An IOT Based Banking Locker System

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Abstract - Personal Security is a concern when it comes to the office, personal workplace, in-home, and bank. So to overcome this problem, this project uses the Internet of Things(IoT) to provide secure access only to an authorized person, so the message will be sent if there is an unauthorized person detection. The Raspberry Pi captures the image when a person tries to access the bank locker and process it. The captured image gets compared with the trained dataset. The detected image of that person gets compared with the already stored image while image processing, if it is found similar in the dataset then it authenticates the user to provide access to the authorized person and unlock the locker. Raspberry Pi sends the command to open the lock. If it is not similar to the dataset, the system sends an SMS to the bank authority. so to have a highly secured locking system, we are using this proposed method

Key Words: Raspberry pi-3+ model B, Relay, Ethernet, SD card, GSM, Sensors

1.INTRODUCTION

The system indicates very high-level security. In day-to-day life, every person is involved in banking transactions. Because of high-level security, we use bank lockers to secure our important documents, expensive jewelry, cash, or expensive things. Hence it is a needed part of every human being. To suffer in this world, and continuous development, the banking sector needs to accommodate a great rise in security. As we knew new branches are opening by considering the public interest, more security, for different sectors is required. Because the development of the current system and services become autonomous and banking service is not so far from that. Various researches show that there is accountability in devices and technologies in a security system. In automatic security systems, general passwords, identification cards, and PINs, verification techniques are using for security. But the disadvantage is that the passwords can be hacked by and a card may be stolen or lost. The most secure system is fingerprint recognition because the fingerprint of one person never matches the other. Biometrics studies commonly include fingerprint, face, iris, voice, signature, and hand geometry recognition and verification. Many modalities are in various stages of development and assessment.

One of the security techniques which is available in the market is the biometric trait. This technique has been proving that it is one of the best traits. It provides a good mismatch ratio which is highly accurate in terms of security and also reliable. Hence we are motivated to do this paper. Therefore the study shows that all the approaches intent to solve the problem of security are the system with the proper authorization. Such systems are only accessible by the designated users and not by unauthorized persons. The solution must ensure the obstruction of all possible ways, violation of security within the periphery of the secured area. It is expected that to regulate the access of certain users divided into different using capacity groups. In the RFID technology, if someone tries to open the locker, the system sends the indication message to the user via GSM. In this fingerprinting method, the bank locker will be open only when the unique graphical security pattern will be drawn on the screen and also pattern can be easily identified by an unknown person, and that person can easily open the locker without any exception. Nowadays fingerprint-based security system is available in banks. This system gets easily cracked by a thief, so to overcome this problem, we are designing a system using IOT which can provide better security to banks.

2.LITERATURE SURVEY
2.1.1 Security using PIR and IR sensor

In this system, two levels of security protection are there. One security level uses a PIR motion detection sensor, and the other level uses IR proximity detection. Here Programmable system on chip (PSoC) technology is used to interface these two detection algorithms. PIR is a passive infrared motion sensor used to detect infrared light waves emitting from objects around it. IR proximity sensor detects objects closer to the sensor. The main component in an IR sensor is IR LED which radiates infrared radiations, which are reflected in an object is in the vicinity of the sensor. However, this system suffers a drawback as there are some colors.

2.1.2 Security using heat sensor, RFID, GSM

In this system, an RFID tag, heat sensor, and GSM module are present. Initially, the locker holder has to swipe his RFID tag, which are consists of information about the bank locker holder like locker number and other details. Once the tag has been verified as a valid tag, the bank manager will provide the respective locker through the conveyor setup. If somebody tries to open the bank locker at night through the machine or any instrument, then the thief is detected by a heat sensor. A burglar will use some instrument, and the temperature will be increased and sensed by the sensor, an alarm will trigger.

3.MOTIVATION

In the RFID technology, if someone tries to open the bank locker, it will be sensed and sends the indication message to the user via GSM. In this fingerprinting method, the bank locker will be opened only when the unique graphical security is drawn on the screen, and the pattern gets easily identified by an unknown person. Also, that person can easily open the locker without any exception from the user.

The main aim of the project is to develop a system for bank locker security. The purpose of the system is to alert the theft and auto arrest the thief in the bank itself from a centralized monitoring unit, and control system using IoT technologies.

4.IMPLEMENTATION DETAILS OF MODULE

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 the intensity of light. If the intensity of the light is below a predefined limit, the light is exposed to detect a person in night mode. For controlling light, a relay is used, which is under control by using the raspberry pi. The camera and PIR sensor are both placed near the locker. If PIR detects any presence or motion, it turns on the camera. An image is captured and gets compared with the trained dataset of bank customers. If the captured image matches, the locker opens, and the person can access this locker. In some cases, if the captured image does not match with the trained image, the bank locker remains lock, and the message will get sent by the system to the authorized person of the bank. The SMS is getting triggered using GSM 800a.

Figure 1: - Smart Irrigation System architecture

CONCLUSION

In this project, we presented a system that allows a person who tries to access the locker, and the signal conditioning unit activates the complete circuit. It will send the SMS to the authenticated user via GSM if it's an unauthorized person. In addition, the camera is take placed near the locker. Whenever an unauthorized person is trying to access the bank locker, that person will get captured by the camera, and then the image gets processed in Raspberry Pi to be compared with the trained dataset. If the person in the captured image is present in the system's trained dataset, he/she can permit the bank locker to open it. But if the person in the captured image is unknown to the system, he/she can make the bank locker remain closed. Thus the bank locker is highly secured from an unknown person.

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[4] Hiloni S. Detroja and Disha D. Kotadiya and Prutha J. Vasoya, "GSM Based Bank Locker Security System using RFID, Password and Fingerprint Technology", International Journal for Inn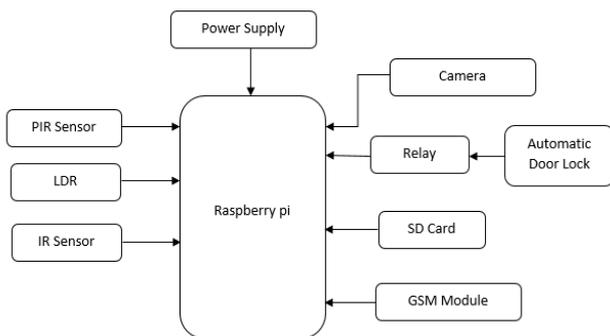ovative Research in Science & Technology, April 2016