

INTEGRATED SECURITY BASED ON ATM ROBBERY PREVENTION

Dr. T. Chandrasekar¹, T. Vijay², R.R. Vishnu Kumar³

¹Assistant Professor, EEE Department, Velammal College of Engineering and Technology, Madurai, Tamilnadu.

^{2,3}UG Student, EEE Department, Velammal College of Engineering and Technology, Madurai, Tamilnadu.

ABSTRACT- This system uses a PIC Microcontroller based embedded system to process real-time data collected by the vibration sensor, LDR sensor, and accelerometer sensors. Upon detection of the theft, the siren will begin alerting the public. Within the ATM chamber, the Solenoid valve is used to leak the gas (Chloroform) to carry the thief into the unconscious stage until he inhales the given dose. Using GSM Modem, calls are sent to the nearest police station, corresponding bank manager, and security officers. They will disable the program in future work by logging in.

I. INTRODUCTION

Many of us are using ATM in this modern world. Rapid advancement of banking technology has numerous advantages and disadvantages for banking activities and transactions is the advent of Automated Teller Machine (ATM). We belong to the edge of the digitized and smart world. People are getting smarter day by day with the help of new technology, innovations. The main explanation for the introduction of emerging technology is essentially to solve the current problems. The Economic growth of world makes the life smarter and better as compared to the previous lifestyle. The introduction of an Automated Teller Machine (ATM) is a smart step towards the economy, for faster and easier money transfer. But over this ATM system, a group of people do malpractice to put people, organizations or banks into one million pounds of losses. An Automated

1. Christiawan, B. A. Sahar, A. F. Rahardian and E. Muchtar-Jan 2019 introduce Fingershield ATM – ATM Security System using Fingerprint Authentication. The prevalence of the ATM Fraud case in Indonesia remains the company's main concern, particularly bank clients. In March 2017 ATM Frauds reported a total loss of 5 billion rupiahs. Although a 6-digit PIN is the only option that guarantees the protection of ATMs, there are still plenty of security loopholes that hackers can use to steal customer data and the 6-digit PIN itself. One of the most frequent methods of ATM Fraud is skimming. The authors therefore bring the concept of Fingershield ATM, ATM Machine which implements biometric identification in the form of fingerprints that are integrated with smart card and database server.

teller machine is a mechanical system that has its origins built into a banking institution's accounts and records. Today, people are worried about their safety in the real world, for their important things. ATMs are electronic banking devices installed in different locations, and customers can make simple transactions without the assistance of bank staff. Using ATM, the customer may conduct a variety of banking activities such as money transfer, cash withdrawal, payment of various bills for home use such as electricity and telephone bills. It is more convenient for users to access their bank accounts and to conduct financial transactions. ATM card and private PIN (Personal Identification Number) or password shall be given to the account holder. PIN or password is an essential feature of the ATM system, generally used to protect and safeguard consumer financial information. PIN needs to be remembered by the card owner and it should not be shared with others to prevent unauthorized access. A crime that exists in ATM has become a serious issue impacting not only customers but also bank operators.

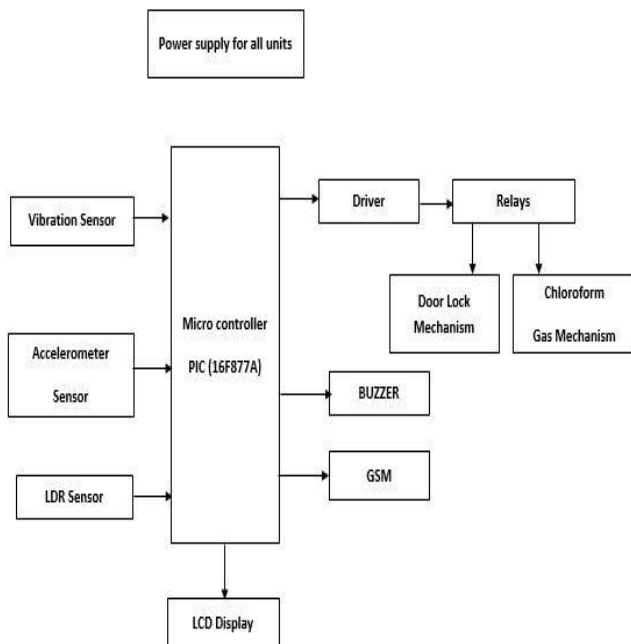
Security is a serious issue in the ATM system. ATM fraud involves criminals slipping into the ATM card slot a thin, transparent, rigid plastic sleeve. In doing so, the computer can't read the strip when you enter your card and it will proceed to ask you to re-enter your PIN.

II. LITERATURE SURVEY

2. Prakash Chandra Mondal, Rupam Deb- 2017 - proposed On Reinforcing Automatic Teller Machine (ATM) Transaction Authentication Security Process by Imposing Behavioral Biometrics. Various methods of ATM transaction processes include physical biometric verification and token-based three-factor authentication to collect original customer information, and the implementation involves a new identification system, so these are costly. This paper proposes new three-factor authentication methods that use online handwriting signature verification from the customer account profile database along with chip-based card and PIN after considering cost commitment, efficiency, and implementation feasibility.

3. Bharati M Nelligani, Dr. N V Uma Reddy-2016-SMART ATM SECURITY SYSTEM USING FPR, GSM, GPS. This existing paper gives a description of the new approach towards the security of ATM systems. The paper aims to know the Enhanced Smart ATM protection framework built using Embedded Systems and Advanced Technology. RFID card is used in our proposed system as an ATM token, IR sensor to detect the presence of card holders and switch on Fan and Light if ATM is manipulated, then SMS is sent to two main stations via GSM. GPS is used for location monitoring in case the cash box is stolen.

III. BLOCK DIAGRAM

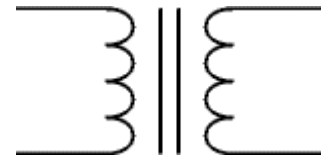


IV. COMPONENTS DESCRIPTION

4.1 POWER SUPPLY

Power supply is a reference to an electric power source. A device or system that supplies an output charge or group of loads with electrical or other forms of energy is called a power supply unit or PSU. The term is most commonly used for the supply of electrical energy, less frequently for mechanical supplies and rarely for others.

4.2 TRANSFORMER

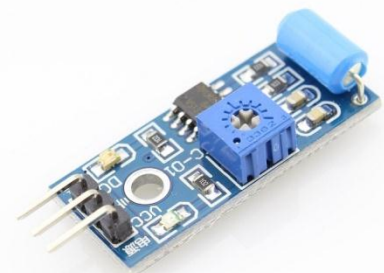


With no power loss, transformers convert AC electricity from one voltage to another. Transformers operate only with AC, and that is one of the reasons why AC is power from the mains.

4.3 VIBRATION SENSOR

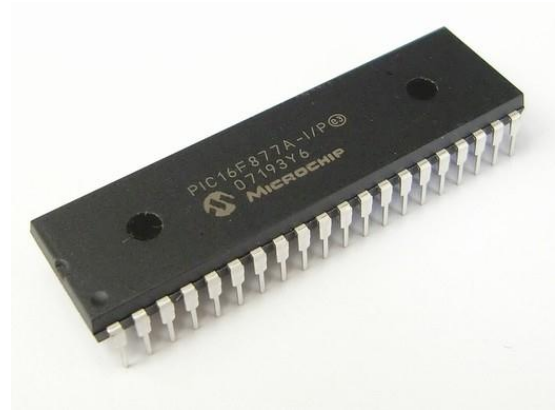
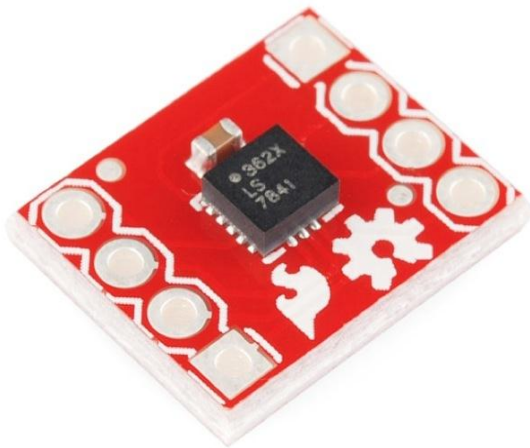
This sensor has a piezoelectric transducer buffer. Bending creates strain within the piezoelectric element and generates voltages as the transducer is displaced from the mechanical neutral axis.

A piezoelectric sensor is a device that detects changes in friction, acceleration, temperature, strain or force using the piezoelectric effect by converting them into an electric charge. The piezo- prefix is Greek for 'shake' or 'squeeze.'



4.4 ACCELEROMETER

An accelerometer is a system that calculates proper acceleration; proper acceleration is not equal to coordinate acceleration (rate of velocity change). For instance, an accelerometer at rest on the Earth's surface would calculate an acceleration due to Earth's gravity, straight up (by definition) of 9.81 m / s² of g al. By comparison, free fall accelerometers (falling at a rate of around 9.81 m / s² into the middle of the Earth) will test null.



4.5 LDR SENSOR

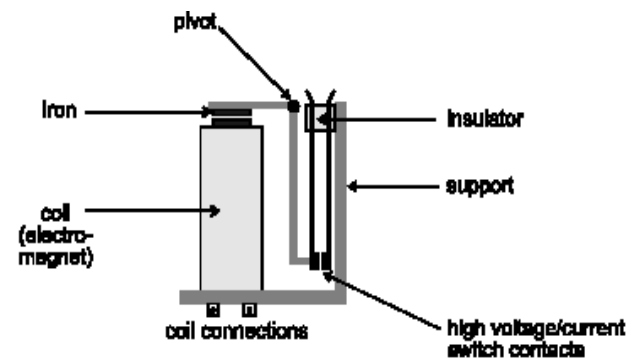
Light based resistors or LDRs are often used in circuits where the intensity or the level of light is to be sensed. A number of names can identify them from light-dependent resistor, LDR, photo resistor, or even photo cell (photocell) or photoconductor.



4.7 RELAY DRIVER

A relay is an electro-magnetic device that is useful to turn on and off a light bulb (or something else) connected to the 220v mains supply if you choose to use a low voltage circuit.

The following diagram shows a typical relay (with contacts which are "normally open").



4.6 PIC 16877A MICROCONTROLLER

Different microcontrollers have various kinds of memories. EEPROM, EPROM, FLASH etc. are some of the most recently formed memories of which FLASH is one. Software used in PIC 16877 is flash software, so that even when the power is turned off the data is preserved. Other features of PIC 16F877 include ease in programming and erasing. PIC16F877A microcontroller is used in the project. The following are some of the important features of the controller.

4.8 DC MOTOR

DC motors are part of the electric motors which use DC power as the source of energy. Such machines convert energy from electrical to mechanical. The basic concept of DC motors generally is the same as electric motors, the magnetic force that will produce spin between the rotor and the stator.

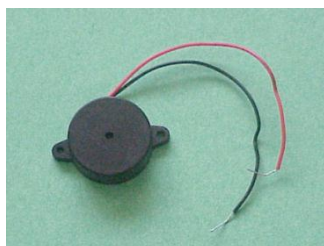
4.9 GSM

GSM, which stands for Global Mobile Communications Network, reigns as the most commonly used technology for cell phones in the world. Mobile phones use the GSM network of a mobile phone service provider by searching for cell phone towers in the surrounding area.



4.10 BUZZER

A buzzer or beeper is a signaling system, generally electronic, commonly used in cars, domestic appliances such as a microwave oven, or game shows. The term "buzzer" derives from the rasping noise buzzers made when they were electromechanical devices, working at 50 or 60 cycles from stepped-down AC line voltage. A ring or a beep are two sounds that are commonly used to indicate a button has been pressed.



4.11 LCD DISPLAY

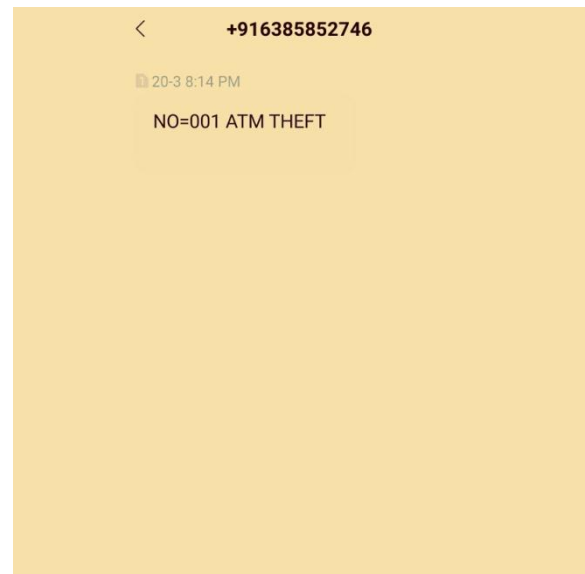
Displays of liquid crystal cells (LCDs) are used in similar applications where LEDs are used. These applications show numerical and alphanumeric characters displayed in dot matrix and segmental displays.



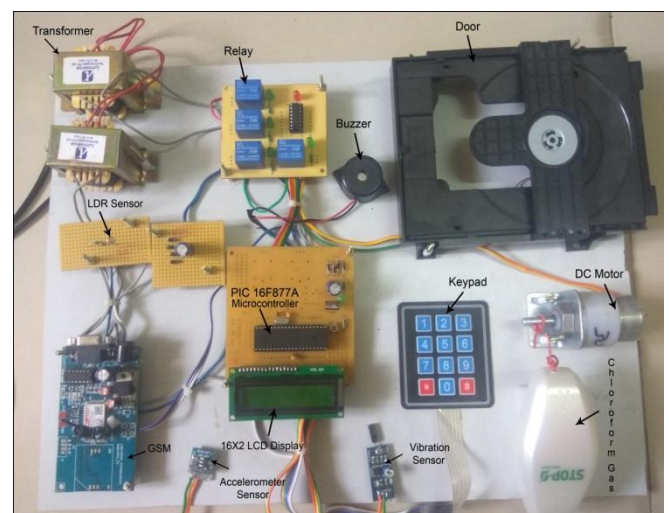
V. RESULT AND CONCLUSION

In this paper we presented a framework which provides integrated security that ensure can avoid ATM robberies. The framework functionality starts as soon as a warm object such as human being enters into

ATM cabin. The proposed system based on PIC microcontroller is found to be multipurpose. In addition Opensource is the development board used and the applications used, and this project offers an opportunity for potential improvements. It utilizes very common and reliable GSM technology. If the thief tries to cut or smash the ATM machine then the warning will be sent to the nearest Police Station using GSM and the Corresponding Bank Manager will be shown below. We've got a way of catching the thief that plays a significant role.



The overall hardware module of Integrated Security Based on Exploring ATM Robbery Prevention is shown in the figure.



VI. REFERENCES

[1]. Kannamma, M. Barathi, B. Chanthini, and D. Manivannan. "Control and monitoring of industrial automation processes using Zigbee" Advances in Engineering, Communications and Information Science (ICACCI), International Conference 2013, IEEE 2013.

[2]. Kim, Jaewoo, Jaiyong Lee, and J. Yun. "M2 M service platforms: research, challenges, and enabling technology" (2013): 1-16.

[3]. Dujak, Mico, et al. "Machine-to - machine communication as a primary enabler in smart metering systems". Electronics & Microelectronics Information & Communication Technology 2013, 36th International Convention on, IEEE 2013.

[4]. Kannan, P, and Ms P. MeenakshiVidya. "Security Based ATM Theft Monitoring System Design and Implementation."

[5]. Ajaykumar M (2013) "Anti-theft ATM System Using Vibration Detection Sensor" International Journal of Computer Science and Software Engineering Advanced Research, pp: 23-28.

[6].<http://blogs.webnms.com/m2m/2014/08/28/bid-adieu-toguards-welcome-atm-site-manager/>

[7]. <http://www.engineersgarage.com/rfid-radio-frequencyidentification-and-detection>