

# Advance Security System For ATM Machine Using Hydraulic Gate

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**Abstract-** The Idea of Designing and Implementation Of Smart Security System For ATM Machine Using Hydraulic Gate is born with the observation of ATM crime incidents happening around the world. Security of ATM is very necessary because of it is widely spread in all areas such as financial as well as other important parts of financial network which requires very sensitive handling transmission of money. Frauds related to ATM are increasing day by day which is a serious issue. So overcomes the drawback this paper deals with the prevention of ATM theft from robber. ATM system is used to provide protection against the frauds. This system is implemented in various components such as vibration sensor, GSM, lcd display, buzzer, dc motor, hydraulic gate and RTC etc. This system is based on ARM controller(LPC 2138). In this paper the existing security of ATM system has been improved by using the hydraulic gate technology. The hydraulic gate is used because it has far fewer moving parts as compared to electromechanical and mechanical gates. Hydraulic motor requires less power for moving the large gate. If your gate is on the large side this might be the best option which is the one of the advantage of hydraulic gate. By using this technology robber can easily caught.

**Keywords-** LCD, GSM, ARM controller(LPC2138), Vibration sensor(piezoelectric), DC motor, Hydraulic gate, Buzzer, RTC.

## I. INTRODUCTION

Automated Teller Machine gives much convenience to everyone in life due to their easy and readily available cash. The main advantage of ATM is its ability to provide 24 hours service daily to customer and users. Number of robber related to the ATM are increasing daily which is serious problem. The attacks on ATMs are increased widely and this is a serious problem for banking sector. In the year of 2007, 212,530 of theft and 4,439 of robber cases are happened and 269,410 of theft and 4,409 of robber cases are happened in year 2010. Theft and robber have been increased widely during past 12 years. The crime for the ATM has been increased because of now a days externally ATM is not secured(Ref.no.6).

Now a days number of ATM has been increased widely with increases ATM theft from robber. The first ATM was installed in Enfield town in London On June 27, 1967 by Barclays Bank ATM is one of the automatic system being used 1967 by many of us. ATM was invented by John Shepphardbaren on June 1967 at United Kingdom.(ref. no.11)

The above statistics necessitates the implementation of ATM crime prevention system. This paper providing security to both the ATM and the customers.(ref.no.12). By using this technology theft of ATM machine can be easily caught.

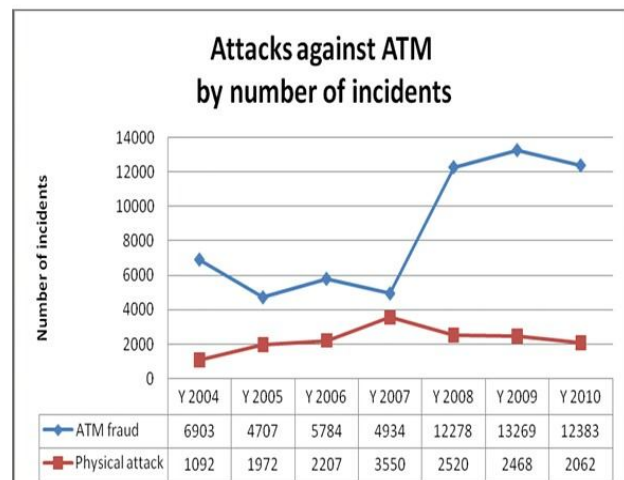


Fig. 1

## II. LITERATURE SURVEY

A. Design and implementation of security based ATM theft monitoring system

This paper deals with prevention of ATM theft from robbery. So overcomes the drawback found in existing technology in our society. Whenever robbery occurs, vibration sensor is used which senses vibration produced from ATM machine. Once the vibration is sensed the 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. RTC used to capture the robber occur time and send the robbery

occur time with the message to the nearby the police station and bank through the GSM.

*B. Advance security system for ATM*

This paper provide the solution of robbery of ATM to used various technology, rules and regulation. This technology work in three steps first step contain verification of user and valid ATM pin, account number. When user do swap of ATM card then he give response for valid ATM card else he generate message this card in invalid. In second step retina scanner after scan the door will open if user is successfully match then open gate. In third step you have take a photo with help of face recognizer than go in finally ATM machine. And thief broke any part then alarm generate.

*D. Smart Security System In Automatic Teller Machine*

This paper is based on concept of Smart Security System In Automatic Teller Machine by using face recognition, fingerprint scanner and ATM access card method. In this paper security approaches of ATM have been focused and have been improved using biometric based authentication technique. Vibration sensor is used here which senses vibration produced from ATM machine. ATM access card stores the fingerprint and face of the human. This card is used to open the door. This system based on Embedded system to process real time data collected using the vibration sensor. A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. Stepper motor is used to leak the gas inside the ATM to bring the thief into unconscious stage.

**IV. PROPOSED SYSTEM**

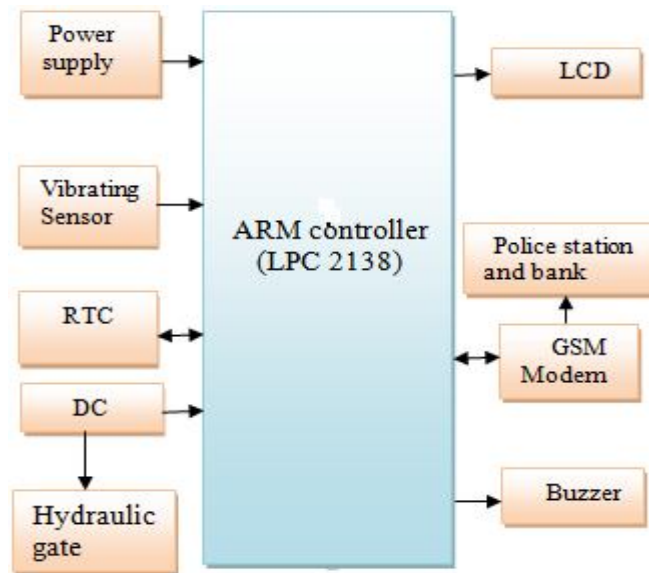


Fig. 2 Block diagram of Proposed System.

*i POWER SUPPLY :*

Power supplies are essential for the testing and implementation of any useful electronic circuit. power supplies are not available then the only way to provide power to a circuit is the battery.

They do not provide for overload protection and thermal protection.

*ii LCD DISPLAY :*

LCD is an electronic display module and find a wide range of application. A 16\*2 LCD display is very basic module and is very commonly used in various devices and circuits. A 16\*2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5\*7 pixel matrix. LCD display is used for showing the output message continuously.

Power supply – 5V  
Current rating – 500mA

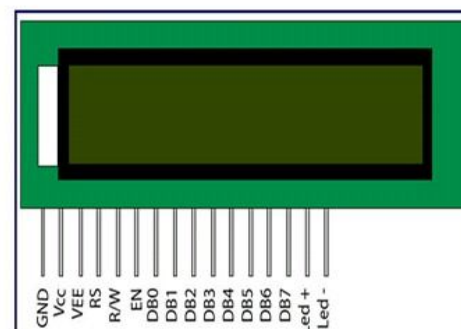


Fig. 3 LCD display

iii *DC MOTOR :*

Fig.4 DC motor

Dc motor rotates continuously. It has two terminals that is positive and negative. By connecting dc power supply to those terminal the motor rotates in one direction.

If the polarity of power supply is reverse. The direction of rotation reverses. The speed of dc motor is measure in revolution per minute.

i v *Vibration sensor (piezoelectric):*

In the system we will be using a vibration sensor (piezoelectric transducer) to find vibration from ATM machine when ever robbery occurs. When the attacker try to damage ATM machine vibration sensor gets activated.

Specification:

- i. Current Consumption-400uA
- ii. Output Impedance-1K ohm

v *GSM Modem :*

Fig. 5 GSM modem

GSM (Global System for Mobile communication) is a digital mobile telephony system. With the help of GSM module interfaced, we can send short text messages to the required authorities as per the application. GSM module is provided by SIM uses the mobile service provider and send SMS to the respective authorities as per programmed. This technology enable the system a wireless system with no

specified range limits. In this way, whenever the safe range of the vital parameter of an infant is violated, the programmed ARM controller produces an alarm and GSM Modem interfaced with the ARM controller sends an alert SMS to the bank & police station mobile number deploying wireless technology.

Power supply -5V  
Current rating -500mA

vi *Real Time Clock :*

RTCs are present in almost any electronic device which needs to keep accurate time. A real-time clock is a computer clock that keeps track of the current time.

vii *Hydraulic Gate :*

It's quite common to see mechanical gate operators, also known as electromechanical gates. These gates use high voltage power that's provided by power mains. However they can also be outfitted with solar panels as well as a battery backup so that access is possible during a power outage.

There are three main types of mechanical gates:

1. Swing gate
2. Sliding gate
3. Barrier arms

Hydraulic gate are electric however they require hydraulic fluids for movement. In a hydraulic gate there are far fewer moving parts compared to a mechanical operator, Which can be an advantages. Hydraulic motor are also capable of producing more power so if your gate is on the large side this might be the best option. Hydraulic gates don't even have to be operated at full power to open large gates. Another advantage of hydraulic gates is that they can be non locking.

Hydraulic gate operators can also be used with swing or slide gates and can be controlled via wireless remote. These operating systems will also need to have a backup power system. Hydraulic gate valves are widely used in the automatic control systems and remote control systems. Hydraulically controlled opening and closing, stable performance and easy operation.

viii *Buzzer:*

Weight - 2g  
 Power Supply - 5V  
 Current Rating -500mA



Fig.6 Buzzer

A piezoelectric buzzer can be driven by an oscillating electronic circuit or other audio signal. Buzzer is a piezoelectric audio signaling device. It carries with sound level up to 105dB. It can be used for Alarm devices, Timers, Game shows, Sporting events etc. A buzzer is an electrical device that is used to make a buzzing sound for example, to attract someone's attention.

## VII. CONCLUSION

As we all know, these days most of the ATM has been attacked by the robberies. Also gradual increases the theft of ATM after the year by year. This project demonstrates how an automation of "ATM THEFT" Prevention from robbery or thief can be implemented using GSM and hydraulic gate technology, vibrating sensor, buzzer, LCD display can be implemented in ATM machine. By implementing this project we can catch thief and robberies' in ATM itself and also we can save our ATM machine.

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