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IOT BASED PROGRESSIVE ANTI THEFT ATM SECURITY SYSTEM

S.Ramyasri¹, and M.Mahalakshmi²

¹M.Tech (Embedded System) Student, Department of ECE, CMR College of Engineering & Technology, Hyderabad, India, ramyasrisunka31@gmail.com

²Asso.Prof, ECE Department, CMR College of Engineering & Technology, Hyderabad, India.

Abstract. Automated Teller Machines ATMs are used with one type of approach, usually with cash withdrawals. ATM customers use a lot of ATM facilities and make billions of transactions. In the meantime, Due to inadequate of security, the thefts in the ATMs are also disproportionate. The main objective of our analysis is to minimise the number of ATM robberies. N of this assignment, we use the camera to recognise the face. The IR will activate, the buzzer will warn the sound, and the corresponding alert message will be sent to the assigned user if any of the sensors including temperature. In addition, if someone wants to open the money locker, the gas is sprayed on the robber to make him unconscious. This is why a low-value portable Integrated database server primarily based on the ARM11 computer and the Raspberry Pi operating gadget for Linux needs to be put into operation. This configuration is suggested for ATM safety, consisting specifically of door lock modules, internet, sensors and a face-recognition camera. Whenever theft occurs, an infrared sensor is used here that detects the vibration and temperature of the ATM system and takes critical motion. This machine uses the ARM11 controller to process real-time information acquired using the IR sensor, based primarily on the built-in gadget. The details are communicated to the entire master device based on ARM11 until the IR is detected. The DC engine would then be used to shut down the Automated teller machine lock, the circuit will be used to release fuel inside the ATM to deliver the robber to the unconscious point, the GSM modem will send signals to the local police station and the approved person concerned, and the alarm will eventually come from the buzzer. This can deter the robbery, and the man or woman who is involved in the robbery will be without difficulties.

Keywords—RaspberryPi 3,USB Camera,Motor Driver, Servo motor, IR sensor, Temperature sensor.

1. Introduction

A wireless telephone system that helps clients to carry out financial transactions, in particular cash withdrawals. 3 million bank branches are set up worldwide as per ATM Industry improvement. Through inserting a reversible Debit card or a mobile application with such a chip card that requires a



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special key, ATMs are remembered. With less safety data, such as CVVC, it is of wide variety. Authentication is issued by entering the Personal Identifying Number (PIN) of the client. Meanwhile, ATM thefts are still on the rise in society. Due to the lack of security on the ATM mounted equipment, the target of the ATM robbery is. Although guards are available at ATMs, with the aid of some tactical methods, criminals manage to carry out the burglary. As a consequence, GOVT has a few lakhs and cash crores.

- KanchanP.Boradeetal.(march2017)demonstratedhowUsing GSM technology, vibrating sensor, dc motor, Web camera, buzzer with Raspberry pi 2 can be implemented in ATM Machines centre to automate ATM THEFT prevention from robbery thief. By implementing this project we can catch thief and robberies in ATM itself and we can also save our precious time.
- K. Hemasaisivaprasad et al.(2016) has The proposed framework guarantees the creation of an innovative anti-theft ATM system. In this project, a sophisticated and cost-effective solution was suggested for Mobile payment safety. It can be put in the ATM at a hidden location so that the thieves are unable to access it. The proposed solution differs from existing ATM intrusion and theft control devices in many respects; the systems currently in use are just very expensive and inefficient from either a distance. Reliable construction, affordable and appropriate.
- Karen Renaud(ELSEVIER, 2017) et al. A textual-review of the HCSP analysis has been published. Using the waves proposed by BødkerandHarrisonet al., we found them field aturity. We showed why the major conference journals from the HCSP seemed to show that we would be now also going to work on first surge. A glance at a few of the IT gatherings shows that papers from the third and fourth waves were starting to appear. We have offered several ideas and proposals for a way forward before ensure that our business is mature and to improve the security of personal computers.
- G. JakeerHussain et al(Aug 2016) has proposed a system by developing integrated features of all software and hardware components which arev designed and used successfully by testing them. In this system he has used a MEMs sensor by placing it in the locker section of ATM. When a user is trying to open the money locker mems sensor is activated and the door gets closed automatically and the data is stored in the embedded sever.
- Taha Ayesha et al (2018) implemented a system to secure the ATM transaction using Raspberry pi interfaced with GSM, RFID module, keypad, monitor, USB camera based on embedded linux platform. Consecutive acts, such as ATM, are given for the security function. user to swipe the card with person's captured image and SMS alert is sent to the card holder using raspberry pi processor and GSM module.

D.Narmada et al. (Aug 2016) has Proposed An innovative security system has adopted. It can be linked to certain secret places in the ATM that can not be reached by robbers. In several respects, this gadget is different from the existing ATM intrusion and fraud management structures. Current networks are both expensive and not much reliable. The system deployed is efficient, cheaper and of an acceptable nature.

2. HARDWARE SYSTEM

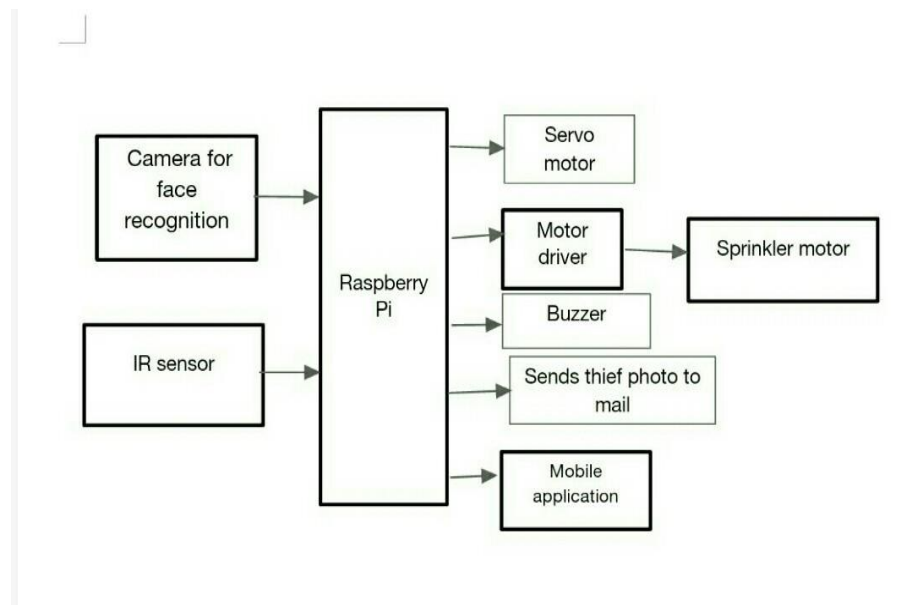


Figure 1.BLOCK DIAGRAM

The infrared sensor is used while human efforts are made to unlock a money locker. Whenever a sensor moves an object, the door will be closed automatically. The IR sensor is installed at the money locker as the barrier passes through the IR sensor, It transmits the data to Raspberry Pi through the GPIO pins. We use the camera to remember the face. Using the Servo motor to open and shut the door. If all of these sensors are temperature-like, IR will activate a buzzer to warn the sound, and the resulting alert message will be transmitted to the designated person. In addition, if someone manages to open the money locker, the gas is sprinkled on the robber to render him unconscious.

3. METHODOLOGY AND WORKING PROCESS

RASPBERRY PI: Raspberry Pi: In particular, A Raspberry Pi 3 Display B operated with the Broadcom BCM2837 System-On Chip (SoC), which has four excellent 1.2 GHz ARM Cortex-A53 process cores with 32 Kb Level one or 512 Kb Level A reserve memory, a quad - Core example device, which is mounted to the back of the board with a 1 GB LPDDR2 usb drive. With Bluetooth Low Energy (BLE) and BCM43143 Wi-Fi on platform, solutions are also 40-pin popularly accurate data returns (GPIO) and enhanced features. It also has an updated 5V USB control power source supply of up to 2.5 Amps. The Raspberry Pi 3 Model B is the best raspberry PC to date. Whenever a person enters the ATM centre to use ATM facilities in the ATM, the camera records the person's image and checks the stored data when the image fits, the door is opened or the door is closed. L293D is a common 16 pin IC engine driver. As the name suggests, it is primarily used to drive the engines. We used DC motors to shut and open the ATM door. The DC motor power supply is provided as 12VDC to control it. An electrical mechanism that can drive or rotate the object very precisely is the servo motor. Use a servo motor if you would like to rotate an object at a certain angle or size. The infrared sensor is an electronic instrument used to detect certain properties of its surroundings. It does this by emitting or sensing infrared radiation. DHT 11 (Temperature Sensor) is a low-cost optical sensor for temperature and humidity sensing. Buzzer is a digital structure and raspberry pi in need of sufficiently current to drive circuits such as flag exchange circuits etc. [8]. The invention of establishing the proposed dynamic ATM security system is to accomplish the following objectives:

- To decrease the number of robberies happening in the ATM.
- Face recognition provides better protection and convenience than conventional methods of personal recognition..

Stage1:The main entrance at the ATM centre is initially inaccessible. The IR sensor is used here to open the door.

Stage2:For face recognition, we use a camera. To open and close the ramp, we use a Servo motor here. If the face is remembered then the door gets opened if not the door would be left closed.

Stage3:The person must draw the cash after entering the ATM centre or he may use other services.

Stage4:Whenever an obstacle passes through the IRsensor, an IR sensor is placed at the money locker, it identifies and relays the signal to Raspberry Pi via GPIO pins.

Stage5:If an attacker attempts to steal, the money storage must be opened where the Ir sensor is located to identify the obstruction and transmit the signal to the Raspberry Pi. The Raspberry pi then locks the door immediately and triggers the unconscious spray to render the robber unconscious.

Stage6:If IR triggers some of the sensors such as temperature, the buzzer alarms sound and the resulting warning message is sent to the designated user. In addition, if any one attempts to open the money locker, the gas is sprinkled on the robber to render him unconscious and the photos are terminated via mail to the designated person.

4. FLOW CHART

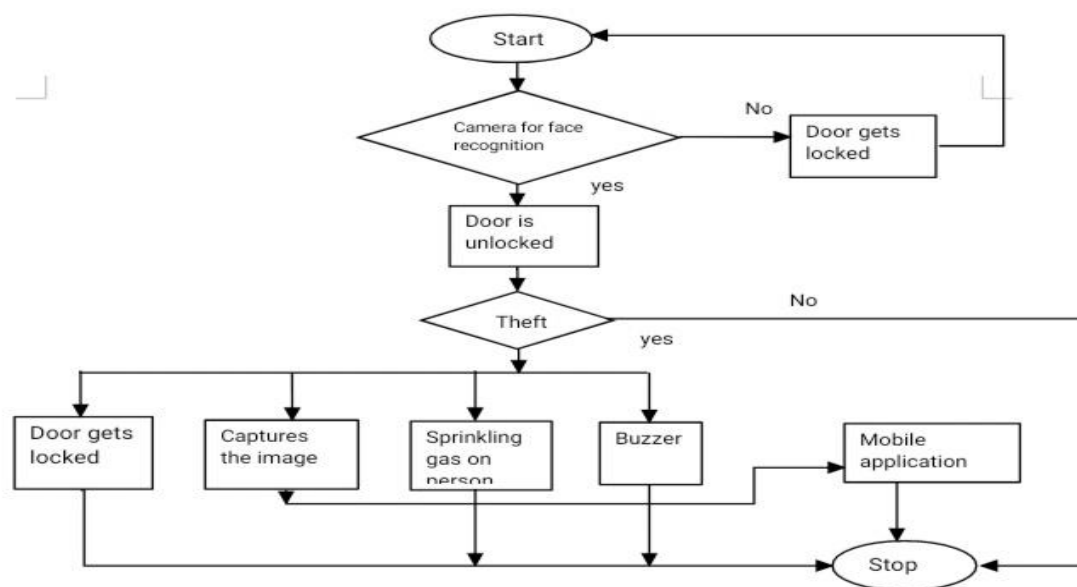


Figure2.Flow chart

5. RESULTS AND DISCUSSIONS

We use the camera for face recognition in this project. If any of the sensors like temperature is triggered by IRThe buzzer alerts the noise and sends the corresponding alert message to the designated

user. Besides that,, if anyone attempts to unlock the money locker, the gas is sprinkled on the thief to render it in an unconscious state. The photographs taken are shown below as a result.

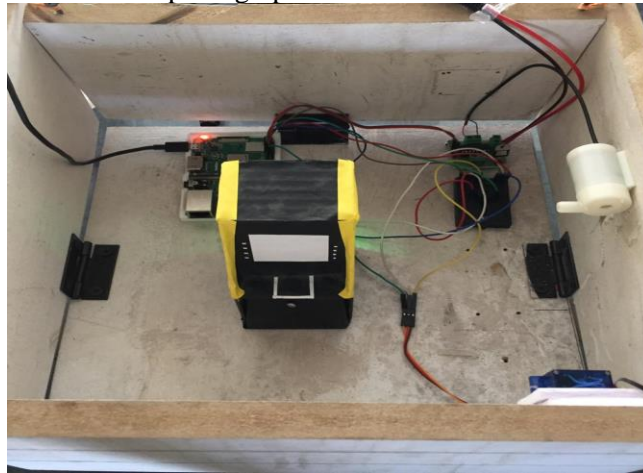


Figure 3.Hardware kit



Figure 4.ATM setup Image 1



Figure 5.ATM setup Image 2

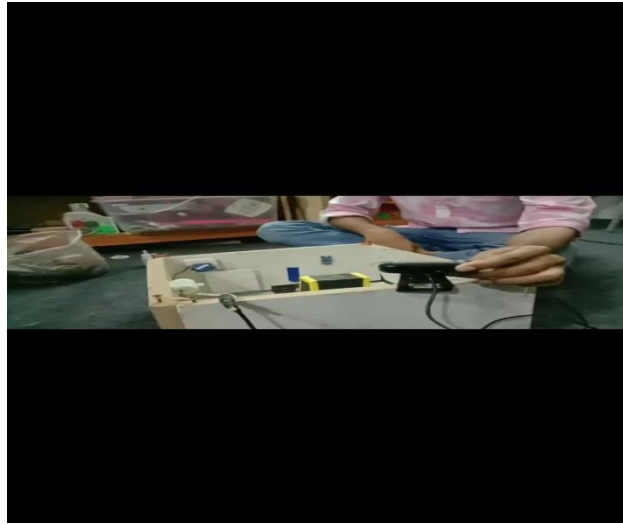


Figure 6. Hardware setup

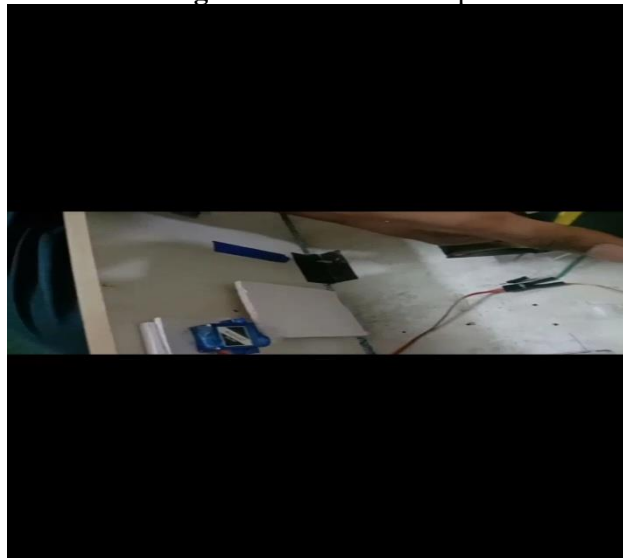


Figure 7. Hardware inside setup



Figure 8.ATM model image

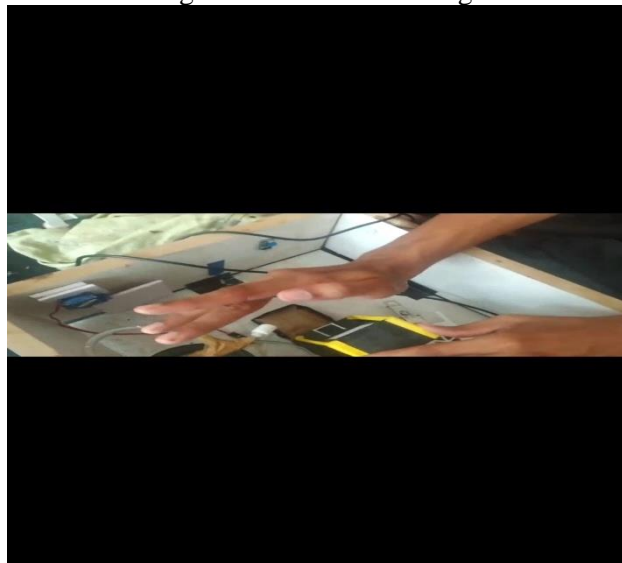


Figure 9. Intruder detection

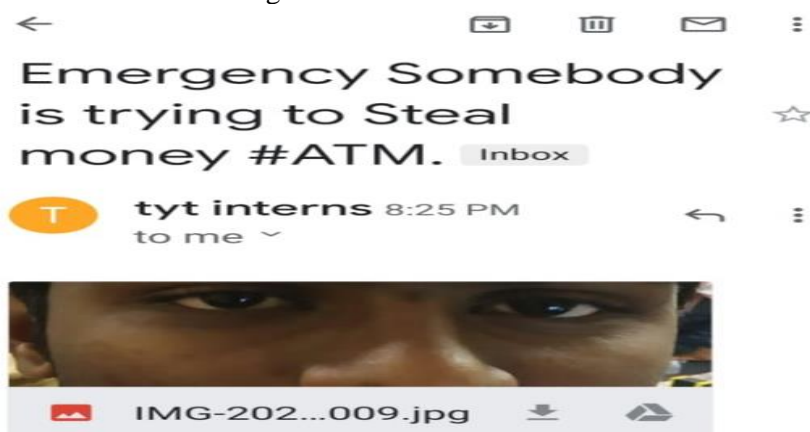


Figure 10.EMAIL TO AUTHORISED PERSON WITH IMAGE OF THEFTING ATM TRANSACTIONS USING RASPBERRY PI PROCESSOR



Figure 11. IR sensor



Figure 12. IR SENSOR DETECTED IN THE ANTI THEFT ATM MACHINE USING EMBEDDED SYSTEM

6. CONCLUSION

As we all know, these days most of the ATMs have been targeted by theft, so the drawbacks of the current circumstances that exist in the ATMs have come to an end. Since we use a camera to identify a face, a person without a proper identification can not access the ATM core. Registered individual data is matched to registered data through the use of a camera face recognition when the door is opened and the user uses the ATM services. If the captured image does not fit the stored image, the door will stay locked. If some of the sensors like temperature, the IR sensor will activate, the buzzer will warn the sound, and the corresponding alert message will be sent to the designated user. Besides, if anyone attempts to open the money locker, the IR sensor that is on the back of the ATM will be triggered, the door will be locked immediately, and the gas will be sprinkled on the intruder to turn the guy into an unconscious state. Provides good coverage for both ATM and ATM users.

7. FUTURE ENHANCEMENT

As part of the expansion of this initiative, we will expand the database so that more users are stored and can access the ATM facilities safely. We may also give a caught image of crime to a local police station so that the matter can be fixed quickly. We will use this high-level banking security transfer method. We can use an efficient antenna for longer communication. Further extensions can be rendered by enhancing protection by incorporating innovative methods such as eye recognition using computer learning and artificial intelligence.

8. ACKNOWLEDGEMENTS

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