



Preventing Robberies and Providing Security to the ATM Machines

K. Yaswanth¹, K. Sanjay², S. Hemanth³

^{1,2,3}CSE, B. Tech, Aditya Engineering College, Surampalem

ABSTRACT:

The idea to design and implement a security-based ATM theft project came from observing real-world incidents happening around us. This project is working to prevent ATM theft by robbery. A vibration sensor is used here that detects the vibrations produced by the ATM whenever there is a robbery. A buzzer sounds when it senses vibration. A stepper motor is used to close the ATM door. An ultrasonic sensor is installed near the ATM to constantly calculate the distance from a fixed point. An LDR sensor is placed at the bottom of the ATM system to calculate light intensity. The time of the robbery is transmitted via GSM to nearby police stations and relevant banks. This makes it easier to prevent robberies and catch those involved in robberies. Here, IoT tools are used to implement the idea and achieve the result.

Keywords – Ultrasonic Sensor, Vibration Sensor, Arduino UNO, Stepper Motor, GSM Module

1. INTRODUCTION

In today's technologically advanced world, autonomous systems are proliferating rapidly. As informationization and automation progressed in society, financial activities became smoother with the installation and spread of ATMs and credit cards, and banking operations were simplified. Crime against financial institutions is on the rise. Crimes against these financial institutions increased gradually from 1999 to 2003, declined slightly in 2004, and increased again from 2005 onwards. In 2007, there were 212,530 thefts and 4,439 robberies, in 2010 there were 269,410 thefts and 4,409 robberies, and in 2011 there were 270,109 thefts and 4,509 robberies. Among crimes against financial institutions, theft and robbery account for a very high percentage of more than 90%, and the increase in ATM crimes is due to the increase in external ATMs, which are always the target of crime. Therefore, in this research, we propose a method to detect ATM theft in real time using GSM technology, to respond quickly, and to minimize losses. By using GSM technology, we can anticipate external ATM vibration sensors and DC motors. This project uses buzzers to signal the corresponding banks and police stations. Cameras are used to capture continuous video clips. Here we use a DC motor to close his ATM door and a vibration sensor to predict the vibration.

2. LITERATURE REVIEW

Using the light sensor to detect the light intensity and temperature sensor is used to detect external temperature. To catch the thief using light intensity and external temperature. It only works when the ATM machine is lifted up from its position. Computer vision framework which uses the embedded ATM camera to perform face detection and recognition in order to prevent such unnecessary losses generated by CCF(card and/or cash forgetting).

Catching the thief by using face detection and recognition by using embedded ATM camera.

It only works when the thief's face is uncovered. Using the fingerprint recognition system like Biometric and RFID technologies for authentication. To give access only to an authorized person because data of every person is unique cannot be shared. It would be difficult to those who can't make to the ATM. Using Aadhar Card Iris Scanner to allow access to the authorized person only for the ATM machine security.

To restrict the access to the unauthorized person by using Iris Scanner. One should carry his/her Aadhar Card every time to use ATM machine. By using face detectors to detect the authorized person to give access to the person to use the ATM machine. To allow the access to the authorized personnel. It doesn't work when the face is covered.

Using Net Banking Security with Face Recognition based Bio-Metric Internet banking transaction to allow access to the authorized personnel. To allow access to the authorized personnel by using Net Banking. It doesn't work when the bank account doesn't have net banking compatibility.

3. PROBLEM STATEMENT

Today, robberies are increasing day by day in many areas to reduce theft in the public sector. The main purpose of this project is to use vibration sensors to detect theft and lock the main door to deter burglaries. In addition, it immediately sends an SMS to the police and sounds a buzzer to warn the surroundings.

4. OBJECTIVES

The main goal of this project is to reduce ATM theft using Advanced Technologies such as the Arduino UNO.

The purpose of the proposed system is to

- To overcome ATM theft.
- Restrict access to unauthorized persons.
- Enhance security.
- Formal steps towards smart cities. The proposed setup can be installed in public places such as schools, universities, shopping malls, supermarkets and parks, ATMs, etc. where the possibility of robbery is high.

5. EXISTING METHODOLOGY

Most businesses are looking for other ways to protect their customers and employees. Biometrics is known to be very secure, but it is used only by specialized organizations (such as the military) due to the expensive hardware required and high maintenance costs. Alternatively, banks and businesses use tokens as a two-factor authentication option. A token is a physical device that generates passwords required in the authentication process. Tokens can be either software or hardware. A hardware token is a small device that you can easily carry around. Some of these tokens store cryptographic keys or biometric data. Each time a user authenticates to your service, use his one-time password that appears on the token in addition to his normal account password. A software token is a program that runs on your computer that provides a one-time password that changes after a short period of time (usually 30 seconds). Security of OTP algorithm is very important. No one should be able to guess the next password in a row. Sequences should be as random, unpredictable, and irreversible as possible. Elements that can be used in OTP generation include name, time, seed, etc. There are now several commercial two-factor authentication systems such as RSA Secure ID. Multi-factor authentication uses two or more forms of authentication for added security.

• ATM security guard

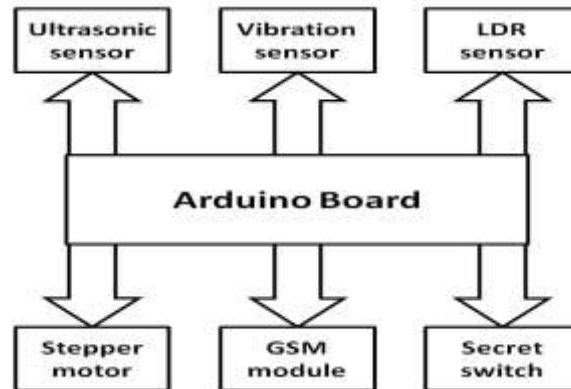
• Surveillance camera

Disadvantages:

- Required man power.
- Less secure.
- Guard at every ATM is unavailable.
- Investigating about robbery consumes more

6. PROPOSED SYSTEM

Implement your ideas using IoT tools. Arduino is used to implement the project. In the case of robbery, a vibration sensor is used here that detects vibrations emanating from the ATM. When vibration is detected, the buzzer will beep at a higher vibration frequency. The vibration sensor is set to a certain limit just to detect the burglar's vibrations. An ultrasonic sensor is installed near the ATM to constantly calculate the distance from a fixed point. The LDR sensor is located on the underside of the ATM. A stepper motor is used to close the ATM door. Especially multi-factor authentication (MFA) methods add complexity to users. This project helps overcome the complexity problem and provides the easiest way to secure ATM transactions. Every time a user enters an account number at her ATM, the system asks for her PIN to authenticate the user. Once the PIN is validated, a call is made to the user's mobile phone. A transaction process is executed when a user responds to execute a transaction. The proposed system uses a GSM modem for calling the user from the ATM and getting the answer from the user to her ATM. If the user correctly enters the amount and the secondary password from the mobile phone, the transaction will take place. Lost or damaged ATM cards are no problem. Also, if a thief tries to damage the ATM, the vibration sensor detects vibrations and alerts the nearest police station and issues an alarm.

BLOCK DIAGRAM OF THE PROPOSED SYSTEM**ADVANTAGES:**

- More secure.
- No man power required for security.
- Completely depends on automation.
- Helps to catch the robber easily.
- Prevents robbery.

The proposed system uses an IOT-based ATM monitoring and control system. When a person tries to break into the ATM, a vibration sensor detects this and immediately activates the door lock. The light sensor is used to detect light intensity and the temperature sensor is used to detect outside air temperature. Easy and fast recording and updating:

The RTC is used to record the time of the robbery and send the time of the robbery along with a message to the nearest police station. Corresponding banks via GSM. No additional hardware is required where the RFID reader gate is installed. All functionality is controlled by the Apna Complex portal. your property

The manager can issue and deactivate tags, update the portal while at the property office, and the data is synced with her RFID reader at the gate. besides you Vehicle movement tracking can be easily deployed using cantilever barriers, making it very cost effective for use in housing associations. This project uses vibration sensors to detect theft and lock the main door to deter burglaries. In addition, it immediately sends an SMS to the police and sounds a buzzer to warn the surroundings.

CONCLUSION

As you know, most ATMs these days are robbed. ATM thefts are also on the rise. This document shows how to implement automation to prevent "ATM theft" from robbers (or thieves) using GSM technology, vibration sensors, DC motors, buzzers, and cameras. By doing this project, we can catch the thief and her ATM robbery ourselves, saving us precious time.

FUTURE SCOPE

In the future, with less storage space, you can also connect external storage media to record this live streaming data. Intelligent surveillance systems are designed to meet user needs for specific surveillance areas. It has a myriad of applications and can be used in many different environments. For example, it can be used at one's place of work in one's absence to know that the activities of those who work in the industry have occurred, but in another example, it can also be used for the purpose of spying on warehouses. Safe deposit boxes.

Another important application is that it can be used to provide information to users.

Notification of what is happening in the monitored area. This system may be made more reliable and easier to use with the development or addition of other features and systems. They are:

- It's based on Embedded and DIP, so you can create your own algorithms in your microcontroller for extra security.
- Use this highly secure money transfer system for banking, military and online shopping.
- Powerful antennas can be used for longer communications.

- Future expansion to include facial recognition and biometrics.

BIBLIOGRAPHY

WEB LINKS

1. http://timesofindia.indiatimes.com/articleshow/65319210.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst
2. https://www.researchgate.net/publication/285582879_Design_and_Implementation_of_Security_Based_ATM_theft_Monitoring_system
3. <https://ieeexplore.ieee.org/document/9441861>
4. <https://ieeexplore.ieee.org/document/8261340>
5. <https://ieeexplore.ieee.org/document/9008641>
6. <https://ieeexplore.ieee.org/document/8307851>
7. <https://ieeexplore.ieee.org/document/7159316>
8. <https://www.electrosal.com/product/advance-atm-security-system/>

REFERENCES

- [1]. Sivakumar, Gajjala Ashok, K. Sai Venu Prathap "Design and Implementation of Security Based ATM theft Monitoring system". e-ISSN:2278-7461, p-ISSN:2319-6491 volume 3, issue 1(August 2019) pp: 01-07, ATM theft monitoring system with the help of LPC2148.
- [2]. S. P. Balwir, R. D. Thakare , K. R. Katole "Secured ATM transaction system". Volume 4, Issued 4 April 2020, Transaction system is used.
- [3]. Raj M M.E, Anita Julian "Design and Implementation of Anti-theft ATM Machine using Embedded systems". 2015 International Conference on Circuit, Power and Computing Technologies [ICCPCT], Embedded based ATM security system.
- [4]. Best Practice for ATM Security (Overview of ATM security situation, forecast, and best practices) GRG Banking Equipment (HK) Co., Ltd .2011/5/27
- [5]. "European ATM Crime Report." The European ATM Security Team". June 2011.
- [6]. Kim, Bo-Ra, "Domestic ATM status and meanings", Payment and Settlement, and IT, Vol. 44, pp. 76, 2011.
- [7]. <http://www.engineersgarage.com/armprojects/introductionn-to-arm-microcontrollerlpc2148>
- [8]. "Global ATM Market and Forecasts to 2016." Retail Banking Research". September 2011. Brochure Pg 2.
- [9] http://www.nexrobotics.com/index.php?option=com_content&view=article&id=106:lpc2148-pro-developmentboard&catid=75:lpc2148-development-board
- [10]. "The Hacker's Choice Wiki". Retrieved 30 August 2010.
- [11]. GSM Modem overview "<http://www.sunrom.com/159> "
- [12]. HM 2007 overview <http://www.sunrom.com/615> "
- [13] William H. Yeadon, Alan W. Yeadon. Handbook of small electric motors. McGraw-Hill Professional, 2001

BOOKS

Books:

The Internet of Things

Author - Samuel Greengard

Samuel Greengard focuses on technology and business in his writing. His work has been published in several notable publications such as AARP: The Magazine, Entrepreneur, and Wired. Aside from this internet of things book, he also wrote Finding the Work You Love, and Virtual Reality, among other things.

Getting Started with the Internet of Things: Connecting Sensors and

Micro-controllers to the Cloud

Author - Cuno Pfister

Using basic