Development of Advanced And Secured ATM Machine Surveillance System

Vijayalakshmi R[1], Arul Prakash S[2], Sai Ram T[3], Samuel J[4], Sarun D[5]
[1]Assistant professor, Dept of EEE
[2, 3, 4, 5]Dept of EEE
[1, 2 , 3, 4, 5]Nandha Engineering College, Erode, Tamilnadu, India

Abstract- *The Robbery on ATM machines are increasing now a days. This project deals to prevention such theft from robbers. To overcome the drawback found in existing technology in our society a novel techonologyhas been introduced. Whenever robbery occurs, the Vibration sensor senses vibration produced from ATM machine.The vibration sensor is sensed by the sound intensity or pressure produced from the machine when it range increased above its 40dB. This system uses PIC controller based embedded system to process real time data collected using the vibration sensor.Once the vibration is sensed, the buzzer starts to sound and mild electricty flow over the machine. DC Motor is employed for closing the door of ATM. Sparking pump system is used here to make the robbers to faint for a while. RTC used to capture the robber occur time and send the robbery occur time with the message to the nearby police station and corresponding bank through the GSM. LCD display board used here is to show the output of the message continuously. This helps to prevent the robbery and the person involving in robbery can be caught easily.*

I. INTRODUCTION

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 (Automatic Teller Machine) is one of a facility which is provided by the bank to the customer. ATM machine comes in India

In1968 which is invented by John Shepherd Barron. ATMs are located in different places and the customers can make basic transactions without the help of bank staff, due to this use of the ATM machine increase widely. The rapid growth in Automatic Teller machines (ATM) has made life easy for the day to day man, but it is not so for operators who manage it. The crime which is happening in ATM becomes a serious issue so ATM security also a serious issue. Currently, The ATM protection is used to allocate security against burglary. Though protection is provided for ATM machine, cases of burglary are spreading. Nowadays technologies allocate protection within machines for safety transaction, but machine is not secured smartly. The ATM machines are not secured since security provided traditionally by using CCTV (closed -circuit television) or by using watchman outside the ATM. This protection isnot sufficient because control rooms are responding only after the burglary has been occurred specifically during night times. So,there is a necessity to propose new technology which can defeat this problem.

II. RELATED WORK

[1]GSM vigilance for electronic banking by P.MD.Shariff, V.Anil Kumar, M.Preethi Pauline Marry, V.Sivachidmbaranadan. Concept: For controlling purpose GSM is planned for sending the alert notifications to the administrative phone as well as sending images to the administrative e-mail through Raspberry Pi. Buzzer sounds will be alarmed in order to make uneasy the focus of robber. The control room pay attention on video footage after receiving alert notification of that specific. But it only alarm for indication and send the cctv footage through mail to the police station.[3]An Extensive Resolution Of ATM Security Systemsby Jamuna Rani, JebaJohnsly, Glory Beula. Concept: In this security system, the ATM fraudulent electronic transaction technique is used as a safeguard. in order to avoid the ATM robberies maximum of the systems offers various forms of supervising options. To improve the security various techniques are combines to give a 12 better result .The purpose of this paper is to present a survey about different techniques used for ATM security purpose and about confrontations facing in it.[4]Design and consruction of GSM based fire alarm system using PIC microcontroller by miss cingnuamman, misswai war myintaung the system is capable of sending alert messege via GSM network and activating siren at the permiss is .due to the outbreak of fire that damage properties and life.

III. SYSTEM DESIGN

This system consist of PIC16F877A microcontroller with 12v power supply vibrator sensor is connected to the microcontroller which is used here to sense the vibration from

the ATM machine by the sound intensity or pressure when it range increased above its 40dB.

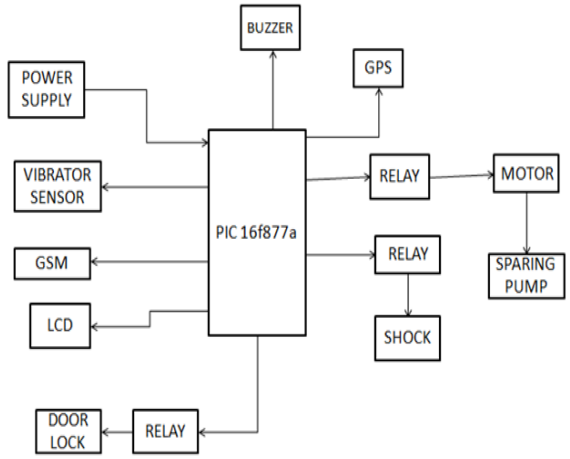


Figure 1 Block diagram of design and implementation of anti theft ATM machine using embedded system.

The signal from the GPS is processed by the microcontroller to find the location of the ATM system. The GSM system is used to send the message to nearby police station.

Three relay are used here to lock the door, to spray the chloroform pump and then electrocution.

Buzzer is used here as a indicator to alert.hear LCD display board using to showing the output of the message continuously

IV. WORKING

Whenever robbery happens, Vibration sensor is used here which senses vibration produced from ATM machine. This system uses PIC 16F877A based embedded system to process real time data collected using the vibration sensor. If the vibration sensor sense the vibration beyond the certain level, the beep sound will occur from the buzzer. DC Motor is used for closing the door of ATM.

Here Sparking pump system (chloroform spray) is used to make the robbers to faint till the police arrive.RTC used to capture the robbery occurred time and send that information as a message to the nearby police station and corresponding bank through the GSM. Hear LCD display board is used here as a showing the output of the message continuously.DVR system process the video data at the recorder.

1. PIC 16F877A microcontroller

PIC is a family of modified Harvard architecture microcontrollers made by Microchip Technology, derived from the PIC1650 originally developed by General Instrument's Microelectronics Division. The name PIC initially referred to "Peripheral Interface Controller" now it is "PIC" only.

Figure 1 PIC 16F877A microcontroller

PICs are popular with both industrial developers and hobbyists alike due to their low cost, wide availability, large user base, extensive collection of application notes, availability of low cost or free development tools, and serial programming (and re-programming with flash memory) capability.

PIC16F877A is a PIC Microcontroller.PIC16F877a can be write-erase as many times as possible because it uses FLASH memory technology. It has a total number of 40 pins and there are 33 pins for input and output. PIC16F877A is used in many pic microcontroller projects.figure 1 shows the PIC 16F877A microcontroller

2. VIBRATION SENSOR

The vibration sensor has two electrical contacts that do not touch each other in idle condition. When any movement or vibration occurs, the sensor's contacts close and touch each other. When the movement or vibration stops, the sensor's contacts return back to their original positions, away from each other. The closed contacts during vibration trigger the circuit connected to it. The vibration sensor has a small spring mechanism that makes the contacts touch each other when vibration occurs above a certain threshold level.

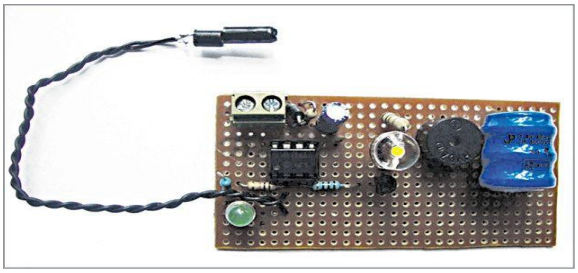


Figure 2 vibration sensor

Two pins coming out of the sensor are insulated by a resistance of more than 10-mega-ohm. During vibration the spring inside the sensor vibrates and makes a momentary short-circuit between the two terminals. Terminals of the vibration sensor have no polarity but one pin is thick. It is connected to Vcc through a resistor and the thin pin is connected to the circuit to be triggered.

3. BUZZER

Figure 3 Buzzer

A buzzer or beeper is an audio signaling device,which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or keystroke. Buzzer is an integrated structure of electronic transducers, DC power supply, widely used in computers, printers, copiers, alarms, electronic toys, automotive electronic equipment, telephones, timers and other electronic products for sound devices. Active buzzer 5V Rated power can be directly connected to a continuous sound, this section dedicated sensor expansion module and the board in combination, can complete a simple circuit design, to "plug and play."

4. RELAY

Figure 4 Relay

A relay driver circuit is a circuit which can drive, or operate, a relay so that it can function appropriately in a circuit. The driven relay can then operate as a switch in the circuit which can open or close, according to the needs of the circuit and its operation. In this project, we will build a relay driver for both DC and AC relays. Since DC and AC voltages operate differently, to build relay drivers for them requires slightly different setup. We will also go over a generic relay driver which can operate from either AC or DC voltage and operate both AC and DC relays.

5. POWER SUPPLY

A power supply (sometimes known as a power supply unit or PSU) is a device or system that supplies electrical or other types of energy to an output load or group of loads. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others**.**All digital circuits work only with low DC voltage. A power supply unit is required to provide the appropriate voltage supply.

Figure 5 Power Supply

This unit consists of transformer, rectifier, filter and a regulator.AC voltage typically of 230Vrms is connected to a transformer which steps that AC voltage down to the desired AC voltage level. A diode rectifier then provides a full wave rectified voltage that is initially filtered by a simple capacitor filter to produce a DC voltage. This resulting DC voltage usually has some ripple or AC voltage variations. Regulator circuit can use this DC input to provide DC voltage that not only has much less ripple voltage but also remains in the same DC value, even when the DC voltage varies, or the load connected to the output DC voltage changes. The required DC supply is obtained from the available AC supply after rectification, filtration and regulation.

6. GSM

GSM (Global System for Mobile communication) is a digital mobile network that is widely used by mobile phone users in Europe and other parts of the world. GSM uses a variation of time division multiple access (TDMA) and is the most widely used of the three digital wireless telephony technologies: TDMA, GSM and code-division multiple access (CDMA). GSM digitizes and compresses data, then sends it down a channel with two other streams of user data, each in its own time slot.

Figure 6 GSM

It operates at either the 900 megahertz (MHz) or 1,800 MHz frequency band. GSM, together with other technologies, is part of the evolution of wireless mobile telecommunications that includes High-Speed Circuit-Switched Data (HSCSD), General Packet Radio Service (GPRS), Enhanced Data GSM Environment (EDGE) and Universal Mobile Telecommunications Service (UMTS).

7. DC MOTOR

A DC motor is any of a class of rotary electrical motors that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current in part of the motor DC motors were the first form of motor widely used, as they could be powered from existing direct-current lighting power distribution systems.

Figure 7 DC Motor

A DC motor's speed can be ` 45 controlled over a wide range, using either a variable supply voltage or by and backpacking, bicycling, or many other activities.changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances. The universal motor can operate on direct current but is a lightweight brushed motor used for portable power tools and appliances.

Larger DC motors are currently used in propulsion of electric vehicles, elevator and hoists, and in drives for steel rolling mills. The advent of power electronics has made replacement of DC motors with AC motors possible in many applications.

8. GPS

A Global Positioning System, also known as GPS, is a system of satellites designed to help navigate on the Earth, in the air, and on water. A GPS receiver shows where it is. It may also show how fast it is moving, which direction it is going, how high it is, and maybe how fast it is going up or down.

Figure 8 GPS

Many GPS receivers have information about places.GPSs for automobiles have travel data like road maps, hotels, restaurants, and service stations. GPSs for boats contain nautical charts of harbours, marinas, shallow water, rocks, and waterways. Other GPS receivers are made for air navigation, hiking and backpacking, bicycling, or many other activities.

9. LCD

LCD is a type of display used in digital watches and many portable computers. LCD displays utilize to sheets of polarizing material with a liquid crystal solution between them. An electric current passed through the liquid causes the crystals to align so that light cannot pass through them.

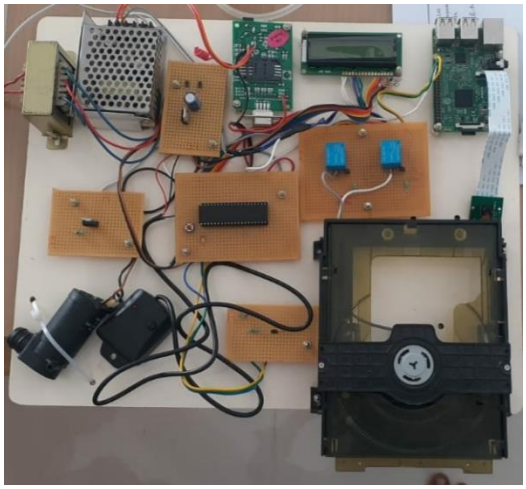
LCD technology has advanced very rapidly since its initial inception over a decade ago for use in lap top computers.

Figure 9 LCD

Technical achievements has resulted in brighter displace, higher resolutions, reduce response times and cheaper manufacturing process.

The liquid crystals can be manipulated through an applied electric voltage so that light is allowed to pass or is blocked. By carefully controlling where and what wavelength (color) of light is allowed to pass, the LCD monitor is able to

display images. A backlight provides LCD monitor's brightness.



V. RESULT

The results shows that, When the sensor sense the extreme vibration of the ATM machine above its normal value it causes the alarm to start sounding. It gives the electric shock over the ATM machine and lock the door And spray the chloroform with the help of a motor and send message to the nearby police station by GPS. This paper is helpful in showing the prevention of ATM machine from thefting or robberies

Table. 1 RESULT COMPARSION

EXISTING METHOD	PROPOSED METHOD
1. Easy to break 2. Low secure with no Alarm	1. This system can monitor remote area ATM machines from theft. 2. It can avoid fire accidents 3. It shows the status of ATM machine through web server 4. It can spray some kind of GASs on person who trying to theft ATM machine

VI. CONCLUSION

So that it gives the full security system to the ATM from the robbery. And caught the robbers at the same time. This type of security system can also use in a museum, jewelry shop, home locker, etc., it reduces the manual power (like a security guard, watchman

REFERENCES

[1] GSM vigilance for electronic banking by P.MD.Shariff, V.Anil Kumar,M.PreethiPaulinMarry,V.Sivachidmbaranadanhttps://ieeexplore.ieee.org/abstract/document/8261397/references

[2] K.Malladi,S.Sridharan, "Contemplate for Online Plebiscite Capturing ATM Terminals," in international Journal of Advanced Research in Computer Science and Software Engineering, vol. 3, issue 4, April 2018.

[3] Smart Camera Based Monitoring System and Its Application to Assisted Living Video analysis algorithms replace human operators in a practical prototype system that attempts to respect privacy while detecting residents who fall. By Sven Fleck Student Member IEEE and Wolfgang StraQer Member IEEE.

[4] Prof. Selina Oko and Jane Oruh, "Enhanced Atm Security System UsingBiometrics",IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 5, No 3, September 2012

[5] S.T. Bhosale and Dr. B.S.Sawant "Security In E-Banking Via Card Less Biometric Atms", International Journal of Advanced Technology & Engineering Research, Volume 2, Issue 4, July 2012

[6] SunilLohiya"Biometric Identification And Verification Techniques -A Future Of ATM Banking System", Indian Streams Research Journal, Volume 2, Issue. 7, Aug 2012