

“Bank Locker System” Internet of Things (IoT)

Prof. Anuja Garande¹, Prachi Bharne², Mansi Shah³, Tejal Joshi⁴, Siddhant Chaudhary⁵

Faculty, Department of Information Technology¹

Students, Department of Information Technology^{2,3,4,5}

Zeal College of Engineering and Research, Pune, Maharashtra, India

prachibharne15@gmail.com¹, shahamansi49@gmail.com², tejaljoshi1303@gmail.com³,
siddhant.hkc02@gmail.com⁴

Abstract: *Personal Security is one of the main concern when it comes to office, personal workplace in home, bank etc. Soto overcome this problem, this project suggest the use of Internet of Things(IoT) to provide secure access only to authorized person , SMS is also send if there is an unauthorized person detection. The Raspberry Pi captures the image when a person tries to access the bank locker and then process it and is compared with the trained dataset If persons face matches after image processing on the captured image then provide authorization to the Raspberry Pi is send to open the lock and if it doesn't match then the system sends SMS to the bank authority. so in order to have highly secured locker we are using this proposed method.*

Keywords: Raspberry pi-3+ model B, Relay, SD card, GSM, Sensors.

I. INTRODUCTION

The Bank which is used to place that indicates the very high level security. In day to day life every person are involved in banking transaction. Because of high level security, we use bank lockers to secure our important documents, expensive jeweler, or cash etc, Hence it has become a very important part for every common human being. To suffer in this world and for a continuous development; the banking sector needs to accommodate a very hinge rise security. As we know new branches are opening by considering the public interest. Hence more security for every sector is required. Because of development current system and services becomes autonomous and banking service is not so far from that. Various researches show that there are accountability in devices and technologies in security system. In automatic security systems generally passwords, identification cards and PIN verification techniques are being used but the disadvantage is that the passwords could be hacked and a card may be stolen or lost. The most secured system is fingerprint recognition because a fingerprint of one person never matches the other. Biometrics studies commonly include fingerprint, face, iris, voice, signature, and hand geometry recognition and verification. Many other modalities are in various stages of development and assessment.

Among these available biometric traits fingerprint proves to be one of the best traits providing good mismatch ratio, high accurate in terms of security and also reliable. That's why we are motivated to do this paper. Therefore, the study shows all the approaches intent to solve the dire problem of security to critical systems of an institution with proper authorization. Such systems are only accessible by the designated users and not by the mass. Moreover, the solution must ensure the obstruction of all possible ways of violation of security within the periphery of the secured area. It is also expected to regulate the access to certain users divided in different using capacity groups. In the RFID technology if someone tries to open the locker it will be sensed and the indication message to the user via GSM. In this fingerprint method, The locker in the bank will be will be open only when the unique graphical security is drawn on the screen and also pattern can be easily identified by unknown person and that person can easily open the locker without any exception from the user. Nowadays fingerprint based security is available in banks, which can be easily cracked by thief, so overcome this we are designing a system using IOT which can provide better security to banks.

II. RELATED WORK

[1] J. Thirumalai, Gokul. R, Ganasekaran. P, Manellore Murali. M ,“ An IoT based Bank Locker Security System ”, International Journal of Engineering Research & Technology (IJERT), 2020

An Automated Safety Vault with Double Layered Defense Mechanism was designed [1]. The solution comprised of an Electronic Lock driven by password verification and a Biometric authentication for users using a Fingerprint scanning and sensing tool. Both of these two layers ensured the authenticity of the user by preventing any unauthorized access to the Vault. The system was then implemented in a prototype scope for testing and validation of the proposals. The implemented system and testing data showed that the Automated Safety Vault with all its security features had successful operation. The specification of the whole system as well as the results was observed and verified

[2] Pooja K M and Chandrakala K G , "Finger Print Based Bank Locker Security System ", International Journal of Engineering Research & Technology (IJERT), 2018

Designed and implement a bank locker security system based on Finger print and OTP technology. This can be organized in bank, offices and homes. In this system only the authenticate person recover the documents or money from the lockers. In this security system fingerprint and OTP is used. In this system first person enroll user name and password and mobile number. If user name and password matches then Finger of person will detect and store with ID. If the ID gets matches. Then four digit code will be sent on authorized person mobile to unlock. So biometric and Bluetooth security is more advantages than other system. This system can also create a log containing check in and checkout of each user along with basic information.

[3] Ajay Kumar and Priyan Sood, "Internet of Things (IoT) for Bank Locker Security System", IEEE Access 2020.

The idea was to develop a Bank Locker Security system that permits the manager to see the occurrences from an isolated area and catch the frame depending on its advantage. This will be assimilated by planning site pages, connecting them with the database, picture catching by raspberry pi, face acknowledgment, face discovery, structuring of the application and permitting/denying the client entry

[4] Shashikanth, " Multifold Security for Bank Locker System using ARM", International Journal of Engineering Research & Technology (IJERT). Provided two options for an authorized person to have an access to his locker. One is Face Recognition system and other option is OTP along with static password. Our ultimate challenge would be how effectively and accurately we will implement this methodology. The system has Object Detection sensor for detecting object inside the locker. When somebody enters into bank then the buzzer will be on. The system includes the Object Detector, Wireless Motion Detector (WMD), microcontroller, LCD display, buzzer and 5V power supplied to operate the system.

III. PROBLEM STATEMENT

In the RFID technology if someone tries to open the locker it will be sensed and sends the indication message to the user via GSM. In this fingerprint method, the locker in the bank will be opened only when the unique graphical security is drawn on the screen and also the pattern can be easily identified by unknown person and that person can easily open the locker without any exception from the user. The main aim of this project is to develop a device for the bank locker security purpose for alerting theft and to auto arrest the thief in bank itself from centralized monitoring unit and control system using IOT technologies.

IV. SYSTEM ARCHITECTURE

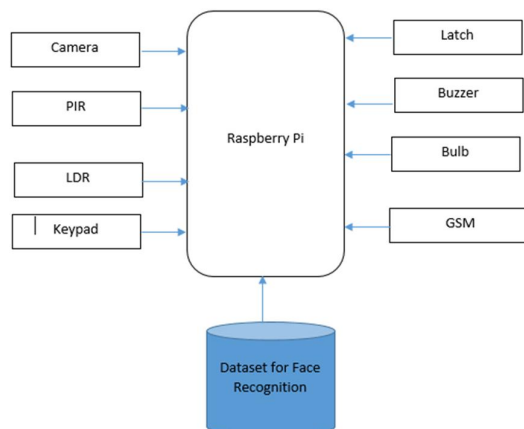


Figure: System Architecture

V. METHODOLOGY

In this system, if a person tries to access the locker the signal conditioning unit will be activating the complete circuit. LDR is used to sense intensity of light. If intensity of light is below a predefined limit then light will be turned on, on detection of person in night mode. For controlling light a relay will be used which will be controlled through raspberry pi. The camera and PIR sensor is kept near to the locker. If PIR detects any presences it on's the camera. A image is captured and the captured image is compared with the trained dataset of bank customers. If the captured Image is matched the locker gets open and the person can access this locker. Incase the captured image doesn't match with the trained image the lock remains in the locked state and a message is send to the authorized person of bank, the sms is triggered by using GSM 800a.

Assume bank was locked and a thief enters at bank then this framework will give a caution through the burglary action. PIR sensor was fixed in various part of bank and IR sensor was fixed in the entrance of every room, all the doors are connected with magnetic locks controlled by relay and burglar alarm connected with the relay circuit. We utilize the IR Sensor for catching the present location of thief inside the bank. Thus PIR sensor detect the motion and presence and offer back to the microcontroller. While in central processing unit all the actions were monitored by the executives and information will be passed to the bank managers and local police stations. After that if the theft was confirmed by the executives by checking the values of several sensor inputs, executives activate the arresting system which locks all the doors inside the bank like manager room, locker room, .etc.. Then the thief will be arrested with auto arrest system. We link all sensors in the IOT terminal.

VI. CONCLUSION

In this project we presented a system that allows if a person tries to access the locker the signal conditioning unit will be activating the complete circuit and it will be sending the Call alert to the authenticated user via GSM. To get the access to locker he has to enter the password, In addition, the camera is kept near to the locker. The person who is trying to access the locker will be captured by the camera and then it the system will compare the face with dataset using CNN. The Face dataset of users are trained and kept using CNN techniques. If the person in the image is known to the user, he/she can permit the locker to open. Else if the person in the image is of unknown to the system, the system alarm will be generated and a call to bank authorized will be passed. Thus the bank locker will be of highly secured from unknown person.

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