LOCKER SECURITY SYSTEM WITH IMAGE AND VOICE AUTHENTICATION

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Abstract: For our daily life, security and authentication of persons, especially in bank lockers is important. Security in banks is necessary as we grow individuals and achieve many things vital for each person, such as essential documents, jewelry, personal goods, and more, we need an adequate security. From the ancient mechanical things to the world of current electronics, the world has changed a lot. A technology has created new door-locking system is an equipment used to authenticate digital information such as user data, voices and facial recognition. In this approach, the bank collects every person's biometric data for access to the lockers. The money can only be collected by verified people, such papers as biometrics and faces are kept for a person's specific identity. The facial recognition and detection options have only been considered because they are used extensively on the interactive user interface and play a significant part in computer vision. Robust and efficient face sensing algorithms are strongly necessary. We proposed voice identification and face recognition system through the use of ESP32 cams for face detection and face tracking and GSM module.
Keywords: GSM, ESP32, ARDUINO, OTP.

I. INTRODUCTION

The current locker system scenario is the key to safeguarding a person's stuff. Two keys are going to be, one key is with the client and the other key is with the banker concerned. Both keys have to be inserted to open the locker. So if one of the keys is lost or stolen it is very tough to open and it is a very long procedure to do so, the present locking method is in disadvantage. Bank is a financial entity that provides us with financial services such as money issuance, card saving, etc. Collect and save money is very important to us in our lives for a comfortable economic position, therefore we all have a central role to play in the banking industry. Cash, property and other precious items must be kept under safe custody as robbers now possess a lot of advanced equipment. According to one quote, if you lose your health, it can again be recovered, but you lose the value of your wealth. To secure our valuables banks should they offer other advantages like safe lockers to store their value things. Safe locking systems are needed both in banks and other institutions such as offices, businesses, financial institutions, gas stations, hotels and hospitals. This requirement is recognized more and more in these days because the safety worries are growing. The locker security study and analysis are continually increasing with the knowledge and applications of a wide number of embedded technologies. Security systems included several modern technology such as a well-known biometrical passports campaign, technology of perception processing and communication strategies. In the same way, it remains valuable to approach the lockers. The GSM is mostly utilized for the transmission or receiving of data such as voice and message. GSM plays a major role in our security system. By using GSM, the user receives the message when an unauthorized person tries to unlock the lock. The fingerprint, password and GSM Technology security system are used to implement this bank locker system, providing the most efficient and trustworthy safety system than the conventional system.

This project's main objective is to design a security technology. There are many people who may or may not know us, and because of that there are various problems such as document loss and precious property. Even the latest technology can be easily unlocked, such as fingerprint sensor locks. This project suggests the authentication of the image and voice, so that only an authorized individual can have secure access to the system. We will use ESP 32 cam to capture the image for this purpose.When a person tries to enter and then process the door and check if the face matches or not the stored picture, the ESP 32 cam takes the image. When matches are made, OTP is requested and then we need a voice order and only the door opens and closes. The user can only offer an access if the image, OTP and voice match and if the locker does not then remain shut. This may also be utilized where security is of considerable concern, such as a personal workplace, a desktop location like logs, servers, document storage spots, etc. So we use this provided way to establish a highly secured locker.

II. EXISTING SYSTEM

The microcomputer has an image processing control unit and microprocessor for an extensible emergency system in real time to prevent lockers. Enhanced authentication algorithm is used by the face detection and recognition system. In real-time applications ARM processor is important to the complete securitysystem that contains each component.
ARM 7(microprocessor) in the system is therefore used as the control unit. Once the attacker enters the automotive, the passive infrared sensor on the driver's seat triggers the covert camera inside the door through the microcomputer control of ARM 7. The camera gets a picture of the person in front of the driver's seat in the right position. The system tries to recognize the face once the person's image is acquired. This study employs facial recognition with Live Image Authentication in comparison to all previous studies

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proposed. We use ARM – 7 CPU for this work. It comprises of 64 pins to be coupled by a single CPU with all other peripherals. It can be supplied with 3.3V and 5V voltages. The work can be developed in various ways, where the more efficient voice may be added or replaced with the biometric system that helps to improve safety. Security can be strengthened with GSM technology, in which the user receives the message when another person opens the locker.
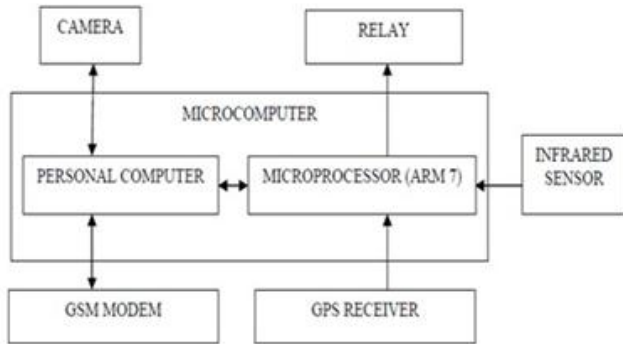

Fig.1.Existing Method

III.PROPOSED METHOD

We use facial recognition and voice recognition with OTP Based Device in this proposed system. To open a locker, the face and voice of the individual must be matched otherwise the locker will not open.
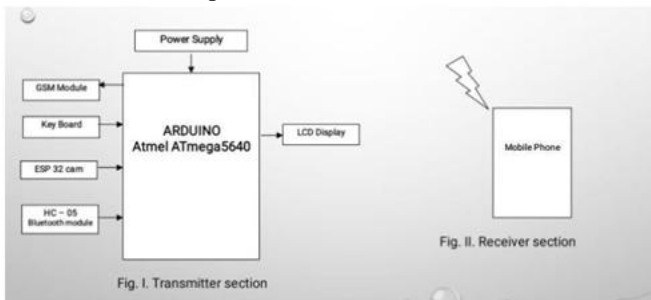

Fig.2. Proposed system

In any door security system, the most crucial aspect is the accurate detection of visitors who enter and pass the door. The most natural way to ensure security is to detect visitors at the door and warn users via a cell phone. The system presented has additional capabilities such as speech, camera live feed, OTP. This technology recognizes the presence, voice, image identification and OTP of the visitor and communicates the image to the door owner to recognize the visitor. Without having to maintain an extra server, the user can simply login and interact with the embedded device in real time. It offers a range of functions, including power efficiency, intelligence, cheap cost, mobility and high performance. Our offering is voice, face-detection system with integration of voice detection and tracking using the AMR voice and microcontroller. The facial recognition and detection options have only been considered because they are used extensively on the interactive user interface and play a significant part in computer vision. Robust and efficient face sensing algorithms are strongly necessary.

We utilize AMR voice, ESP32 board in this project to add the database, face recognition and response for the authorized individual's message. The memory unit contains the user database. The processing and detection of images is carried out within the Android board. It is also used for this paper as a control platform. A system for face recognition uses biometrics to map photographs or video facial characteristics. The information is compared to a database of familiar sides for matches. This is because face recognition has all sorts of business uses. It can be utilized from monitoring to marketing for everything. In all three techniques the results achieved in ensuring safety are extremely robust. By using face and speech as identification technology, the system has successfully addressed some of the characteristics that exist in today's technologies.
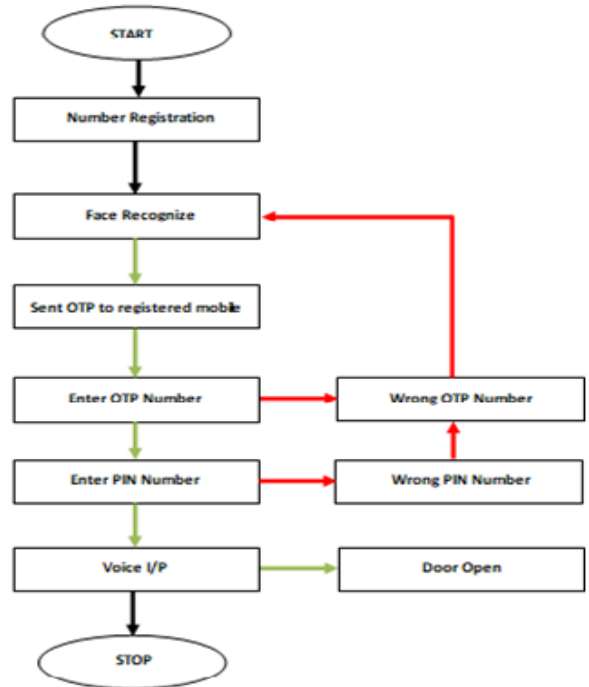
Fig.3 Flow chart

IV.DESIGN PROCEDURE

4.1. Face recognition

Step-1: In order to identify the authorized locker user, our system employs a face recognition technology and thedoor may only be used by approved users.

Step-2: The ESP 32 cam circuit is equipped with a camera.

Step-3: When we enable the system authority, which contains three options for registration, starting and clearing data, to scan the owner's face first while registering.

Step-4: The owner can operate the door following successful registration. The owner must push the back command to shut the door.

Step-5: When an unauthorized user is trying to access the door, the system scans the face of a person and verifies that the face matches the authorized face if the system doesn't match and doesn't open the door.

Step-6: The system thus helps to safeguard such smart doors. When the face matches, ask the OPT/PIN entry.

4.2. OTP/PIN Identification

If the user's information matches their own previously recorded information, users can access the voice command and then proceed to give it. If not, the users must enter again their identity number. Three tries are made for the users. If the door is open three steps ok.

4.3. Voice Recognition

The ability of a door access system to receive and interpret the statements of the people and to provide the feedback is voice recognition. In order to capture the microphone in the form of an input signals, features or attributes can be extracted to make a template, the system will pass through the registration stage.A sample speech statement is then compared with models already stored in the system to identify the best match in the verification stage. When Voice's all right and opens the door.

V. HARDWARE COMPONENTS

5.1. ESP32-CAM

The ESP32-CAM is a Camera Module based on ESP32 chip from the Original Ai-Thinker ESP32 CAM WiFi + Bluetooth with the extra camera facility. It is perfect for many IOT apps. The ESP32-CAM offers a highly competitive, tiny camera module that can function as a basic system independently. In a variety of IOT applications, Ai-Thinker ESP32 CAM is frequently used. It is appropriate for home smart devices, industrial wireless control, wireless surveillance, WLAN ID, Wireless Signals and other IOT applications. The solution is suited for IOT applications.

Fig.4. Ai Thinker ESP32 CAM

5.2. ARDUINO:

The Arduino UNO is the greatest electronic and coding board to get started. Arduino is a platform for open source construction of electronics devices. The arduino is a physically programmable circuit board and a software package that is either used on your computer to create and upload computer codes to the physical board or IDE. A physical programmable system (also referred to as microcontroller) is used.
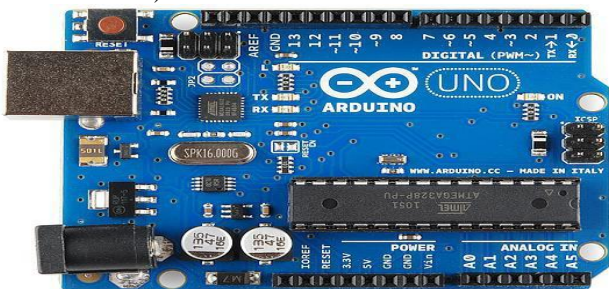

Fig.5. ARDUINO

VI. RESULTS

Assemble the circuit on the bread board and general board. After assembling the circuits on the boards check it for proper connections before switching on the power supply. The implementation of "**Locker Security System with Image & Voice Authentication**" is done successfully. The communication is properly done without any interference between different modules in the design. Design is done to meet all the specifications and requirements. It can be concluded that the design implemented in the present work provide portability, flexibility and the data transmission is also done with low power consumption.

Fig.6. Hardware Prototype

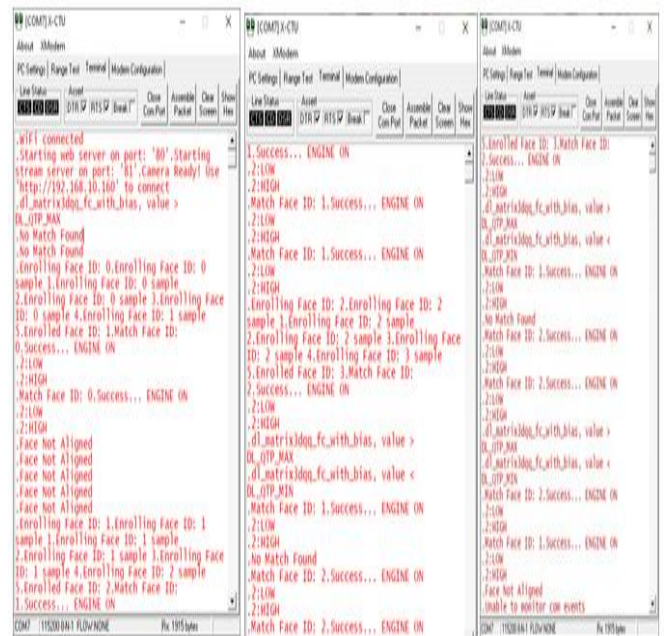
Fig.7. Face Identification & Settings

Fig.8. Output Operation (terminal X-CTU)

VII. CONCLUSION

The system may be lightened and used with less control, employing an ESP 32 CAM facial recognition system, and thus be easier to operate than a pc-based facial recognition system. The system is more comfortable. It is Linux-based open source software. Also, send the authorized person utilities a security alert message. We also provide power backup in case of power breakdown to ensure the system functions smoothly and continuously. The ESP 32 CAM is loaded using a power door so the system is less slowed. ESP 32 CAM is less powered and offers adequate versatility to meet the needs of different persons. This development scheme can be inexpensive, fast and very reliable

REFERENCES

[1] Çarıkçı M. Özen F. 2012 A Face Recognition System Based on Eigen faces Method.

[2] Jogdand S. Karanjkar M. 2015Implementation of utomated Door Accessing System with Face Design andRecognition.

[3] Sowmiya, U. shafiq mansoor J. 2015 Raspberry pi based home door security through 3g dongle.

[4] Kartik J. Srimadhavan V. 2013 SMS Alert and Embedded Network Video Monitoring Terminal.

[5] Sahani M. Nanda C. Sahu A. Pattnaik B. 2015Web Based Online Embedded Door Access Control and Home Security System Based on Face Recognition.

[6] Divya R.S, "Super secure door lock system for critical zone". International conference on network & advance in computational technology.

[7] K. Suganithi^2, "Survey of integrating Face and Iris biometrics for security motive using change detection mechanism", International conference on science technology.

[8] A.N. Gaikwad "Fingerprint and Iris biometric controlled smart security machine embedded with GSM Technology for OTP", International institute of information of technology.

[9] Anitha Julian, "Design and implementation of anti-theft ATM machine using embedded systems", International conference on circuit, power and computing technology.