ATM Crime Prevention and theft Detection model by Wireless Technologies RFID and GSM

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Abstract: The Implementation of Advanced ATM theft avoidance System is brought into world with the perception of ATM wrong doing occurring far and wide. This paper manages the counteractive action of ATM wrongdoing. At whatever point burglary happens, MEMS module is present to detect crime happening at ATM machine. Proposed framework is done by ARM controller based installed framework designed for constant information gathered utilizing a MEMS module. When the theft happens this, designed system automatically alerts alarm such as buzzer, dc motor control gate, GSM sends SMS to authorized person and the status is displayed in LCD to monitor. Simultaneously this framework additionally manages the well lbeing of the client by cautioning the encompassing individuals and close-by police headquarters at whatever point the client is in risky circumstance. Here we utilize RFID module to verify ATM Card. RFID discoveres ATM card can swipe anyplace. It naturally sends burglary alert through GSM, buzzer ready individuals, DC motor entryway lock and all the status is displayed on LCD. Keil software is used to implement programmatically and execute the project successfully.

Index Term: ARM Microcontroller, ATM, GSM, MEMS, RFID

I. INTRODUCTION

ATM was turned into indispensable correspondence & administration tool among money bank and cash card persons because of quick, comfort and human asset sparing favorable circumstances. Presentation of ATM in 1967, culprits has concocting approaches which attempt to take money from inside. Since a machine called ATM wipe out that requirement to nonstop individual inclusion, will in general be situated in spots that make them increasingly powerless against assault.

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The quantity of ATM machine being used increments, due to that recurrence & modernity of safety, dangers, designing the advanced wrongdoing avoidance estimates the peek requirement for ATM makers, monetary organizations. Because of huge misfortune for card holders and banks, we fabricate secure ATM violations avoidance system for quick and simple user friendly money transactions between banks and human being with safety and security.

II. LITERATURE OVERVIEW

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.

III. EXISTING SYSTEM

In past activities, numerous analysts have built up a framework for programmed ATM security utilizing Microcontroller 8051 without any wireless data transfer system. Practically all frameworks are wired, yet now we have attempted the equivalent by the utilization of remote.

IV. PROPOSED SYSTEM

In proposed framework we are utilizing ARM7 to actualize this task, and we are utilizing GSM innovation to send the security data through SMS. We are utilizing MEMS Technology to distinguish the breakage of ATM machines and that data would be send to microcontroller then it will send to security framework. We are utilizing smoke sensor to recognize the flame mishaps. Advantage of Proposed system is Cost productive and Low Power utilization

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V. METHODOLOGY

The proposed framework is put at the entryway where the ATM is to be secured. The Vibration sensor is set on the ATM which is associated with port 0 eleventh stick of ARM. At the point when the sensor identifies Vibrations, data is given to the microcontroller, and after that lock framework Utilizing DC motor which is connected to port 0 seventeenth pin of ARM controller.

Buzzer which started to alarm individuals and send the SMS to favored people consequently.if any one stolen embedded card is inserted into ATM, RFID activates and same activity executes that buzzer will alarm, DC motor close the Entryway and GSM send the SMS to authenticate individual. It's simple to discover stolen cards and simple to forestall ATM frameworks. LCD is utilized to display the information like the status of working. RFID utilized as ATM card reading module. All info and yield modules interfaced to ARM smaller scale controller by utilizing KIEL creating programming.
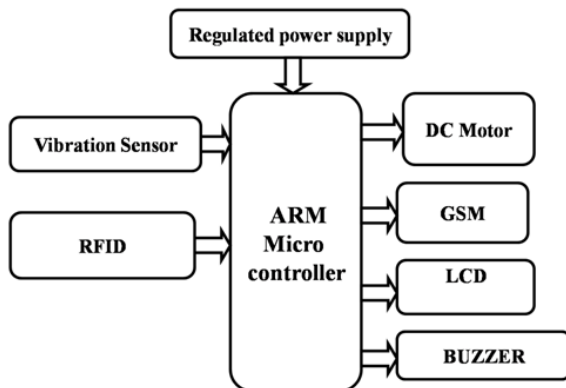

Fig. 1. **Block Diagram.**

VI. FUNCTIONAL DESCRIPTION
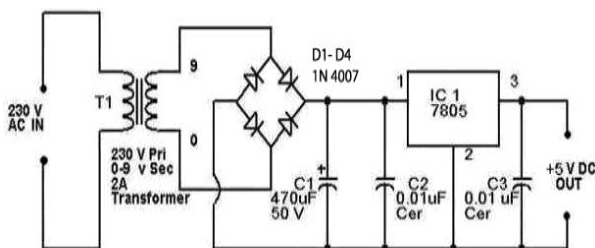
A. Regulated Power Supply

Fig. 2. **power supply.**

Regulated power supply is the main power source to provide +5v dc to throughout project. This section having step down transformer which converts high voltage to 12v ac voltage and bridge rectifier coverts to 10v dc, filter section used to convert constant voltage and finally voltage regulator finally give 5v with 1A power supply to function circuit components perfectly.

B. LPC2148 Functional Module

ARM Microcontroller Implement panel is ground-breaking improvement stage dependent LPC2148. We are going to design complete application using LPC2148

Microcontroller. Board having 64 GPIO pins distributed in 2 PORTS. PORT0 and PORT1. Each port having 32 pins with that we connect all input and output modules to General purpose input and output pins. Controller having 512kb flash memory used for data storage and code. 32 kb RAM for processing data. Having 64MHz crystal oscillator for carrier generation and fast process. Controller also compatible for serial communication. ARM microcontroller acquires the data from input modules and process as per code and produce output though output modules.

Fig. 3. **power supply.**

C. LCD display

Liquid crystal display used to display the data which used for status of the proposed system. We used 16*2 LCD in the proposed system can display 32 characters from the two rows. LCD driver board used to convert 16 pins to required 8 pins among them four data pins used to display the data and remaining pins are power and special purpose pins.

Fig. 4. **16*2 LCD Module**

D. GSM

The GSM is remote framework and it has low-control, low cost and settlement module. Global System for Mobile is a wireless communication module to send the data or receive the data from one place to another place. In our project we used GSM SIM 800L model which works on 5V Power supply and consumes 100ma Current. Operating frequency of GSM modem is 860 MHz to 960MHz. it can send the data through Transmission antenna and Receive data trough Receiver Antenna. GSM modem works based on AT commands. The role of GSM in this project is to send the SMS when microcontroller request while there will be when ATM crime happens.

Fig. 5. **GSM modem.**

E. Buzzer

Peizo electrical buzzer which is used to convert electrical signal to sound signal. The function of the buzzer in proposed system is when ever ATM theft occurs or ATM card activated in any ATM it automatically gives sound alert to surrounding people. Operating voltage of the buzzer +5Vdc.

Fig. 6. **Buzzer.**

F. MEMS Accelerometers

Fig. 7. **MEMS module.**

MEMS accelerometers are one of the easiest yet additionally most pertinent small scale electromechanical frameworks. They wound up crucial in car industry, PC and sound video innovation. Accelerometer is electromechanical device which will work on the position base. MEMS module position having 3 axes X, Y, Z. depends on it, generate signal and gives to microcontroller. Its works with 5 v power supply. When it tilts or changed its position we use this as alert. In our project when ever ATM is vibrated or changed position.

G. Door close Motor

Door close motor is a DC motor. The working of DC motor is that which converts Electrical Energy to Mechanical Energy. We used DC Motor to control the ATM door when required conditions. This is initiated by Microcontroller. Power supply to DC Motor is 5v DC. When Microcontroller triggers it move clock or anti clock direction.

Fig. 8. **power supply.**

H. RFID

Radio Frequency Identification Device is wireless communication module helps transfer data through wirelessly. RFID system have transmitter and receiver, RFID Tag which acts as Transmitter and collect data, RFID Reader module which acts as receiver to collect the data. Data transfer between transmitter and receiver is due to induced EMF concept. EM18 is the RFID module we used in project Range of RFID is very less 5 to 10 cm. operating voltage is 5V. Role Of RFID In Our Project Is That When RFID is activated, It Means that Stolen ATM Card Is swiped. Some of ATM Centers, then that ATM automatically sends SMS to authorized person as well as Police to catch the thief.

Fig. 9. **RFID Module.**

I. Software

Embedded system deals both Software and Hardware. Software is very important module to develop programming code. To design project we used KEIL software as editor to write fundamental Embedded C language and compiler to convert high level language to machine level language as 0 s and 1 s. Flash magic software we used to dump or program code e.i HEX File into ARM 7 microcontroller flash memory. Simulation is very important tool to design project virtually, before hardware implementation. We used protease Software to simulation of complete project. Express SCH software is used to design schematic diagram of project.

VII. RESULT AND DISCUSSION

We successfully interfaced all input and output modules to microcontroller. Controller performed and executed results as per the requirement. We obtained ATM theft detection alert through GSM SMS and status seen in LCD module when both RFID card Swiped and vibration alert from MEMS sensor.
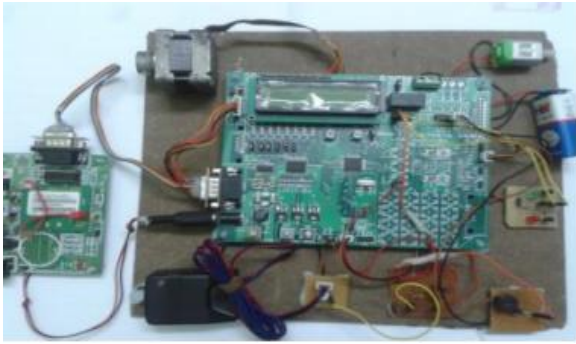
Fig. 10.   **Output Results.**

VIII.   CONCLUSION AND FUTURE WORK

As we all know, nowadays the vast majority of ATM are assaulted by burglaries, Our aim is to prevent all crime on ATM with proposed innovative methodology. This proposed model shows how a robotization of ATM wrongdoing counteractive action can be executed utilizing GSM innovation, ARM microcontroller, MEMS sensor, DC motor, voice acknowledgment module, with keil smaller scale vision in ATM Machines focus. By executing this venture we, without much of a stretch avoid the wrongdoing and furthermore we can save our valuable time. We successfully implemented system and executed.

In further work we design a system which supports to send data through server using IOT and for further improvements sensors with better execution level can be sent to expand the productivity and execution level of the framework.

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