*"*ATM Theft Monitoring and Security System using Raspberry Pi2*"*

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Abstract Automated Teller Machines (ATMs) security is the field of Study that gives a solution that provides multiple points of protections against theft .This project deals with prevention of ATM theft from robberies overcome the drawback found in existing technology in our society. ATM video surveillance cameras and ATM monitoring options, security specialists are ready to help the people get more out of the ATM security and ATM loss prevention systems. Most of the time it happens that theft enter in ATM, collect the money, start running police cannot capture theft so, to avoid such condition this project gives real time data of sensor, images of theft and mechanism of door and shutter lock. Here Raspberry pi2 is a series of small computer used, to interface the camera, vibration sensor, GSM, DC motor, Buzzer. There must be the installation of the raspbian operating system. The aim of using raspberry pi 2 is its ease of portability, ease of connections, and ease of handling. The setup is proposed for ATM security, comprising of the modules namely, authentication of shutter lock, web enabled control, sensors and camera control.

Keywords: Raspberrypi2, Camera, Vibration Sensor,D Cmotar, GSM, Buzzer.

I. INTRODUCTION

Now a day's autonomous systems are gaining rapid popularity. As the social computerization and automation has been increased and the ATM and credit card has been installed and spread out to simplify the activity for financial activity, the banking activity has been simplified, however the crime related with financial organization has been increased in proportion to the ratio of spread out of automation and devices. Among the crime for financial organization, the cases of theft and robber have very high proportion of over 90% and the crime for the ATM has been increased because the external ATM has been increased and it is always exposed to the crime. Therefore, this study is going to suggest the method of rapid reaction and minimization of loss by detecting the ATM machine at real-time when it has been stolen can be found.

Whenever robbery occurs, Vibration sensor is used here which senses vibration produced from ATM machine. This system uses Raspberry pi2 to process real time data collected using the vibration sensor. Once the vibration is sensed the beep sound will occur from the buzzer. DC Motor is used for closing the door and shutter of ATM. Camera is always in processing and sending video continuous to the PC and it will be saved in computer. GSM is used to give the message to the nearby police station and corresponding bank. Here, Raspberry Pi2 is used to implement the idea and results are obtained. Raspberry Pi2 is used for run the DC motor and for automatic door lock as well as shutter lock.

A. Need of Project

As increase in external ATM, the robberies are occurring.

Table1.1 This Project Overcomes the Drawbacks of Present System.

Serial no.	Robbery year	Theft	Robberies
1.	2007	112,5304	2,384
2.	2010	269,4104	4,139
3.	2011	270,1094	4,509

II. PROJECT IMPLEMENTATION
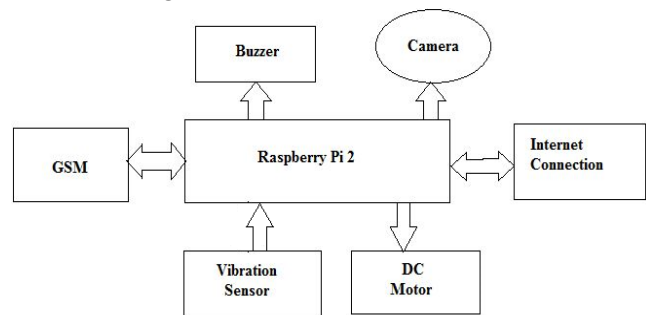
1. Block Diagram

Fig.1. Block Diagram

2. Description:

Here raspberry pi2 model is interfaced with components are GSM, camera, Dc motor, vibration sensor, Buzzer. The Tx and Rx pins of GSM are connected Rx and Tx of raspberry pi2 respectively. The pin no 1 & 2 of driver IC of Dc motor are connected to pin no. 22 & 24 of raspberry pi2 which are the GPIO pins. And sensor connected directly connected to the raspberry pi. Buzzer is directly interfaced with raspberry pi2.(VCC & GND).Camera is directly interfaced with raspberry pi2 by using USB port.

III.   DESCRIPTION OF HARDWARE

1. Raspberry Pi2
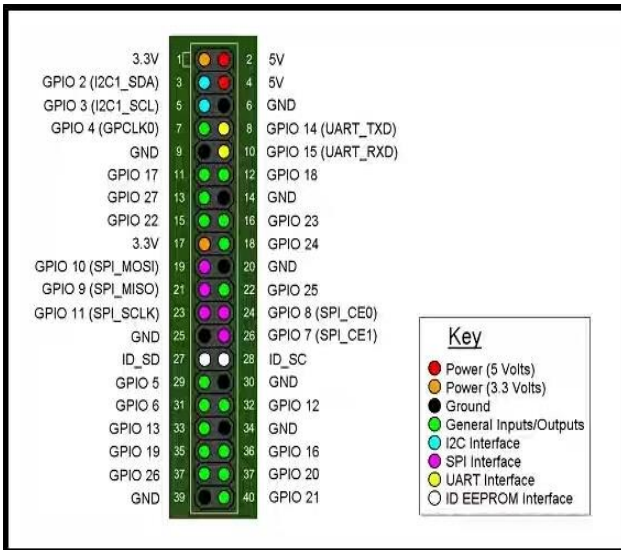

Fig.2.A Raspberry Pi2

Fig.3.Pin Configuration of Raspberry Pi2

2. Features of Raspberry pi2:-

A raspberry pi2 is having 900MHz quad-core ARM Cortex-A7 CPU, 1GB RAM Like the (Pi 1) Model B+. It also has: 4 USB ports 40 GPIO pins, Full HDMI port, Ethernet port, combined 3.5mm audio jack and composite video also Camera interface (CSI) and Display interface (DSI).

3. Vibration Sensor

In engineering, the applications of vibration sensor are widely used, so it caused by a high degree of importance about its research and development in the world. At present, with the development of science and technology, the shortcomings of vibration sensors continue to be overcome; measurement accuracy and increasing the sensitivity range of applications are increasingly being used.

Fig.4.Vibration Sensor

4. DC Motor

Almost every mechanical movement that we see around us is accomplished by an electric motor. Electric machines are a means of converting energy. Motors take electrical energy and produce mechanical energy. Electric motors are broadly classified into two different categories: DC (Direct Current) and AC (Alternating Current).

Fig.5. DC Motor.

5. Web Camera

Here web camera is used to continuesouly capture image after every 30 second.

Fig. 6 Web Camera

6. GSM (Global System for the Mobile Communication)

Most GSM networks operate in the 900 MHz or1800 MHz bands.GSM(Global System for Mobile Communication) is the most popular standard for mobile telephony systems in the world.

The GSM Association, its promoting industry trade organization of mobile phone carriers and manufacturers, estimates that 80% of the global mobile market uses the standard. GSM is used by over 1.5 billion people across more than 212 countries and territories. This ubiquity means that subscribers can use their phones throughout the world, enabled by international roaming arrangements between mobile network operators GSM differs from its predecessor technologies in that both signaling and speech channels are digital, and thus GSM is considered a second generation (2G) mobile phone system. This also facilitates the wide-spread implementation of data communication applications into the system.

Fig.7. GSM

7. *Buzzer*

Due to vibration buzzer get 'beep' sounded.

Fig. 8. Buzzer

IV.   FUTURE SCOPE

» This is the embedded plus DIP based so we can make our own algorithm in micro controller for more security concern.
» We can use these high level security transfer system for banking, military and online shopping.
»We can use the powerful antennas for longer   m communication.

V.   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 paper demonstrates how an automation of "ATM THEFT" prevention from robbery (or) thief can be implemented using GSM Technology, vibrating sensor, DC motor, Buzzer, and Camera. By implementing this project we can catch thief and robberies in ATM itself and also we can save our precious time.

ACKNOWLEDGMENT

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