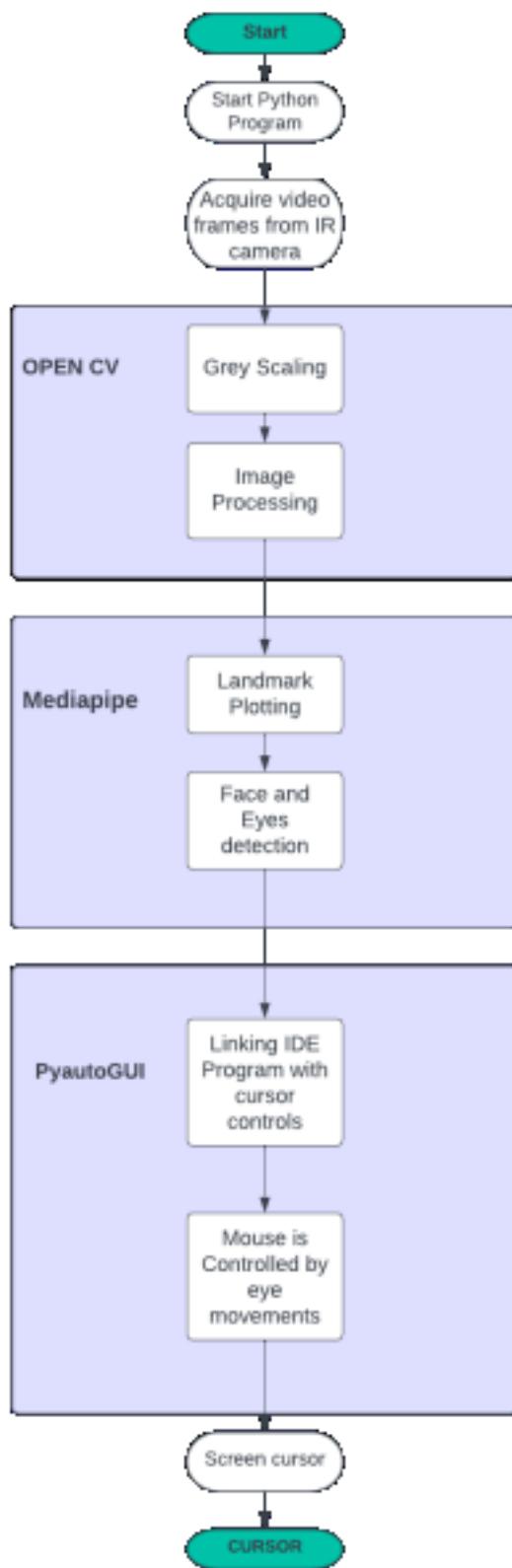


Fig.6. Flowchart of system

IV. ADVANTAGES

- 1) It was observed that the eye tracker can estimate the gaze position very accurately when properly calibrated.
- 2) This technology has primarily been applied to communication devices for individuals with disabilities that contain huge icons that the user may aim with their eyes.
- 3) The project's key benefit is that it essentially created a low-cost system compared to other readily available solutions on the market.
- 4) System is lightweight, allowing for improved portability.
- 5) Moreover, eye tracking equipment allows researchers record and quantify eye movements, pupil dilation, point of gaze, and blinking to determine where study participants focus their visual attention, what they pay attention to, and what they ignore.

V. FUTURE SCOPE

Using simplistic eye tracker technology, the System offers a dependable software solution for disabled persons and people with movement difficulties, finally enabling the person with severe disabilities to control computer operations. The high accuracy findings or accurate output reported have revealed the systems' dependability.

- 1) Monitor mouse motions and user eye movement.
- 2) Monitor the user's gaze at a specific location to enable mouse clicks.
- 3) Utilize mouse movements that have been observed to operate computer features.

VI. CONCLUSION

Using inexpensive eye tracker technology, the initiative offers paralysed individuals and those with motor impairments a dependable software solution that eventually enables them to operate computer functions. The results of reasonable accuracy have demonstrated the system's dependability. The blink detection, however, loses accuracy if the camera is positioned too far above the user's head, aiming down at the user at a large angle. As almost the entire user's eyelid is visible to the camera, this is brought on by the extremely slight difference in correlation scores as the user blinks. So, it is advantageous to the detection accuracy to increase the degree of variance between the user's open and closed eye images when situating the camera. And finally, this technology offers a discrete alternative for the clinical setting. It has been determined that employing a web camera as a human computer interface can be a workable input technique for the website of severely impaired people.

This information will be extremely helpful for the company's marketing and UI designers.

TABLE I. TABLE OF FIGURES

Fig No.	Title of figure
Fig.1	Block diagram of system
Fig.2	Required landmarks traced
Fig.3	Landmarks point numbers

Fig.4	All landmark points
Fig.5	Click function performed
Fig.6	Flowchart of system

VII. ACKNOWLEDGMENT

WE WOULD LIKE TO EXPRESS SPECIAL THANKS OF GRATITUDE TO OUR GUIDE **PROF. SUSHMA KORE** AS WELL AS OUR PROJECT COORDINATOR **Ms. SUSHMA KORE & DR. AARTI BAKSHI**, WHO GAVE US THE GOLDEN OPPORTUNITY TO DO THIS WONDERFUL PROJECT ON THE TOPIC **IRIS INPUT FOR COMPUTER INTERACTION**, WHICH ALSO HELPED US IN DOING A LOT OF RESEARCH AND WE CAME TO KNOW ABOUT SO MANY NEW THINGS. WE WOULD ALSO LIKE TO THANK OUR H.O.D. OF EXTC – **DR. RAJIV IYER** AND PRINCIPAL **DR. VILAS NITNAWARE** FOR PROVIDING US THE OPPORTUNITY TO IMPLEMENT OUR PROJECT. WE ARE REALLY THANKFUL TO BOTH OF THEM. FINALLY, WE WOULD ALSO LIKE TO THANK OUR DEPARTMENT STAFF MEMBERS AND OUR *MENTORS & FRIENDS* WHO HELPED US A LOT IN FINALIZING THIS PROJECT WITHIN THE LIMITED TIME FRAME.

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AI: “Water Jug Problem” logical concept

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Abstract:

Artificial intelligence as the word itself defines the worst domain, consisting of future aspect which focuses on mankind. Let's concentrate on one simple aspect to build a view of logic in us to support Intelligence in machine or rather Artificial Intelligence in m/c in every aspect. But we all mainly concern for goal oriented intelligence rather than Human kind intelligence. Just take one logical base problem “Water Jug Problem”. In this paper we will see the solution of water jug problem in Prolog and Problem definition.

General Terms: Problem solving, water jug problem, problem finding, problem query, intelligence.

Keyword: Artificial Intelligence, Problem Solving Technique, Logics , Prolog.

1. Introduction: The "Water-jugs Problem"

This classic AI problem is described in Artificial Intelligence as follows:

"You are given two jugs, a 4-gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a tap that can be used to fill the jugs with water. How can you get exactly 2 gallons of water into the 4-gallon jug?".

This program implements an "environmentally responsible" solution to the water jugs problem. Rather than filling and spilling from an infinite water resource, we conserve a finite initial charge with a third jug: (reservoir).

This approach is simpler than the traditional method, because there are only two actions; it is more flexible than the traditional method, because it can solve problems that are constrained by a limited supply from the reservoir.

To simulate the infinite version, we use a filled reservoir with a capacity greater than the combined capacities of the jugs, so that the reservoir can never be emptied.

"Perfection is achieved not when there is nothing more to add, but when there is nothing more to take away." Antoine de Saint-Exupéry"

2. Problem Solving:

A problem is an obstacle, impediment, difficulty or challenge, or any situation that invites resolution; the resolution of which is recognized as a solution or contribution toward a known purpose or goal. A problem implies a desired outcome coupled with an apparent deficiency, doubt or inconsistency that prevents the outcome from taking place.

Every theoretical problem asks for an answer or solution. Trying to find a solution to a problem is known as problem solving. There are many standard techniques for problem solving, such as Proof by Contradiction, or Proof by Exhaustion, the latter famously being used in the solution to the Thirty-Six Officers Problem posed by Leonhard Euler. A problem is a gap between an actual and desired situation. The time it takes to solve a problem is a way of measuring complexity.^[1] Many problems have no discovered solution and are therefore classified as an open problem.

Problem finding means problem discovery. It is part of the larger problem process that includes problem shaping and problem solving. Problem finding requires intellectual vision and insight into what is missing. This involves the application of creativity.

Finding a problem can, depending on the problem, be either much easier or much harder than solving the problem. An example of a problem that was much easier to find than to solve is Fermat's Last Theorem. The problem is simple, is it true that it is impossible to separate any power higher than the second into two like powers? Solving the problem took 357 years

Problem solving is a mental process which is part of the larger problem process that includes problem finding and problem shaping. Considered the most complex of all intellectual functions, problem solving has been defined as higher-order cognitive process that requires the modulation and control of more routine or fundamental skills.^[1] Problem solving occurs when an organism or an artificial intelligence system needs to move from a given state to a desired goal state.

3. Define the problem

This is often where people struggle. They react to what they think the problem is. Instead, seek to understand more about why you think there's a problem.

Define the problem: (with input from yourself and others). Ask yourself and others, the following questions:

1. What can you see that causes you to think there's a problem?
2. Where is it happening?
3. How is it happening?
4. When is it happening?
5. With whom is it happening? (HINT: Don't jump to "Who is causing the problem?" When we're stressed, blaming is often one of our first reactions. To be an effective manager, you need to address issues more than people.)
6. Why is it happening?
7. Write down a five-sentence description of the problem in terms of "The following should be happening, but isn't ..." or "The following is happening and should be: ..." As much as possible, be specific in your description, including what is happening, where, how, with whom and why. (It may be helpful at this point to use a variety of research methods.

Defining complex problems:

If the problem still seems overwhelming, break it down by repeating steps 1-7 until you have descriptions of several related problems.

Verifying your understanding of the problems:

It helps a great deal to verify your problem analysis for conferring with a peer or someone else.

Prioritize the problems:

If you discover that you are looking at several related problems, then prioritize which ones you should address first.

Note the difference between "important" and "urgent" problems. Often, what we consider to be important problems to consider are really just urgent problems. Important problems deserve more attention. For example, if you're continually answering "urgent" phone calls, then you've probably got a more "important" problem and that's to design a system that screens and prioritizes your phone calls.

Understand your role in the problem:

Your role in the problem can greatly influence how you perceive the role of others. For example, if you're very stressed out, it'll probably look like others are, too, or, you may resort too quickly to blaming and reprimanding others. Or, you are feel very guilty about your role in the problem, you may ignore the accountabilities of others.

2. Look at potential causes for the problem

- It's amazing how much you don't know about what you don't know. Therefore, in this phase, it's critical to get input from other people who notice the problem and who are effected by it.
- It's often useful to collect input from other individuals one at a time (at least at first). Otherwise, people tend to be inhibited about offering their impressions of the real causes of problems.
- Write down what your opinions and what you've heard from others.
- Regarding what you think might be performance problems associated with an employee, it's often useful to seek advice from a peer or your supervisor in order to verify your impression of the problem.
- Write down a description of the cause of the problem and in terms of what is happening, where, when, how, with whom and why.

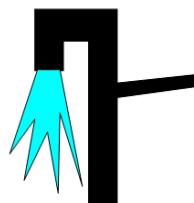
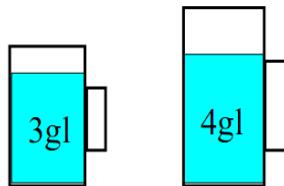
3. Identify alternatives for approaches to resolve the problem

At this point, it's useful to keep others involved (unless you're facing a personal and/or employee performance problem). Brainstorm for solutions to the problem. Very simply put, brainstorming is collecting as many ideas as possible, then screening them to find the best idea. It's critical when collecting the ideas to not pass any judgment on the ideas -- just write them down as you hear them. (A wonderful set of skills used to identify the underlying cause of issues is Systems Thinking.)

4. Select an approach to resolve the problem

- When selecting the best approach, consider:
- Which approach is the most likely to solve the problem for the long term?
- Which approach is the most realistic to accomplish for now? Do you have the resources? Are they affordable? Do you have enough time to implement the approach?
- What is the extent of risk associated with each alternative?

(The nature of this step, in particular, in the problem solving process is why problem solving and decision making are highly integrated.)



Get exactly 2 gallons of water into the 4gl jug.

Fig: 1.1

1. Entry Point

The *water_jugs* solution is derived by a simple, breadth-first, state-space search; and translated into a readable format by a DCG.

water_jugs :-

```

SmallCapacity = 3,
LargeCapacity = 4,
Reservoir is SmallCapacity + LargeCapacity + 1,
volume( small, Capacities, SmallCapacity ),
volume( large, Capacities, LargeCapacity ),
volume( reservoir, Capacities, Reservoir ),
volume( small, Start, 0 ),
volume( large, Start, 0 ),
volume( reservoir, Start, Reservoir ),
volume( large, End, 2 ),
water_jugs_solution( Start, Capacities, End, Solution ),
phrase( narrative(Solution, Capacities, End), Chars ),
put_chars( Chars ).
```

water_jugs_solution(+Start, +Capacities, +End, ?Solution) holds when *Solution* is the terminal 'node' in a state-space search - beginning with a 'start state' in which the water-jugs have *Capacities* and contain the *Start* volumes. The terminal node is reached when the water-jugs contain the *End* volumes.

water_jugs_solution(Start, Capacities, End, Solution) :-

```
solve_jugs( [start(Start)], Capacities, [], End, Solution ).
```

solve_jugs(+Nodes, +Capacities, +Visited, +End, ?Solution) holds when *Solution* is the terminal 'node' in a state-space search, beginning with a first 'open' node in *Nodes*, and terminating when the water-jugs contain the *End* volumes. *Capacities* define the capacities of the water-jugs, while *Visited* is a list of expanded ('closed') node states.

The 'breadth-first' operation of *solve_jugs* is due to the 'existing' *Nodes* being appended to the 'new' nodes. (If the 'new' nodes were appended to the 'existing' nodes, the operation would be 'depth-first'.)

solve_jugs([Node|Nodes], Capacities, Visited, End, Solution) :-

```
node_state( Node, State ),
```

```
( State = End ->
```

```
    Solution = Node
```

```

; otherwise ->
findall(
    Successor,
    successor(Node, Capacities, Visited, Successor),
    Successors
),
append( Nodes, Successors, NewNodes ),
solve_jugs( NewNodes, Capacities, [State|Visited], End, Solution )
).

```

successor(+Node, +Capacities, +Visited, ?Successor) Successor is a successor of Node, for water-jugs with Capacities, if there is a legal 'transition' from Node's state to Successor's state, and Successor's state is not a member of the Visited states.

```

successor( Node, Capacities, Visited, Successor ) :-
    node_state( Node, State ),
    Successor = node(Action, State1, Node),
    jug_transition( State, Capacities, Action, State1 ),
    \+ member( State1, Visited ).

```

jug_transition(+State, +Capacities, ?Action, ?SuccessorState) holds when Action describes a valid transition, from State to SuccessorState, for water-jugs with Capacities.

There are 2 sorts of Action:

- empty_into(Source,Target): valid if Source is not already empty and the combined contents from Source and Target, (in State), are not greater than the capacity of the Target jug. In SuccessorState: Source becomes empty, while the Target jug acquires the combined contents of Source and Target in State.
- fill_from(Source,Target): valid if Source is not already empty and the combined contents from Source and Target, (in State), are greater than the capacity of the Target jug. In SuccessorState: the Target jug becomes full, while Source retains the difference between the combined contents of Source and Target, in State, and the capacity of the Target jug.

In either case, the contents of the unused jug are unchanged.

```

jug_transition( State0, Capacities, empty_into(Source,Target), State1 ) :-
    volume( Source, State0, Content0 ),
    Content0 > 0,
    jug_permutation( Source, Target, Unused ),
    volume( Target, State0, Content1 ),
    volume( Target, Capacities, Capacity ),
    Content0 + Content1 =< Capacity,
    volume( Source, State1, 0 ),
    volume( Target, State1, Content2 ),
    Content2 is Content0 + Content1,
    volume( Unused, State0, Unchanged ),
    volume( Unused, State1, Unchanged ).

```

```

jug_transition( State0, Capacities, fill_from(Source,Target), State1 ) :-
    volume( Source, State0, Content0 ),
    Content0 > 0,
    jug_permutation( Source, Target, Unused ),
    volume( Target, State0, Content1 ),
    volume( Target, Capacities, Capacity ),
    Content1 < Capacity,
    Content0 + Content1 > Capacity,
    volume( Source, State1, Content2 ),
    volume( Target, State1, Capacity ),

```

Content2 is Content0 + Content1 - Capacity,
volume(Unused, State0, Unchanged),
volume(Unused, State1, Unchanged).

2. Data Abstraction

volume(?Jug, ?State, ?Volume) holds when *Jug* ('large', 'small' or 'reservoir') has *Volume* in *State*.
volume(small, jugs(Small, _Large, _Reservoir), Small).
volume(large, jugs(_Small, Large, _Reservoir), Large).
volume(reservoir, jugs(_Small, _Large, Reservoir), Reservoir).

jug_permutation(?Source, ?Target, ?Unused) holds when *Source*, *Target* and *Unused* are a permutation of 'small', 'large' and 'reservoir'.

```
jug_permutation( Source, Target, Unused ) :-  

    select( Source, [small, large, reservoir], Residue ),  

    select( Target, Residue, [Unused] ).
```

node_state(?Node, ?State) holds when the contents of the water-jugs at *Node* are described by *State*.

node_state(start(State), State).

node_state(node(_Transition, State, _Predecessor), State).

3. Definite Clause Grammar

narrative/5 is a DCG presenting water-jugs solutions in a readable format. The grammar is 'head-recursive', because the 'nodes list', describing the solution, has the last node outermost.

narrative(start(Start), Capacities, End) -->

```
"Given three jugs with capacities of:", newline,  

literal_volumes( Capacities ),  

"To obtain the result:", newline,  

literal_volumes( End ),  

"Starting with:", newline,  

literal_volumes( Start ),  

"Do the following:", newline.
```

narrative(node(Transition, Result, Predecessor), Capacities, End) -->

```
narrative( Predecessor, Capacities, End ),  

literal_action( Transition, Result ).
```

literal_volumes(Volumes) -->
indent, literal(Volumes), ";", newline.

literal_action(Transition, Result) -->
indent, "- ", literal(Transition), " giving:", newline,
indent, indent, literal(Result), newline.

literal(empty_into(From,To)) -->
"Empty the ", literal(From), " into the ",
literal(To).

literal(fill_from(From,To)) -->
"Fill the ", literal(To), " from the ",
literal(From).

literal(jugs(Small,Large,Reservoir)) -->
literal_number(Small), " gallons in the small jug, ",
literal_number(Large), " gallons in the large jug and ",
literal_number(Reservoir), " gallons in the reservoir".

literal(small) --> "small jug".

literal(large) --> "large jug".

literal(reservoir) --> "reservoir".

```
literal_number( Number, Plus, Minus ) :-  
    number( Number ),  
    number_chars( Number, Chars ),  
    append( Chars, Minus, Plus ).
```

indent --> " ".

```
newline --> "  
".
```

4. Utility Predicates

Load a small library of puzzle utilities.

```
:- ensure_loaded( misc ).
```

5. Result (Output in Prolog)

The output of the program is:

```
?- water_jugs.
```

Given three jugs with capacities of:

3 gallons in the small jug, 4 gallons in the large jug and 8 gallons in the reservoir; To obtain the result: 0 gallons in the small jug, 2 gallons in the large jug and 6 gallons in the reservoir; Starting with: 0 gallons in the small jug, 0 gallons in the large jug and 8 gallons in the reservoir; Do the following:

- Fill the small jug from the reservoir giving:

- 3 gallons in the small jug, 0 gallons in the large jug and 5 gallons in the reservoir

- Empty the small jug into the large jug giving:

- 0 gallons in the small jug, 3 gallons in the large jug and 5 gallons in the reservoir

- Fill the small jug from the reservoir giving:

- 3 gallons in the small jug, 3 gallons in the large jug and 2 gallons in the reservoir

- Fill the large jug from the small jug giving:

- 2 gallons in the small jug, 4 gallons in the large jug and 2 gallons in the reservoir

- Empty the large jug into the reservoir giving:

- 2 gallons in the small jug, 0 gallons in the large jug and 6 gallons in the reservoir

- Empty the small jug into the large jug giving:

- 0 gallons in the small jug, 2 gallons in the large jug and 6 gallons in the reservoir

Yes

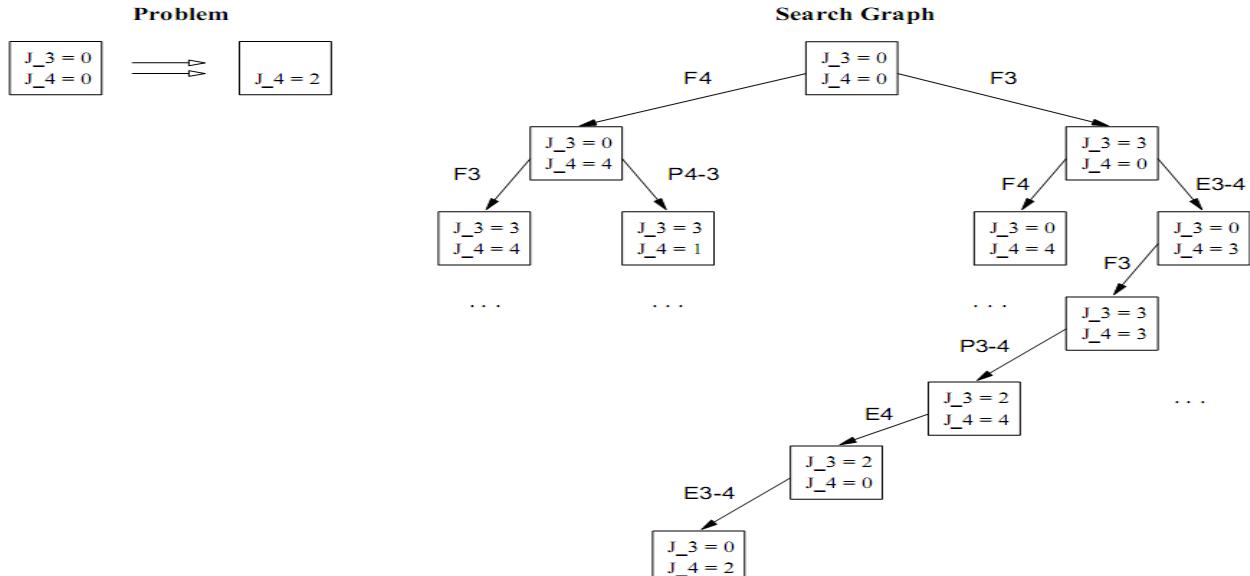


Fig:1.2

6. Conclusion

Problem solving is a mental process and is part of the larger problem process that includes problem finding and problem shaping. Considered the most complex of all intellectual functions, problem solving has been defined as higher-order cognitive process that requires the modulation and control of more routine or fundamental skills. Problem solving occurs when an organism or an artificial intelligence system needs to move from a given state to a desired goal state. Thus conclude to get 2 gallon water in 4 liter jug.

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Problemlöseverhalten in komplexen Situationen [Confoundations in complex problem solving.
On the influence of the degree of correct solutions on problem solving in complex situations].
Bonn, Germany: Holos

An innovative smart alarm for the present generation

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Abstract: Developing an Android based application for an alarm clock using Android Studio IDE. The main feature if this application is to make the user move around and walk a few steps to turn off the ringing alarm. This will enable the user to forcefully wake up when the alarm rings preventing him/her from snoozing it repeatedly. It is specifically designed for students to help them reach morning classes on time without skipping breakfast. This will also benefit the working people to get up on time who have the problem of snoozing their alarm repeatedly.

Keywords: alarm, android studio, application development

1. Introduction

In the olden days, people used to wake up hearing the crowing of the cock. Then came the physical alarm clocks and now due to the evolving technology people have shifted to the alarm clocks on their smartphones. The main drawback of smartphone alarms is that it comes with a snooze button. Due to this, people end up oversleeping. This has several repercussions like missing breakfast, getting late for work/ classes etc. This was the motivation to develop this app, which will make the user to wake up and move around to turn off the alarm.

Sometimes, it so happens that the user walks a few steps but is still not completely awake. In order to tackle this situation, a quiz feature is also implemented in the app. The user also needs to answer a few questions before the alarm can go off.

2. Language description

To develop the android application - Smart Alarm – Java was used. Java is a language that is platform independent. It is used for general purpose coding as well as Android App Development. It is class based and object-oriented programming whose syntax is influenced by C++. The primary goal of Java is to be simple, object-oriented, robust, secure and high level. The code written in Java language in one machine can be executed in any machine.

The Android platform allows developers to write managed code using Java to manage and control the Android device. Android applications can be developed by using the Java programming language and the Android SDK. By using java, powerful and efficient applications can be created for mobile phones, remote processors, microcontrollers, wireless modules, sensors, gateways, consumer products, and practically any other electronic device.

3. Working and Flowchart

The main intention of this application is to make the user wake up on time in the morning. The app is very user friendly. Upon opening the app, there is a time picker to help the user set the time for the alarm. Analog or digital themed time picker can be used depending upon the interest of the user. After setting the time, all that the user must do is press the toggle button to turn on the alarm.

In the morning, when it is time, the alarm starts to ring. There is neither a button to snooze the alarm nor to turn it off. The only method to turn it off is to get up and walk a few steps. Accelerometer and step counter have been used to detect the motion. Sometimes making the user walk a few steps will not be sufficient. Hence, the user also needs to solve a few quiz questions. Only when these two actions are completed, the alarm will go off.

The product functions are as below.

Setting time: The user is given the option to set any time for his/her alarm and from the most comfortable time picking option i.e., analog or digital.

Answering quiz: Once the alarm starts to ring, the user needs to walk a few steps. Then he needs to answer a few questions to turn off the alarm.

The use case diagram is as shown in Fig 1.

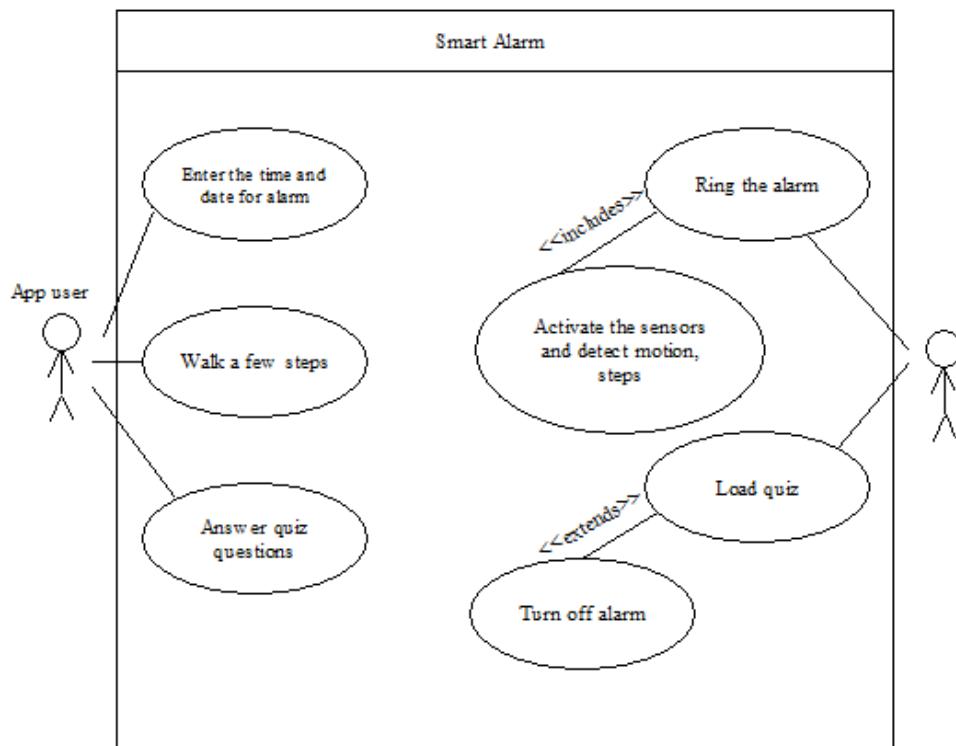


Figure 1. Use case Diagram

The use case diagram represents the different modules of the app controlled by different entities. The app user is only allowed to set the alarm time with date after opening the app. When the alarm rings he will be prompted to answer a few questions. All other modules are controlled by the app itself like ringing the alarm, loading the quiz questions, activating the sensors etc.

The activity diagram is as shown in Fig 2. It represents the sequence of activities that occur in the application. Upon opening the app, the user is allowed to set the alarm and then the control is passed to the application. There are conditions which must be satisfied for the alarm to go off. The user must

walk a few steps when it rings and answer all the quiz questions correctly. Not completing either of the two results in the alarm ringing continuously.

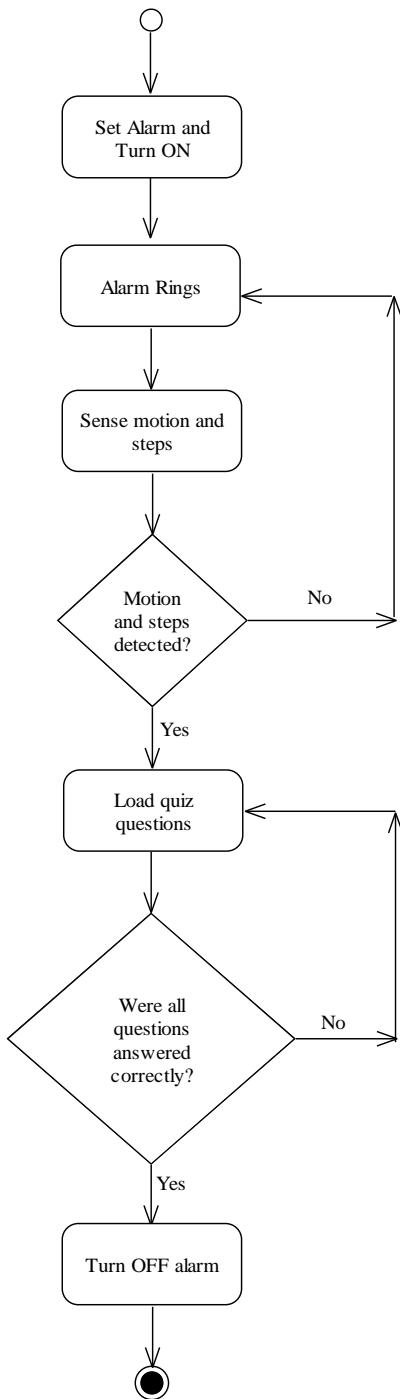


Figure 2. Activity Diagram

4. Results

As this work is the development of an innovative smart alarm, this section includes the screenshots of the different steps. Figure 3 is the screen shots of the setting the alarm in digital/analog time picker. Figure 4 is the screen shots of detecting the steps and answering the quiz questions. The app is coded in such a way that the user must walk at least for a minute holding the phone in his hand before the quiz kicks in. In case the user fails to answer a question correctly, he/she must wait for ten seconds to attempt it again. After a few questions are successfully answered, the alarm stops ringing. Thus, the app is successful in its objective of making the user wake up on time without repeatedly snoozing it.

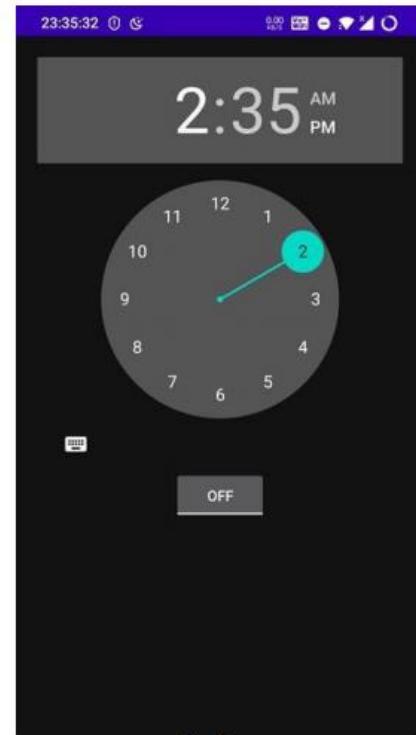
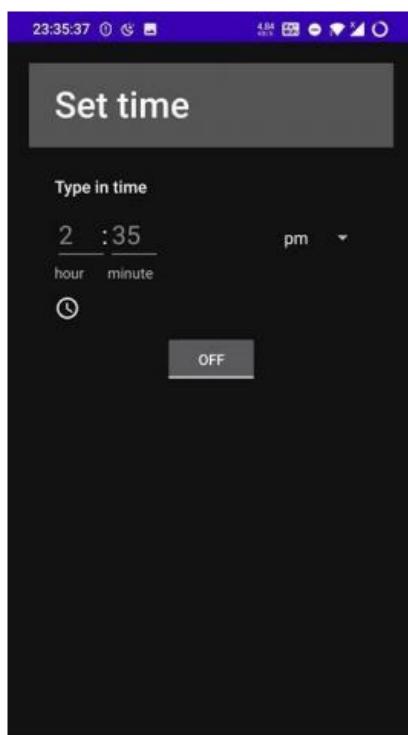


Figure 3. Screen shot of the setting the alarm in digital time picker

Figure 4. Screen shot of the setting the alarm in analog time picker

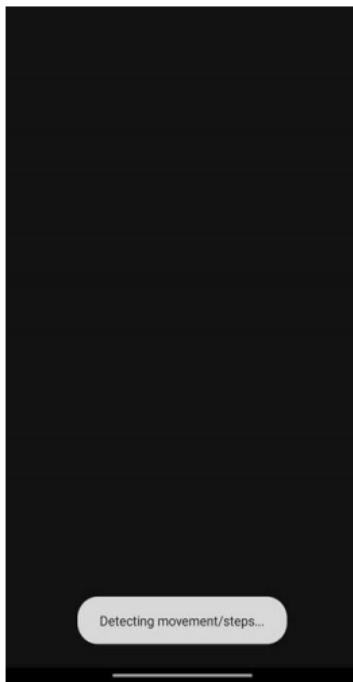


Figure 5. Screen shot of the detecting steps

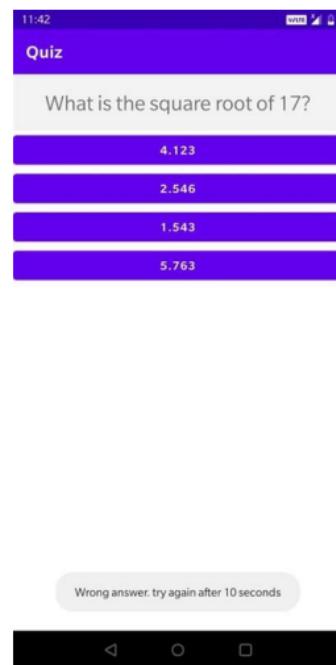


Figure 6. Screenshot of quiz page

5. Conclusions

Waking up on time is very essential for the smooth functioning of our daily activities. In case we oversleep, it has several repercussions. For students, it might mean skipping the early morning class. For working professionals, it might mean, skipping a very important meeting, etc. In such cases, depending on the normal alarm app on the phone can be risky as the alarm can be snoozed indefinitely. It is in places like these, where SMART ALARM plays a vital role. It rings the alarm continuously forcing the user out of bed. Not just that, it makes the user answer a quiz that completely awakens him/her. This app is a must have for all those who have difficulty in waking up in the mornings.

The future scope of this work is this app can be linked with some motivational words or speech which will give some positive thought for the day. It can also be linked to the Google assistant to inform the user about the weather conditions and his tasks for the day which he had entered in the Google calendar. This will give a head start to begin the day with a positive note.

6. References

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POLICY BASED FILE ASSURED DELETION (FADE) ON CLOUD STORAGE

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Abstract Cloud Storage is an emerging business model for data outsourcing. Cloud storage will be a cost – saving business solution for unused storage and provide technical support for data backups. It can also save electric power and maintenance costs for data centers. Cloud must provide security guarantees for the outsourced data, which is maintained by third parties. This project proposes a secure overlay cloud storage system that achieves fine – grained, policy - based access control and File Assured DEletion (FADE). This scheme reliably deletes files of revoked file access policies. FADE enables to have a fine – grained control of how to delete files. To achieve this, FADE is build upon standard cryptographic techniques, such that it encrypts outsourced data files to guarantee their privacy and integrity and deletes files to make them unrecoverable to anyone. Design is geared toward the objective that it acts as an overlay system that works on cloud storage services.

Evaluation is based on the performance of FADE in terms of running time overhead and monetary cost. Performance results also depend on the deployment environment. Evaluation results show that the performance overhead of FADE becomes less significant when the size of the actual data file content increases. Thus, FADE is more suitable for enterprises that need to archive larger files with a substantial amount of data.

Keywords- Cloud computing, FADE, Cryptography, The Federated Broadcast Cloud System,FBCS.

I Introduction

The long-held dream of computing as a utility has the potential to transform a large part of the IT industry, making software even more attractive as a service and shaping the way IT hardware is designed and purchased. Developers with innovative ideas for new Internet services no longer require the large capital outlays in hardware to deploy their service or the human expense to operate it. They need not be concerned about over-provisioning for a service whose popularity does not meet their predictions, thus wasting costly resources, or under-provisioning for one that becomes wildly popular, thus missing potential customers and revenue. Moreover, companies with large batch-oriented tasks can get results as quickly as their programs can scale, since using 1000 servers for one hour costs no more than using one server for 1000 hours. This elasticity of resources, without paying a premium for large scale, is unprecedented in the history of IT.

- I. From a hardware point of view, three aspects are new in Cloud Computing.
- II. 1. The illusion of infinite computing resources available on demand, thereby eliminating the need for Cloud Computing users to plan far ahead for provisioning.
- III. 2. The elimination of an up-front commitment by Cloud users, thereby allowing companies to start small and increase hardware resources only when there is an increase in their needs.
- IV. 3. The ability to pay for use of computing resources on a short term basis as needed (e.g., processors by the hour and storage by the day) and release them as needed, thereby rewarding conservation by letting machines and storage go when they are no longer useful.

The construction and operation of extremely large-scale, commodity-computer datacenters at low-cost locations was the key necessary enabler of Cloud Computing, for they uncovered the factors of 5 to 7 decrease in cost of electricity, network bandwidth, operations, software, and hardware available at these very large economies of scale. These factors, combined with statistical multiplexing to increase utilization compared a private cloud, meant that cloud computing could offer services below the costs of a medium-sized datacenter and yet still make a good profit.

II Related Work

In FADE, active data files that remain on the cloud are associated with a set of user-defined file access policies (e.g., time expiration, read/write permissions of authorized users), such that data files are accessible only to users who satisfy the file access policies. FADE generalizes time – based file assured deletion into a more fine – grained approach called file assured deletion in which data files are assuredly deleted when the associated file access policies are revoked and become obsolete. The design intuition of FADE is to decouple the management of encrypted data and cryptographic keys, such that encrypted data remains on third-party (untrusted) cloud storage providers, while cryptographic keys are independently maintained and operated by a quorum of key managers that altogether form trustworthiness. To provide guarantees of access control and assured deletion, FADE leverages off-the-shelf cryptographic schemes including threshold secret sharing and attribute-based encryption (ABE) and performs various cryptographic key operations that provide security protection for basic file upload/download operations. The design of FADE is based on the thin-cloud interface, meaning that it only requires the cloud to support the basic data access operations such as put and get. Thus, FADE is applicable for general types of storage back ends, as long as such back ends

provide the interface for uploading and downloading data. On the other hand, in the context of cloud storage, we need to specifically consider the performance metrics that are inherent to cloud storage, including data transmission performance and monetary cost overhead.

B. COMPLICATIONS IN FILE DELETION

File deletion is all about control. This used to not be an issue. Your data was on your computer, and you decided when and how to delete a file. You could use the delete function if you didn't care about whether the file could be recovered or not, and a file erase program. If you wanted to ensure no one could ever recover the file.

As we move more of our data onto cloud computing platforms such as Gmail and Facebook, and closed proprietary platforms such as the Kindle and the iPhone, deleting data is much harder.

You have to trust that these companies will delete your data when you ask them to, but they're generally in doing so. Sites like these are more likely to make your data inaccessible than they are to physically delete it. Facebook is a known culprit: actually deleting your data from its servers requires a complicated procedure that may or may not work. And even if you do manage to delete your data, copies are certain to remain in the companies' backup systems. Gmail explicitly says this in its privacy notice. Online backups, SMS messages, photos on photo sharing sites, smartphone applications that store your data in the network: you have no idea what really happens when you delete pieces of data or your entire account, because you're not in control of the computers that are storing the data.

This notion of control also explains how Amazon was able to delete a book that people had previously purchased on their Kindle e-book readers. The legalities are debatable, but Amazon had the technical ability to delete the file because it controls all Kindles. It has designed the Kindle so that it determines when to update the software, whether people are allowed to buy Kindle books, and when to turn off people's Kindles entirely.

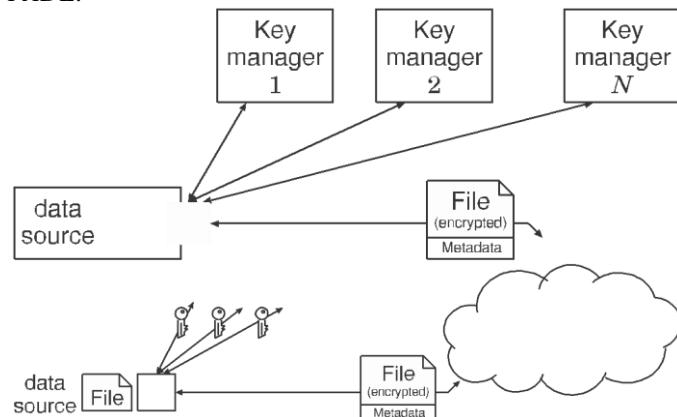
C Forward-Secure Broadcast Encryption Scheme

A broadcast encryption Scheme allows the sender to securely distribute data to a dynamically changing set of users over an insecure channel.

The main idea of the Subset-Cover framework [27] is defining a family F of subsets of the universe of users in the system. Moreover, each subset owns a key, which is available to all users belonging to the given subset. To broadcast a message to the users except those in some sets of revocation users R , firstly a provider covers the set of privileged users using subsets from the family F . This is done by identifying a partition of $\epsilon \setminus R$, where all the subsets are elements of F . Then, the provider encrypts the message for all the subsets in that partition. To decrypt, a user $u \notin R$ first identifies the subset in the partition of $\epsilon \setminus R$ to which he belongs, and then recovers private keys of from his secret information. The subsets are organized into groups, and a private key, groupkey, is owned to each of these groups. Such an organization of the subsets of the family F produces a hierarchy, in which the leaves are elements of F and each internal node corresponds to a group of subsets. The complete explanation of the algorithm is found in [14].

D FADE OVERVIEW

A system that provides guarantees of access control and assured deletion for outsourced data in cloud storage is called FADE.



The cloud hosts data files on behalf of a group of FADE users who want to outsource data files to the cloud based on their definitions of file access policies. FADE can be viewed as an overlay system atop the underlying cloud. It applies security protection to the outsourced data files before they are hosted on the cloud.

From all proviruses work, theirs protocols may be highly vulnerable to a side-channel attacks on the stored keys, because their protocols do not evolve a forward-secure mechanism which is important to guarantee the privacy of past transactions if the long-term key or current session keys are compromised.

III. Federated Broadcast Cloud System (FBCS)

A. System Architecture

In this paper, we propose a new idea about FBCS. According to fs-BE HIBE scheme [14]. The layered cloud security architecture is illustrated in Fig.1; we establish a unified root Global Private Key Generator Broadcast (GPKGB) in FBCS to provide a trust service for different clouds such as the private cloud, the public cloud, and the community cloud. The GPKGB is responsible for managing top-level Broadcast Private Key Generator (BPKG) authorities in the system that allocates hierarchical identities to users in their domains. Those clouds are the first level, and users in those clouds are leaves in that hierarchical. Moreover, each cloud is a self-contained, and its domain with an independent BPKG responsible for certifying cloud entities in its own domain.

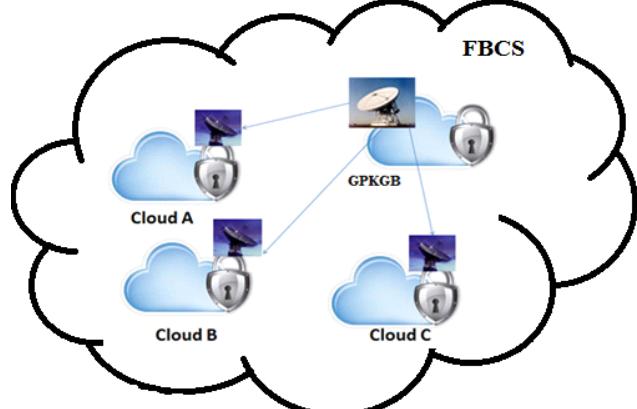


Fig2. The Federated Broadcast Cloud System (FBCS)

IMPORTANCE OF SECURITY IN CLOUD

The way cloud has been dominating the IT market, a major shift towards the cloud can be expected in the coming years. Already organizations have started moving into the cloud and a few of them includes: Schneider Electric implementing their CRM solutions on salesforce.com SaaS platform, Japanese automaker Toyota's pact with Microsoft to develop a new content delivery network for its automobiles on the latter's Azure cloud computing platform. More and more IT organizations will be moving into the cloud and with the emergence of NoSQL built around the technologies like Hadoop/HBase and Cassandra, collecting and using massive amount of data is no more considered as a headache.

Questions such as how a cloud infrastructure is built will be superseded by how and in what way, to better utilize the cloud. Enhanced cross cloud connectivity and integration wherein different cloud deployment models will be integrated to provide a better infrastructure with feasible data migration options. Increasing tablet use and file based collaboration techniques will give way to cloud based service deployment models and an increased user-base in the cloud. Technologies like Ruby on rails, HTML5 will continue to improve cloud experience in comparison to legacy options. Mobile cloud computing is expected to emerge as one of the biggest market for cloud service providers and cloud developers. Split processing techniques will come into picture and will be an enabling platform for mobile devices. Although cloud computing has revolutionized the computing UNC to a private cloud of the Cairo University, then it picks a random $s_1 Z^* q$ and keeps it secret.

Thirdly, the GPKGB generates an initial master key to a private cloud. For example, UNC as $PKUNC = H_1(t // UNC)$ and GPKGB can generate an initial master key as $KUNC_{t, ID=0} PKUNC$.

In the second case, BPKG authorizes cloud users. Firstly, the user registers his identifiable information in its own domain. Secondly, the Broadcast cloud allocates an identity such as the identity of a user Bob in the private cloud of the Cairo University can be $UNC...IDBob_{i,j}$ from a root down to a leaf in a tree. Thirdly, BPKG generates the user's private key and a public key. A user joins the cloud system at time t , and the BPKG uses its current master secret key $KUNC_{t, ID}$ to derive groupkeys given for the user, the Cloud Broadcast run recursively apply the Lower-Level Setup algorithm to derive the private key $SK_{t, ID_{i,j}}$ Bob's parent. Users can refresh their private keys on their own to avoid any communication overhead with any BPKG. Set the Bob's private key $BobSK_{t,u} = \{ID_{i,j}, SK_t, ID_{i,j} \mid 1 \leq i < j \leq n\}$. The BPKG and cloud users evolve their secret keys with time autonomously by calling the Update algorithm.

D Encryption and Digital Signature in a Federated Broadcast Cloud

In the cloud, Encryption and Digital Signature are most important security problems in mutual authentication between users and cloud provider, protection of data confidentiality and integrity during data transmission by encryption using secret keys. In a FBCS, any user has a unique identity. Moreover, any user can get the identity of any other users by requesting it from BPKGs. Any user enables to broadcast data. Sender encrypt the message not only with respect to the nodes in the hierarchy that represents

the subsets in the partition of $\epsilon \setminus R$, but also to the current time t . Forward-security is guaranteed the privacy of past transactions if the long-term key or current session keys are compromised. A broadcast encryption scheme allows the sender to securely distribute data to a dynamically changing set of users over an insecure channel.

Federated broadcast cloud with FS-BE HIBC, a public key distribution is greatly simpler than in [25], because public key is a public during a root setup. The sender can encrypt the message as long as he knows the current time and the ID-tuple of the receiver, along with the public parameters of the system. Encryption is joining-time-oblivious, which means that the encryption does not require knowledge of when a user or any of his ancestors joined the hierarchy. Each service provider does not need to know when each user joins the system in order to broadcast the encrypted contents.

When a cloud provider wants to send a message to a group of users, first run the Cover algorithm [27] to partition the set $\epsilon \setminus R$ into the subsets $\{S_{i_1, j_1}, \dots, S_{i_a, j_a}\}$. The cloud provider then shares a group session key with all the users in the subset. Input to encryption algorithm message M the current time period t public key PK and a set R . Then, run algorithm Encrypt (params, t , ID_h , M) to compute ciphertext. When a user wants to send a message to a group of users. The user then shares a group session key with all the users in the subset. To send a message, this party only needs to know the parameters system params and identifier ID (ID_1, \dots, ID_h) of subset given user, and then it can compute:

$C_j \leftarrow \text{Encrypt}(\text{params}, \text{ID}(ID_1, \dots, ID_h), M)$ for all users in the subset $S_{i_j, j}$ in the cover.

Then it is easy for a sender to add a digital signature [12] using its private key and for a receiver to verify a digital signature using the sender's public key. A user can use its private key, parameters, T_c is current time, and message M to generate a digital signature and sends to the receiver. Receiver and verify the signature using the parameters, message M , and the sender's ID. Signature = Signing (parameters, k , T_c , M), k is the sender's private key. Verification = (parameters, sender ID, M , T_c , Signature).

E. A mutual Authentication Protocol for FBCS

In this section, based on the former fs-BE HIBE scheme, a secure mutual authentication for Cloud (MAFBC) is proposed. Key agreement protocol to create a shared secret key to be guaranteed that they are indeed sharing this secret key between two users. Since Bob's private key that can only be allocated from the BPKG, thus Bob can be verified that he is a legal user of this cloud. A key agreement protocol is providing implicit key authentication to each parties. Key agreement protocol achieve perfect forward secrecy. [43, 44]. TLS [38] offers option forward Secrecy for key agreement, encryption and network authentication. Forward Secrecy greatly increases the level security over normal SSL session key communications.

According to [42], using Identity-Based Cryptography for every two parties, it is easy for them to calculate a shared secret key using its own private and public key. Two users need authentication key agreement protocol to create a shared secret key to be guaranteed them to authenticate each other.

A. Mutual authentication between user and Broadcast cloud

We assume if Bob with identity Bob_ID and a server with identity PRK_A want to authenticate each other.

1. The Bob's system generate a nonce N_Bob , and then sends to the authentication server the message M_Bob , containing the Bob_ID and an encrypted value of the nonce N_Bob , as $M_Bob = E(Bob_ID || N_Bob)$. Here N_Bob is encrypted using public key PK_A . Encrypted value of N_Bob is used to achieve confidentiality.

2 BPKG_A receives the message M_Bob , The cloud -A check subset R revocation, if user is the privileged in the system. After that BPKG_A decrypts the message M_Bob with PRK_A and extracts N_Bob as $D(E(N_Bob || Bob_ID), PRK_A)$.

3. The BPKG_A generates a nonce N_SERVER , $M_SERVER = E(N_Bob || N_SERVER)$ Then BPKG_A generates a signature $sig = H(M_SERVER)$ with private key PRK_A and send sig (M_SERVER) to Bob.

4. Upon receiving the message sig (M_SERVER), firstly Bob verifies the signature and decrypts the message with PRK_Bob and extract N_Bob and N_SERVER . User's system verifies that the received N_Bob , is equal to the sent N_Bob .

5. If both are equal, then sends $M = E(N_SERVER)$ to the server.

6. Upon receiving the message M , The BPKG_A decrypts M and then extracts N_SERVER . AS verifies that N_SERVER received is equal to N_SERVER sent.

Eventually, a shared secret key KBA between Bob and BPKGs calculated between them.

The key K established between the user's system and the cloud server can be used as a secret key for secure communication.

B. User Access Authentication Protocol In HBCSD

Also, Another mutual authentication, when a user belonging to HBCSD, A needs to access RBCSD.

Suppose the cloud A shares a secret key $ShKBoA$ with Bob, also cloud A shares a secret key $ShKBA$ with the cloud B.

1. Bob in broadcast cloud -A sends the request message for communicating with the broadcast cloud B to the cloud A. Bob generate a nonce number N_Bob , then Bob update the shared key by rehashing it $ShKBoA1 = H(ShKBoA)$ and encrypts a request message with shared a secret key $ShKBoA1(N_Bob || ID_Bob)$.

2-Upon the receipt of the request message, the broadcast cloud -A decrypts message with private key PRK_A to retrieve ID_Bob. The broadcast cloud -A check subset R revocation, if user is privileged in the system, The broadcast cloud -A update the shared key by rehashing it $ShKBA1 = H(ShKBA)$ and encrypt Bob's request message to the broadcast cloud -B with a shared a secret key $ShKBA1(N_Bob \parallel ID_Bob)$.

3. On receiving cloud -A's request message, The broadcast cloud-B decrypts message with private key PRK_B to retrieve ID_Bob and N_Bob, and then judges the ID_Bob's HBCSD through N_Bob. The broadcast cloud-B generates a nonce number N_CB, then the broadcast cloud -B encrypt message with a shared a secret key . The broadcast cloud-B sends a response message to broadcast cloud-A $ShKBA1(N_CA \parallel N_Bob)$.

4. Upon the receipt of the request message, the broadcast cloud -A decrypts message with private key PRK_A to retrieve N_CA. After that, the broadcast cloud -A encrypt request message to Bob with a shared a secret key $ShKBoA1(N_CA \parallel N_Bob)$.

5.Upon receiving the message , firstly Bob decrypts the message with PRK_Bob and extract N_Bob and N_CA. Bob verifies the received N_Bob, is equal to the sent N_Bob. If both are equal, Bob sends $ShKBoA1(N_CA)$ to broadcast cloud -A.

6. Upon receiving the message, the broadcast cloud -A decrypts message and then extracts N_CA. The broadcast cloud -A encrypt Bob's request message to the broadcast cloud -B with a shared a secret key $ShKBA1(N_CA)$.

7. Upon receiving the message, The broadcast cloud -B decrypts message and then extracts N_CA. broadcast cloud -B verifies that N_CA received is equal to N_CA sent. The broadcast cloud -B sends privat key PRB $ShK_BA\ 1$ (PRB) to the broadcast cloud.

8. Upon receiving the message, the broadcast cloud -A decrypts message. Then, the broadcast cloud -A can calculate shared a secret key ShK_BB between Bob and the broadcast cloud -B with their public keys and private keys. The broadcast cloud -A send. Shared a secret key $ShKBoA1(ShK_BB)$ to Bob. The broadcast cloud -A send shared a secret key $ShKBA1(ShK_BB)$ to the broadcast cloud -B.

The cloud server trusts the user and allows him to communicate with the cloud server.

10. The key K established between the user's system and the cloud server can be used as a secret key for secure communication.

IV CONCLUSION

Cloud Computing will grow, so developers should take it into account. Regardless whether a cloud provider sells services at a low level of abstraction like EC2 or a higher level like AppEngine, cloud computing, storage and networking must all focus on horizontal scalability of virtualized resources rather than on single node performance. A practical cloud storage system called FADE, which aims to provide access control assured deletion for files that are hosted by today's cloud storage services. Associate files with file access policies that control how files can be accessed are implemented. Then the presentation of policy-based file assured deletion, in which files are assuredly deleted and made unrecoverable by anyone when their associated file access policies are revoked. The essential operations on cryptographic keys so as to achieve access control and assured deletion are explained. FADE also leverages existing cryptographic techniques, including attribute-based encryption and a quorum of key managers based on threshold secret sharing. References

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