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# ATM THEFT DETECTION AND AUTO ARRESTING AND INTIMATION SYSTEM

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**ABSTRACT**

The main objective of the system is to develop an embedded system which is used for ATM security applications. Automated teller machine (ATM) now a days are extensively used all over the world for withdrawal of cash. A unique card is issued for each user along with the unique code provided to him so that the person may do all his transactions personally without anyone getting known. we going to prevent ATM machine with wireless technology. We have to provide some security systems to prevent the crime if we notice any kind of theft. Hence the implementation of ATM crime prevention system is necessary. This system uses ARDUINO controller based embedded system to process real time data collected using the vibration sensor. Whenever robbery occurs vibration sensor is used here which senses vibration and sounds will occur from the buzzer and through IOT it sends a message to the police station and to the corresponding banked motor of the door automatically closes to easy catch the theft. If anyone inserted losses ATM card then this system automatically sends IOT alerts to BANK person. Buzzer will activate to alert surrounding people, dc motor also closed to catch that person. All input and out modules are interfaced to ARDUINO Microcontroller which process input data and provide output with help of 5V regulated power supply. In this project we used Arduino software to write c program and compiling.

**Keywords:** ATM Theft Detection, Arresting, Intimation System.

## 1. INTRODUCTION

The project belong to the edge of digitized and smart world. People are getting smarter day by day with the help of new technology and new innovations. Main reason behind the up-gradation of new technologies is nothing but to overcome the existing problems. Economic growth of world makes the life smarter and better as compared to previous lifestyle. A smart step towards economy is the introduction of Automated teller machine (ATM), for faster and easier money transfer. Today banking sector is one of the most important parts of a human day to day life. Banking facilities grow faster so people used these facilities for their economies

activities. ATM (Automated Teller Machine) is one of a facility which is provided by the bank to the customer. ATM machine comes in India in 1968 which was invented by John Shepherd-Barron. An Automated teller machine, also known as an automatic teller machine, automated banking machine, cashpoint, cashline, minibank, cash machine, cashdispenser or bankomat is an electronic telecommunications device that enables the customers of a financial institution to perform financial transactions, particularly cash withdrawal, without the need for a human cashier, clerk or bank teller. ATMs are located in different places and the customers can make basic transactions without the help of bank staff, due to the use of the ATMs which has increased widely. According to the ATM Industry Association (ATMIA), there are now close to 3 million ATMs installed worldwide.

On most modern ATMs, the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smart card with a chip that contains a unique card number and some security information such as an expiration date or CVVC (CVV). Authentication is provided by the customer entering a personal identification number (PIN) which must match the PIN stored in the chip on the card (if the card is so equipped) or in the issuing financial institution's database. Using an ATM, customers can access their bank deposit or credit accounts in order to make a variety of transactions such as cash withdrawals, check balances, or credit mobile phones. If the currency being withdrawn from the ATM is different from that in which the bank account is denominated the money will be converted at an official exchange rate. Thus, ATMs often provide the best possible exchange rates for foreign travellers, and are widely used for this purpose. But a group of people do malpractices over this ATM system to put people, organization or bank into a million pounds of loses. Nowadays stealing of ATM has increased a lot. At some ATM centers there is no availability of security guard even as there are great chances of occurence of crime. At present thieves are not only stealing the rupees from ATM but also they are taking away the whole cash box. Thus we have to provide some security systems to prevent the crime if we notice any kind of theft. Hence the implementation of ATM crime prevention system is necessary. Therefore, this project suggests the method of providing security to the ATM using the IOT technology, VIBRATION sensor, IR sensor, Servo Motor, buzzer so that the thief can be easily caught. Here Servo Motor is used to close the door of the room in which ATM is placed. The idea of designing an ATM crime prevention system is born with the observation of ATM crime incidents happening around the world. This system is used to prevent the ATM crimes or the theft and the person involving in crime can be easily caught. The aim of this project is to catch hold of the person if he tries to steal money from ATM by any firework on the machine or any other means and also tries to catch hold of the person if he tries to move or displace the machine in order to steal money. The main purpose of this project is to prevent the above mentioned crimes by providing security. This can be a formal step towards smart city. Today, ATM has become an irreplaceable communication and service channel between banks and cardholders due to its fast, convenience and human resource saving advantages; since the introduction of the first automated teller machine (ATM) in 1967, perpetrators have been devising ways to try to steal the cash inside. Because ATMs eliminate the need for round-the clock human involvement and tend to be located in places that make them more vulnerable to attack. According to estimates by Retail Banking Research, there are more than 2.2 million ATMs deployed worldwide. This is a figure forecasted to exceed 3 million by 2016. As the number of ATMs in use increases, so do the frequency and sophistication of security threats, making the development of crime prevention measures a top priority for financial institutions (FIs) and ATM manufacturers. But with the prosperity of installed ATM, the reported ATM crime also has been dramatic grown (Figure 1), causing big loss for cardholders and banks. To build safe ATM use environment, maintain bank’s brand image and protect bank assets, all the involved organizations, institutions, and persons must research, develop and takes measures to meet the challenges faced by ATM crimes. The above statistics necessitates the implementation of ATM crime prevention system. Therefore, this paper suggests the method of providing security to both the ATM and the customers whoever using ATM services. So by using the IOT technology, MEMS sensor, DC Motor,

Stepper Motor, Voice recognizing module the theft can be easily caught. Here DC Motor is used to close the door of the ATM and stepper motor is used for emit gas and bring the thief into unconscious stage. HM2007 (voice recognizing module) used here to alert the surrounding people and nearest police station whenever the customers are in dangerous situation.

## 2. LITERATURE SURVEY

In 1975, Korea trade bank presented the main ATM, trailed By Shinhan bank in 1982 by ATM Industry Association (ATMIA). There are currently near 2 million ATMs in this World [1]. As of now, the ATM machines are not verified that much. Those are just having the card swapping office [2] at the passage at the entryway. Be that as it may, this office doesn't control the quantity of clients entered at a specific example. Number of ATMs are additionally secured under this framework are likewise not many. Another proposed verified framework is to put vibration sensor [3] into the ATM machine. In any case, in the event that the total machine is stolen, at that point it has not so much physical use. For that circumstance we need a GPS beacon on that machine, which isn't being used at this point. ATM burglary and extortion event is discernible increment in most recent couple of years

KanchanP.Boradeetal.(march2017)demonstratedhowUsing IOT 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 [4]. 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 [5]. 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 [6]. The Idea of Designing an Advanced ATM Crime Prevention System is born with the observation of ATM crime incidents happening around the world. This paper deals with the prevention of ATM crime. Whenever robbery occurs, MEMS sensor is used here which senses movement produced from ATM machine. This system uses ARDUINO controller based embedded system to process real time data collected using the MEMS sensor. Once the movement is sensed the beep sound will occur from the buzzer. DC Motor is used for closing the door of ATM. Stepper motor is used to leak the gas inside the ATM to bring the thief into unconscious stage. RTC used to capture the robber occur time and send the robbery occur time with the message to the nearby police station through the IOT. At the same time this system also deals with the safety of the customer by alerting the surrounding people and nearby police station whenever the customer is in dangerous situation. Here, Keil tools are used to implement the idea and results are obtained. This system will prevent the crime and the person involving in crime can be easily caught.

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

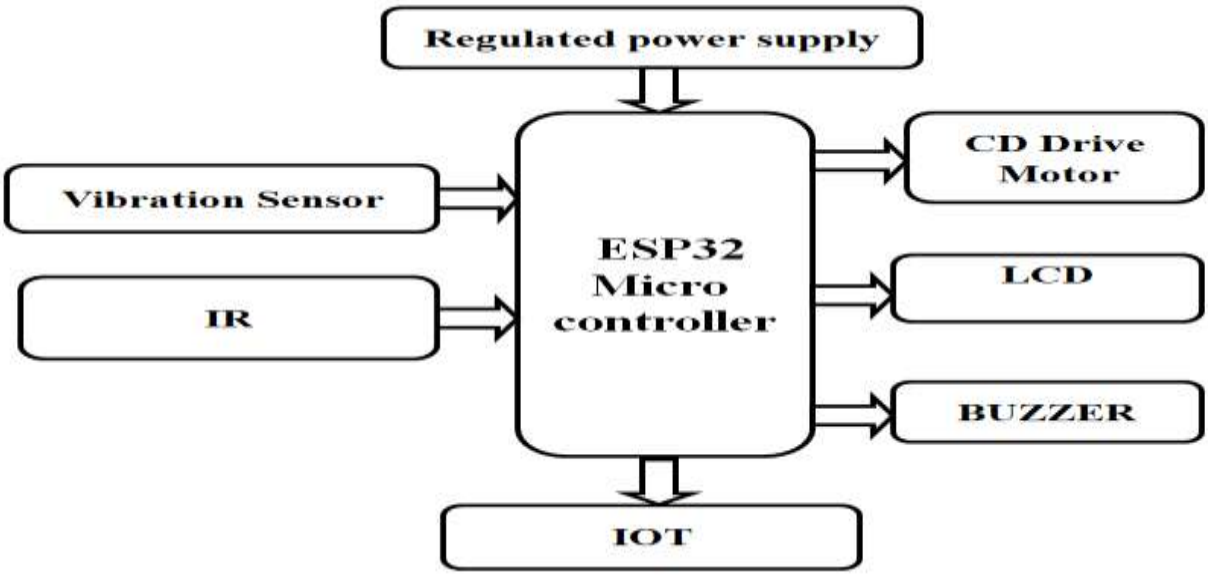
mems sensor is activated and the door gets closed automatically and the data is stored in the embedded sever [7]. Taha Ayesha et al (2018) implemented a system to secure the ATM transaction using Raspberry pi

interfaced with IOT, 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 IOT 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.

## 3. PROPOSED SYSTEM

The Proposed System here achieves safety through Embedded Systems and IOT technology. Here whenever a thief tries to snatch money from the Customer inside the ATM, the Sound detection Sensor senses the scream (or) sound produced by the Customer easily and these signals are driven to Arduino microcontroller. Then Arduino does following actions (Door Lock, Chloroform Spray), so that a great mishap is prevented. Whenever a robber tries to break the ATM, vibration sensor captures the vibration and sends a digital pulse to ARDUINO controller. Further the controller takes following actions (Door Lock, Chloroform Spray) to prevent the theft incident. It also tightens the security of ATM room, such that the thief is trapped inside. From our proposed System, we can easily save both Human Life and Money inside the ATM.

We have to provide some security systems to prevent the crime if we notice any kind of theft. Hence the implementation of ATM crime prevention system is necessary. Therefore, this project suggests the method of providing security to the ATM using the IOT technology, VIBRATION sensor, IR sensor, Servo Motor, buzzer so that the thief can be easily caught. Here Servo Motor is used to close the door of the room in which ATM is placed.




**Working:**

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The proposed system is placed at the desired locations in the ATM Environment to be protected from crime. The Vibration sensor is placed on the top ATM which is connected to port 8th pin of ESP32 and the IR sensor is connected to port 9th as well as the Motor is connected to 12th port and the Buzzer is connected to 10th port. The LCD ports are connected to the corresponding ports of ESP32 from port 2 to 7. Here the input is given from the IR sensor and the vibration sensor to the Esp32. The IR sensor is used to detect whether the ATM is in it's place or whether it's being misplaced through the reflection of light waves. Vibration sensor will be active when there's any activity of ATM breakage intentionally .

When the vibration sensor detects Vibrations, information is given to the microcontroller, and then lock system using DC motor which is Connected to port pin of ARDUINO controller will automatically close the door as well as Buzzer which initiated to alert people and send the data to the IOT server automatically.

If IR sensor detects when there's no ATM same operation executes that buzzer will alert, dc motor will close the door and IOT send the data to the IOT server. All input and output modules interfaced to ESP32 micro controller by using ARDUINO IDE developing software.

**4. RESULT**

Figure.1: Model of ATM Machine

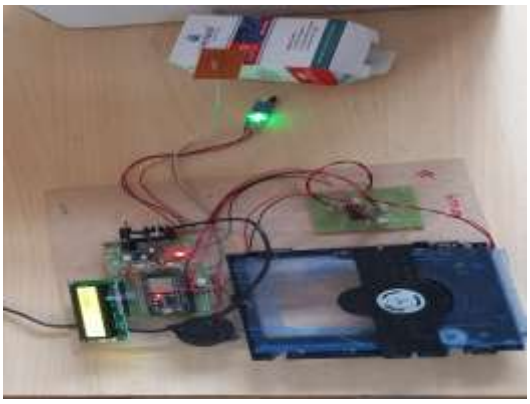

Figure.2: Working of ATM Machine

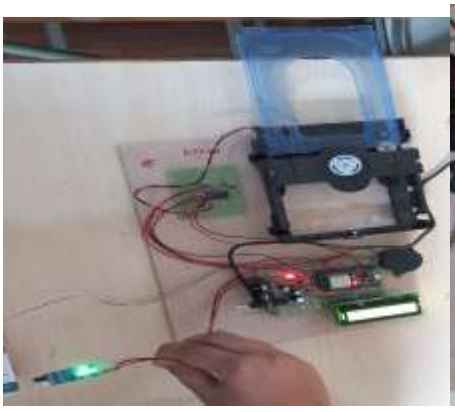

Figure.3: Testing ATM Machine


Figure.4: LCD Display the ATM Misplaced


Figure.5: LCD display vib:off

## 5. CONCLUSION

The project main aim is to prevent the ATM crime that is happening around the world. As we all know, these days most of the ATMs have been attacked by the robberies. From the first ATM being installed in the world till now, ATM has gradually become a target of crimes. While with the constantly evolving of reported ATM crime, ATM industry has begun to pay attention to the safety of ATM, even cardholders. Our project demonstrates how an automation of ATM crime prevention can be implemented using IOT technology, ARDUINO microcontroller, VIBRATION sensor, IR sensor, DC motor, buzzer ATM Machines center. By implementing this project we can easily prevent the crime and also we can save our precious time. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Besides, using highly advanced Microcontroller with the help of growing technology, the project can be successfully implemented. Thus the project has been successfully designed and tested.

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