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HIGH PROTECTION LOCKER SECURITY SYSTEM USING LIVE IMAGE AND VOICE AUTHENTICATION

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Abstract: we need security to keep us and our valuable things safely. As the technology is developing rapidly we should also upgrade the security protection to prevent ourself from illegal handling and losing of our things. This high protection locker security system helps us to keep our valuable things in banks, home and hotels securely. The security system we are using now can be easily accessible by unauthorized person and theft because of the advanced technology. To prevent this we are using high protection locker system which uses image recognition and voice authentication

Here we are using web camera and Node MCU for identifying the person in python and his voice (i.e., Authentication Key). We can compare with the registered images of person if it is matches with the register image and based on the voice command the locker will open otherwise it will not open and stores the image of the intruders.

Keywords: Arduino uno, Locker, Node mcu, security, python, image and voice

1.INTRODUCTION

The security of personal belongings is of utmost importance in today's world. Nowadays people are more concerned about keeping safe of their money, jewellery and other valuable things. High protection locker systems have become increasingly popular for storing valuable items, but the security measures used in these lockers are often basic and outdated also are not protected due to hacker attacks, thefts, and forgotten passwords. The arrival of fast-growing technologies makes users to have high security systems with electronic identification options.

To address this issue, a new security system has been developed that incorporates live image and voice authentication. This cutting-edge technology not only enhances security, but it also provides ease of access for authorized users. With this system, users can rest assured that their belongings are protected by the latest and most advanced security measures available. In this article, we will explore the features and benefits of this high protection locker security system, as well as how it works and why it is a game-changer in the field of locker security.

1.1EXISTING SYSTEM:

In existing system we have used buzzer alerts, fingerprint and otp system in case of any unauthorized persons tries to open door. And we have used RFID for detecting authorized persons. For this RFID can be used by anyone so that no safety and security is available. If RFID tag is stolen then the person need to worry about as the tag can be used to open door.

Drawbacks:

- No safety and security
- Card is Compulsory
- Stolen chances are high
- False alaram's due to fingerprint locker

2.LITERATURE SURVEY

- **HIGH PROTECTION VOICE IDENTIFICATION BASED BANK LOCKER SECURITY SYSTEM WITH LIVE IMAGE AUTHENTICATION-A LITERATURE SURVEY B. SUDARSHAN (2018)**

When human beings were on earth, need of various things emerged. As years passed and with tremendous development people started earning money, property, jewellery and many more precious things. With huge development people felt a need to secure their earnings. In today's a man's life the money security is an important aspect as he earns the money by his hard work, and banking is known for this. It is not enough to have these accessories, but security of this is very important, for this purpose we keep them in a bank locker. Still, we often hear or read in a newspaper that some fake person has access the locker of another person and have stolen money. In order to overcome this type of frauds, authentication of the person who wants to use the locker is very important. To overcome this security threat, a security system has been proposed using voice identification, face detection and GSM technology.

- **HIGH PROTECTION VOICE IDENTIFICATION BASED BANK LOCKER SECURITY SYSTEM WITH LIVE IMAGE AUTHENTICATION G. VIJAYA LAKSHMI, M. KIRANMAI (2019)**

When human beings were on earth, need of various things emerged. As years passed and with tremendous development people started earning money, property, jewellery and many more precious things. With huge development people felt a need to secure their earnings. In today's a man's life the money security is an important aspect as he earns the money by his hard work, and banking is known for this. It is not enough to have these accessories, but security of this is very important, for this purpose we keep them in a bank locker. Still, we often hear or read in a newspaper that some fake person has access the locker of another person and have stolen money. In order to overcome this type of frauds, authentication of the person who wants to use the locker is very important. To overcome this security threat, a security system has been proposed using voice identification, face detection and GSM technology.

- **LOCKER SECURITY SYSTEM WITH IMAGE AND VOICE AUTHENTICATION Mr. Y. Pavan Kumar Reddy (2021)**

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, jewellery, 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.

3.PROPOSED SYSTEM

In this proposed system we have used image capturing techniques with the help of Python. The camera interfaced with PC which has Python software Installed. The cable is interfaced to Arduino and PC so that the data will transfer between Arduino and Python. So that if any unauthorized person tries to open locker, then it alerts and stores the image of the intruders. In this we have used voice recognition also i.e., a keyword is given to verify whether the person is authorized or not. If the person gives the keyword, then it checks whether it is correct or not if it is correct then the door will open. In this we are using both Face Recognition and voice keyword recognition.

Block Diagram

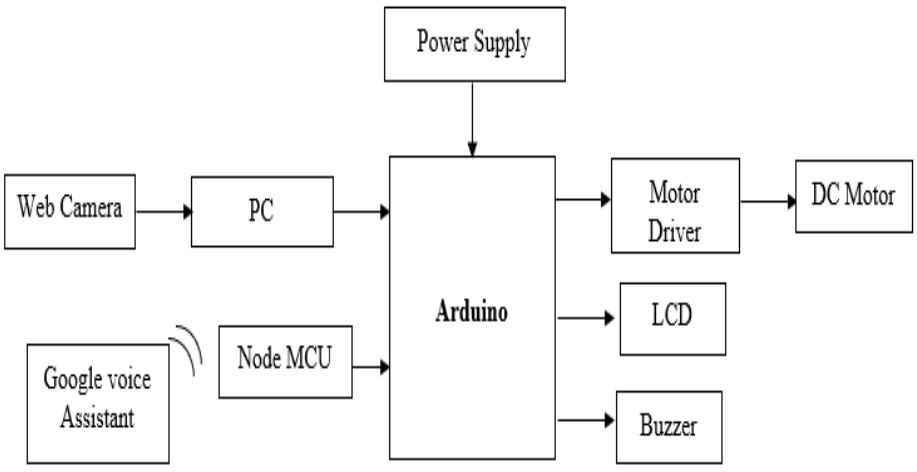

Fig 1: Block diagram of proposed system

4.SYSTEM ARCHITECTURE

in the proposed system, we are using both face and voice recognition. To unlock the locker we need to detect the face first and then voice is recognized, so the proposed method uses Arduino uno with a camera connected to the pc. Here python code is uploaded into the Arduino. 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. The whole process of face and voice recognition has two main parts. One is face and voice keyword registration process and another is face and voice recognition process. At the face registration process, the 1st user starts from inputting information like name, and then the lock detects and saves 70 to 80 images of the users face to train. On the other hand, any new user must be verified by inputting any previous user's information. After training the system will recognize the face and then moves to next step i.e. voice recognition. If voice is recognized the locker will be unlocked, it will stay open for 3 seconds and then becomes ready to be locked again. if not recognized then it again goes to the face recognition step.

Flow chart

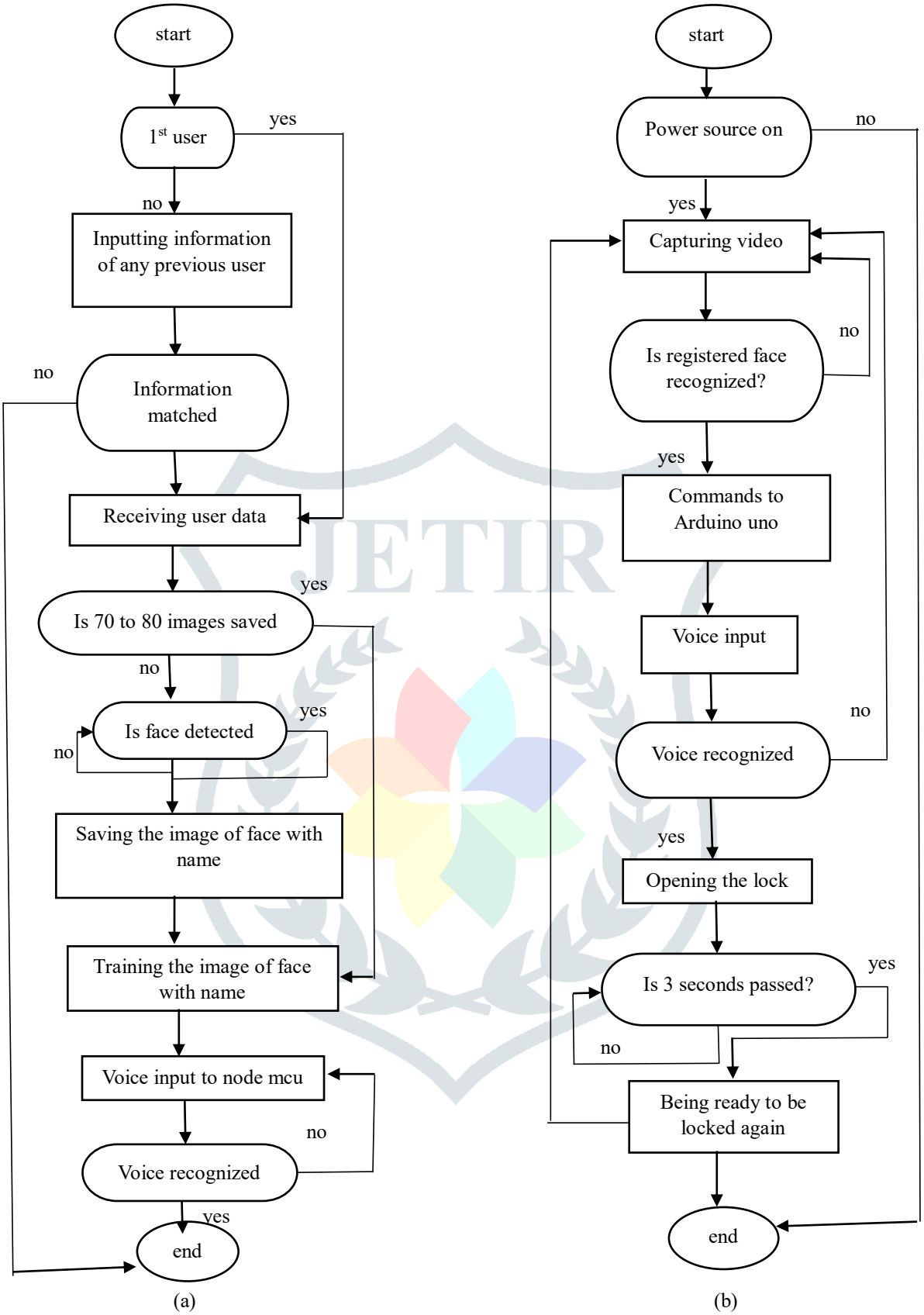

Fig 2: flow chart of proposed system architecture with (a) registration process and (b) unlocking process

5.WORKING

For high security locker system we are using both face and voice recognition. Here we are using arduino uno with python code and camera for face registration and the registered face will be saved with name id in the databases. When the user wants to open the locker then it captures the image of the user and matches with the registered users, if it matches with any registered users then it goes to next step that is voice recognition. We are interfacing node mcu with google assistant for voice recognition. A voice keyword will be given by the authorized user to open the locker. If the keyword doesn't matches with the registered user then the locker will not be opened.

Advantages and applications

Advantages

- Real time observation
- Highly secured
- Less power consumption

Applications

- Banks
- Organizations
- Hotels and Hospitals

6.RESULT

Make proper connections of the circuit on the bread board and pc as shown in the fig 1 of block diagram and switch on the power supply. The implementation of the proposed system high protection locker security system using live image and voice authentication is done successfully. The proposed design is budget friendly and it provides high security, flexibility and also consumes low power which is advantageous.

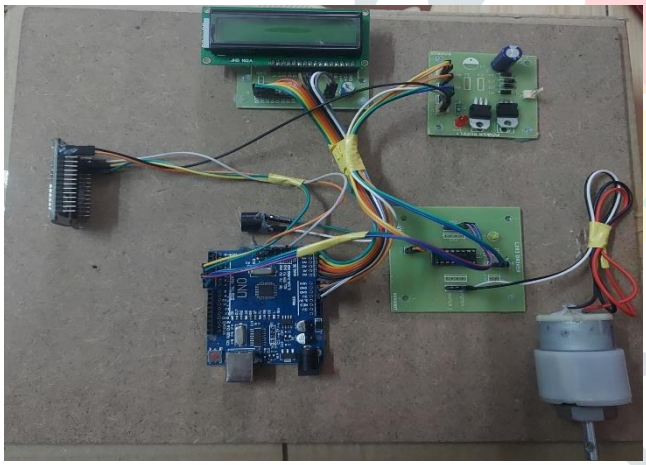

Fig 3: hardware prototype

Fig 4: hp camera

Fig 5: Arduino uno

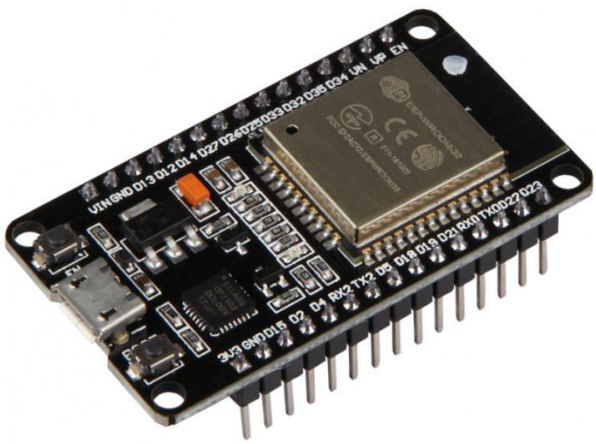

fig 6: node mcu

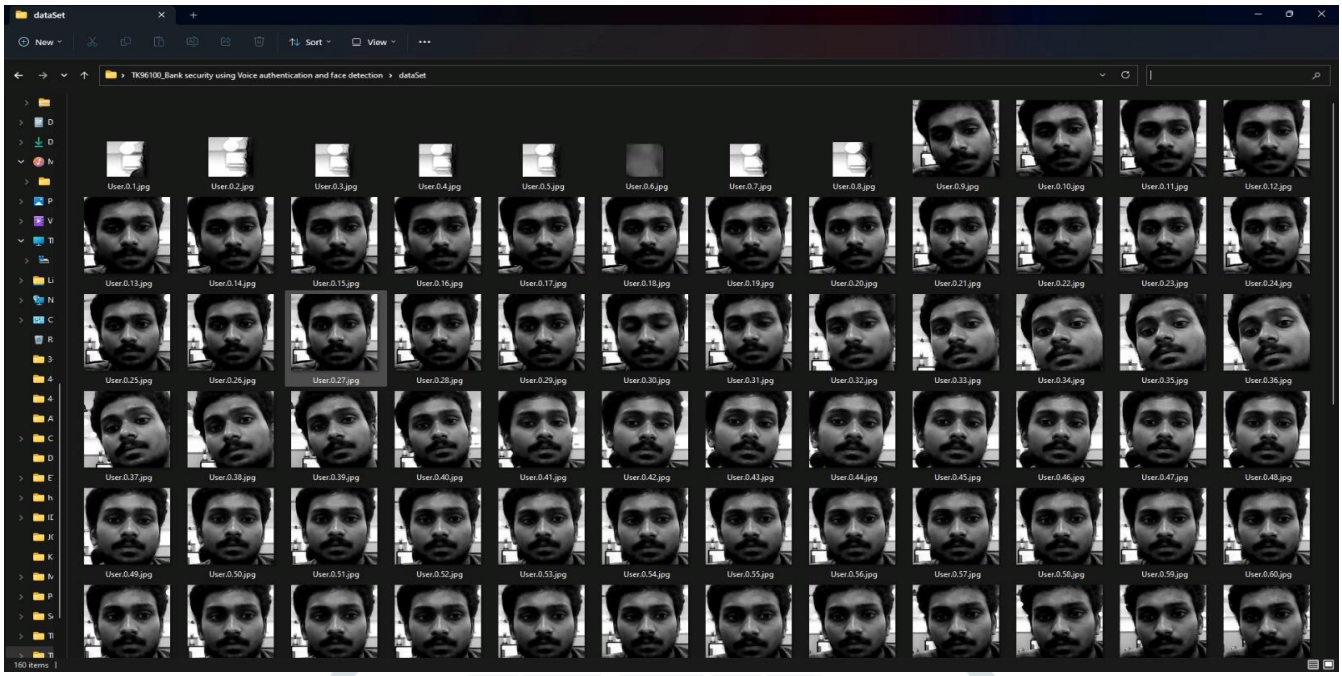

Fig 7: face registration and settings

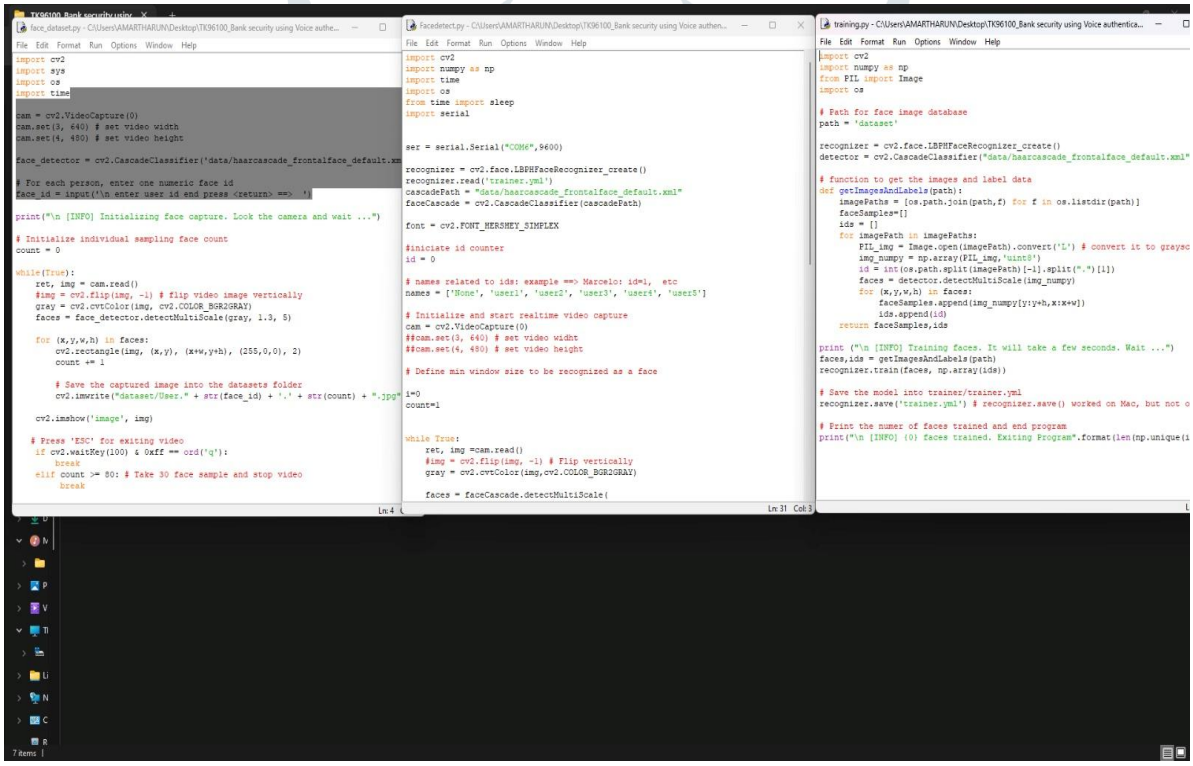

Fig 8: python code for face recognition and image training

7.CONCLUSION

A security system is proposed by using image recognition and voice authentication. It is a low cost, low in power conception, compact in size and standalone system. The microcontroller matches the recognized images with the stored images of the authorized users in the database. If the recognized face matches with the stored information of the user, then the microcontroller gives commands and asks for voice keyword. If both image and voice recognized the microcontroller provides necessary control signal to open the locker otherwise the door remains locked and saves the captured image of the unauthorized users. this proposed system can be used in many applications such as bank lockers, jewellery shops, offices, hotels and other organizations, it is also highly secured and budget friendly designation.

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