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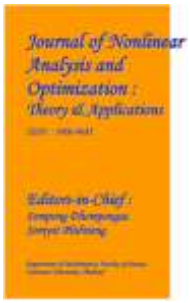

ENHANCED HOME SECURITY FOR HOME OR ATM WITH THE HELP OF SENSORS AND CONTROLLERS

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ABSTRACT
The primary objective of this article is to enhance the security of the ATM system, since incidents of robberies are becoming more prevalent in our everyday lives.
The research aims to identify instances of ATM theft from robberies and then address the shortcomings of current techniques in our culture. Subsequently, the occurrence of theft triggers the use of a PIR sensor to monitor human movement. As a result, an alert is generated in the form of a beep sound emitted by the ATM machine. This system utilizes an ARM controller that is built on an embedded system in order to efficiently analyze real-time data that is acquired using the PIR sensor.
Once the alarm is activated, it emits a beep sound. The DC motor is responsible for closing the ATM door, while the stepper motor is utilized to release gas inside the ATM in order to render the burglar unconscious. The camera consistently transmits the movies to the computer for further monitoring purposes. Subsequently, transmit a message to the nearest police station and associated bank using the GSM technology. Simultaneously, promptly send the videos to the respective bank and police station using the GPS system. Here, an LCD panel is used to continually show the output of the message, along with the video. Implementing this measure would effectively deter robberies and facilitate the apprehension of those participating in such criminal activities. Here, the complete program is executed by using the Keil tool.

Keywords: ARM microcontroller, Passive Infrared (PIR) Sensor, Global System for Mobile Communications (GSM) and Global Positioning System (GPS) modems, Direct Current (DC) Motor, Stepper Motor, Alarm, Liquid Crystal Display (LCD), Keil Tool.

I. INTRODUCTION

In present environments there is no safe and secure for ATM systems with existed technology. Based on population the socially and automatically has been increase d the ATM's card has been installed and spread out to simplify the activity for financially, the banking activity has been simplified, whatever the theft related with financial organization has been increased in vice-versa to the ratio of spread out of automation and devices.

1. At ATM Room
2. Receiver section and Via GSM

Among the crime for financial organization, the cases of theft and robberies have very high proportion of the crime at ATM system has been increased. Therefore, this study is going to propose the method of rapid react ion by detecting the ATM machine by using real time applications. When it has been stolen can be found through GSM and GPS Technology.
In proposed system using these GSM& GPS technologies, PIR sensor, DC and Stepper Motor, the theft goes to unconscious by leakage the gas. In this paper we are using alarm to give signal for corresponding bank and police station.

Camera is used to take the video clips. DC motor is used for close the door of the ATM and stepper motor is used for exploit the gas and then the theft goes to unconscious stage.

BLOCK DIAGRAM

The architectural diagram of the proposed system in which how the ARM controller is interfaced with PIR sensor, stepper motor, GSM and GPS Modem, DC and Stepper Motor, alarm, Real Time Clock and LED display.

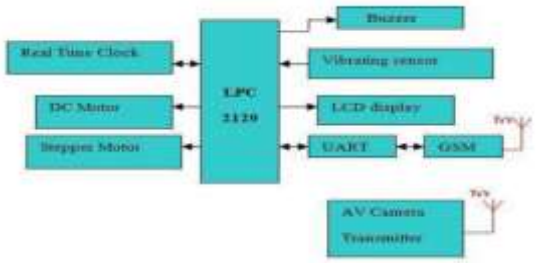

Fig: At ATM Room

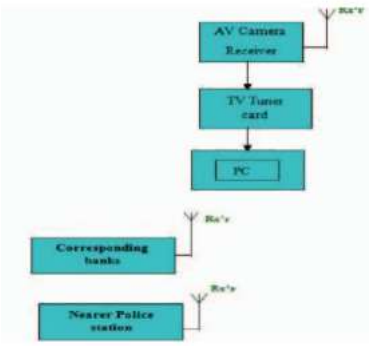

Fig: At Receiver section and via GSM

II. RELATED STUDY

Global System for Mobile Communications(GSM)

The GSM which is one of the main device wireless networks which has low-power, low-cost and easy to use and instGlobal System for Mobile Communication s Mobile is the most popularly standard telephony systems in the world. The Global System for Mobile Communication is used by over 2 billion people come a across more than 212 countries. When a GSM modem which is connected to a PC, this accept the PC to use the Global System for Mobile Communication (GSM) modem to communicate over the mobile phone network. While these Global System for Mobile Communication (GSM) modems are used to provide mobile internet connectivity, so many of them can be used for sending and receiving SMS and MMS messages. A Global System for Mobile Com munication (GSM) modem can be a most predicted modem device with a serial, USB or Bluetooth connectivity, or capabilities.

Technical details:

The Most Global System for Mobile Communication (GSM) modem networks operate in the 900 MHz or 1 800 MHz bands. Some countries in the American (inc luding the US or Canada) use the 850 MHz and 1900 MHz bands because the 900 and 1800 MHz frequenc y bands were already allotted. The rare 400 and 450 MHz frequency bands are allotted to in some countries.

Using GSM & GPS Modem in the ATM System

In ATM system we are using a Global System for Mo bile Communication (GSM) Modem to forward and receive SMSW hen the robberies occur, it will pass the message to corresponding bank and nearer police station (PS) according to the arrangement process.

In this project GPS trace the location in which location occurs robberies, then send the signal to nearer police station(PS) according to the arrangement process.

PIR Sensor

A PIR sensor is an electronic device sensor which measures infrared (IR) light radiating through on object s. They are mostly used to human motion detectors sense out of the range. In the system we will be using a PIR sensor (piezoelectric transducer) to produce alar m from ATM machine whenever robbery occurs.

Hardware Resources

Power supply circuit

The main device is the power supply to provide required for operation. For the ARM controller keyboard, LCD, RTC, GSM, +5V are required & for driving alarm +12V is required. The power supply provides regulated output of +5V & non-regulated output of +12V.

Stepper Motor and DC motors

Stepper motors and DC motors that move in discrete steps. They have multiple coils that are organized in groups are called phases. By employing each phase in sequential order, the motor will rotate by one step at a time. With a computer controlled stepping we can achieve

very precise positioning or in order wise and s peed control.

In this system we are applying this stepper motor for leak the gas inside the room of the ATM then the thief goes to unconscious stage.

We are placing DC Motor for closing the ATM door when thieves are trying to broken the ATM machine.

FEATURES of Stepper Motor and DC motors:

- 0 to 500mA rated collector current(Single output)
- High-voltage outputs: 50V
- Input compatible with various types of logic.
- Relay driver application.

Wireless Camera

The wireless monitoring video camera and wireless receiver set for our home and business surveillance and is used for here demonstration purpose. We simply install the wireless camera in the ATM room in which where we need to monitor and set the wireless receiver in the next room (up to 0 to 15 meters away from the ATM room) and to store and monitor we need a T V or DVR to watch the action or record the footage f or the security records for necessary action.

Here we are placing the wireless camera in the ATM cabin. Depiction of AV Receiver of wireless camera s ends frequently video footages to the Computer.

TV Capture card

A TV capture card is a computer component that used for television signals to be received by a computer. It is a type of television tuner. Most TV tuner s are used for video captured cards, allowing them to record television programs onto the hard disk. Digital TV tuner card is as shown given below Figure

The card contains a tuner and an analog-to-digital converter along with demodulation and interface logic.

Fig: AV Receiver and Wireless Camera.

III. EXPERIMENTAL WORK

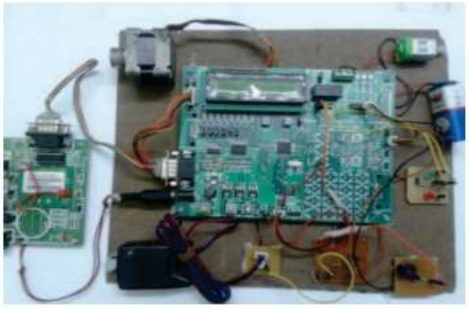

Fig: Completely hardware development of this project for ATM Security system

Fig: Practically GSM and GPS Modems

IV. SOFTWARE IMPLEMENTATION

The software implementation, we will employ the two types of software packages. First software package is the Knowledge Embedded Integrated with Language (KEIL). Second software package is the Flash magic simulator. The KEIL is Debugger accurately simulates on-chip peripherals of ARM devices.

Simulation helps us easy to understand hardware configurations and omits the time wasted on setup problems. With simulation, we can write and test applications before generation of target hardware is available. The system program wrote in embedded C using AR MKEIL software will be stored in ARM Controller.

The ARMKEIL Development Tools are designed for to solve the complex problems facing embedded applications of software developers.

Flash magic is used to copy the code into microcontroller from computer. Flash Magic is a free of cost, and most powerful, highly featured-rich Windows applications that is easy for programming of Philips FLAS H Microcontrollers. Easy to build custom application s for Philips Microcontrollers on the Flash Magic plat form. To create custom end-user framework programming applications are generate an in-house production line programming tool.

The Flash Memory In-System Programmer is a tool that runs under any type of Windows with relevant to networking environments. It employs to make it circuit programming of FLASH memories via a serial link. The Computer side software called Flash Magic is executed that allows the Intel HEX format file generate d from compiler KEIL to be sent to generated target microcontroller. It's find the hardware connected to the serial port.

V. CONCLUSION

Currently, a significant number of ATMs are being targeted by criminals. Furthermore, there has been a steady rise in ATM thefts on an annual basis.

This article presents a method for implementing an automated theft prevention system in ATM machines utilizing GSM technology, vibrating sensors, DC motors, stepper motors, LED displays, buzzers, and Keil MicroVision 3.0.

By adopting this idea, we can apprehend thieves and prevent robberies directly at the ATM, so saving valuable time.

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