SECURITY SYSTEM USING RASBERRY PI MODEL B+

S.Vaseela
(*Department of EEE,Assistant Professor,SNS College of Engineering , Coimbatore, India,vaseela.161@gmail.com*)

Abstract—*This project is designed for an advance security system that can be used in Industries and household application. In this project Passive Infrared (PIR) motion sensor is employed to interface with mobile phone (GSM) or laptop which controlled by the "Raspberry PI Model B+". The existing systems are RF Based Security. Then last few years security system construct with 8051 microcontroller or arduino which contains a piece of code for a specific action. The action will be taken by the GSM modem i.e. to alert an owner about intruder or danger to house. That device should be installed on the door, as the intruder opens the door the magnet which is situated in the door go away from Relay so LED glows with RED light and the appropriate action will be taken by GSM modem. Constantly monitoring and integrated security system is installed in industries. That system is not compact in size and also it leads to more power consumption. But in our system microprocessor is used.*

Keywords—GSM (Global System for Mobile Communications), Raspberry Pi, video steaming and call, security.

1. INTRODUCTION

From last few years industrial security is an essential Requirement of industrial holds to keep industrial safe from Intruders to get robs. So the researchers and companies try to implement algorithms and make some graduates that keep industrial safe from intruders. This leads to advance Technology that makes industrial intelligent or modern this Called as industrial automation system also. With this Technology industrial owner can control other appliances as Well like lighting system, alarm, automatic gate and many more. Now a day's wireless technology is used to control home appliances instead of wired topological Connection the same way used on industrial side.

Raspberry pi is a credit- card sized computer .It functions almost as a computer. There are various surveillance systems such as camera, CCTV etc., In these types of surveillance systems, the person who is stationary and is located in that particular area can only view what is happening in that place .Whereas here even if the user is moving from one place to another, he/she can keep track of what is happening in that particular place. Also another advantage is that it offers privacy on both sides since it is being viewed by only one person. GSM (Global System for Mobile Communication) technology makes used to communicate Input signal from appliances to output message on device. That means after detection of any

-intrusion GSM Modem sends the video call and message to industrial owner's phone. The Signals or data which is comes from sensors or other Equipment digitize it by GSM module and send it to Receiver.

Industrial automation or industrial security system offers many Benefits. It is very easy to install and having a very less cost. Basically it installed over the PIR sensors required area any object cross the area. The PIR Sensor given to the signal raspberry pi and raspberry pi operated on web cam .

Then one by one security system is ON. First relay detected from raspberry pi, signals will generate via relay.So the connected lights are ON. Next given to the signal motor drive circuit therefore gate is closed via, siren is operated by transistor drive and Action takes place according to piece of code written in the chip and GSM module sends the video call and message to owner's phone. The owner's watch it video unknown person is there take action else owner's OFF all setup.

There has been much research done on various types of Industrial Security systems like Sensor based Industrial security System, Figure print, Palm print and keypad activation for authentication and so much. All type of Security system uses only a technique of GSM module. In this paper the work mainly focuses on the security of industrial when the user is out from the place.

GSM based technology proposed to keep updated owner about industrial security. In this security system is SMS based and uses GSM technology to send SMS and video call to the owner. Normally the aim of this type of system is to keep secure industrial from intruders. In this work will be using components like PIR Sensor, Relay drives, transistor drives, motor drive, raspberry pawed cam, GSM chip, WI-FI interface Device in which GSM technology used. Basically this device used to protect an industrial from unwanted things like theft or robbery.

The figure 1 is symmetrically explained connection of this project. The centre of the block is raspberry pi. All the other components are connected with raspberry bi. Then WIFI device and GSM Module is connected with bi directional. Because the data is send and received by raspberry pi to WIFI and GSM Module. PIR sensor output is raspberry pi's input. The lights are directly connected with PIR. Then lights are controlled PIR sensor output and other alert setup is controlled by raspberry.

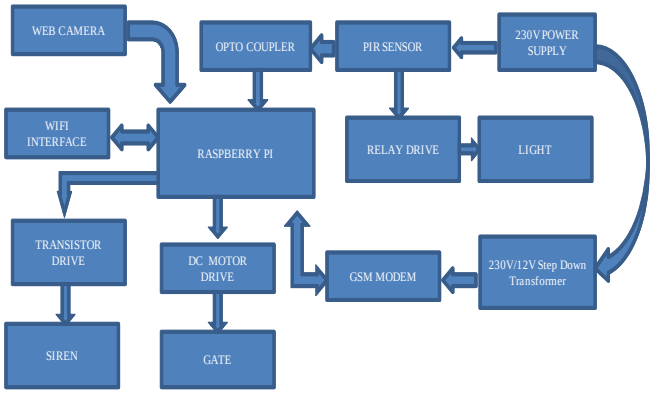

Figure 1 system overview

B. GSM Technology

GSM Modem:

A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities.[11]

What is GSM?

GSM stands for Global System for Mobile Communication. It is a digital cellular technology used for transmitting mobile voice and data services.GSM is the most widely accepted standard in telecommunications and it is implemented globally.GSM is a circuit-switched system that divides each 200 kHz channel into eight 25 kHz time-slots. GSM operates on the mobile communication bands 900 MHz and 1800 MHz in most parts of the world. In the US, GSM operates in the bands 850 MHz and 1900 MHz.GSM makes use of narrowband Time Division Multiple Access (TDMA)

GSM provides basic to advanced voice and data services including roaming service. Roaming is the ability to use your GSM phone number in another GSM network.GSM digitizes and compresses data, then sends it down through a channel with two other streams of user data, each in its own timeslot.

Advantages of GSM

Improved spectrum efficiency ,International roaming ,Low-cost mobile sets and base stations (BSs) High-quality speech , Compatibility with Integrated Services Digital Network (ISDN) and other telephone company services ,Support for new services

Features of GSM

Short Message Service which allows you to send and receive 126 character text messages. Ability to use the same phone for the number of network- Allows the data transmission and reception across GSM networks at speeds up to 9,600 bps currently.. Place a call on Hold while you access another call. . Emergency Calls - In the majority of countries,

2. RESEARCH METHODOLOGY

A. proposed system:

- In this advanced security system raspberry pi model B+ processor is used.
- Multiple program is used in this system.
- It can be interface with modern technology.
- It is duplex security system. So authorized person is easily alert and save Owen things.

B. Flow chart:

- IDLE 3—Clicking this entry loads IDLE configured to use the newer Python 3 programming language. Both are largely compatible with each other, but some programs may require features of Python 3.
- Scratch—this shortcut opens the Scratch educational language, and is the same as the Scratch entry found in the Education category. Either can be used to start the program.

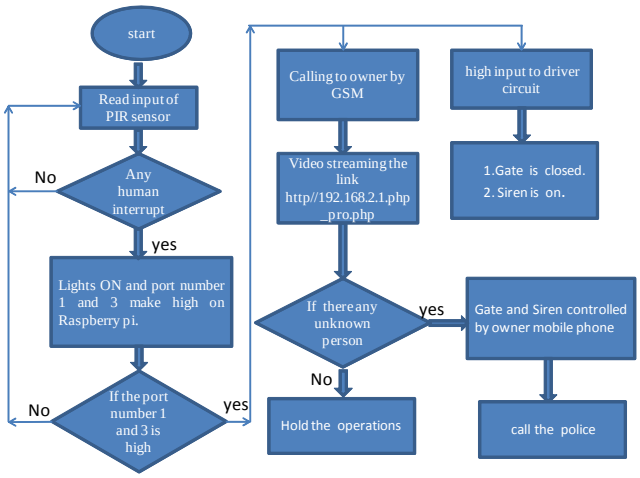

Figure 2 Flow Chart

C. Software Design:

- Squeak—as with Scratch, this is a duplicate of the shortcut found in the Education category. will rarely want to click this directly, and should instead use the Scratch shortcut.

3. RESULTS AND DISCUSSION

The normal condition power is off the project. When start the project first insert the SIM card on GSM Module and supply is on GSM Module. Then check the GSM Module on working or not, working means then The SIM card is insert first.. Next the supply is on raspberry pi. The web camera and WIFI device are connected at USP port on raspberry pi. Then check the WIFI device is working or

not. The WIFI is on the laptop and mobile phone and scan the device and next connected to the WIFI on raspberry pi. Next open the web browser on both device (laptop and mobile phone). Then browse the link http//192.168.2.1/php_pro.php and see the controlled display, video streaming all so. The any people crash the 15m and 180 degree surrounding distance of PIR sensor automatically lights are on and siren also turned on. The GSM Module is called the owner. The working project pictures are detailed explained at below.

Before the PIR Detection

The figure 3 is explained about the system before theft happen the PIR sensor not detect anything. The properties are in secured conditions.

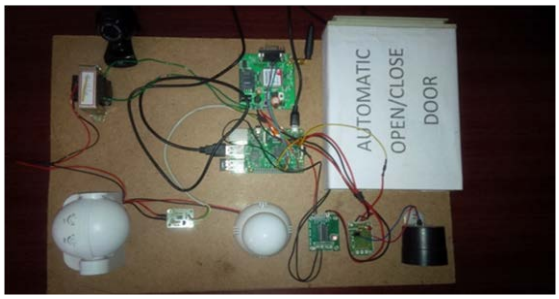

Figure 3 Before the PIR Detection

After the PIR Detection

The figure 4 explained about the condition when theft takes place, the system is in secure condition and the light will turn on automatically and the CD drive is open which represent the gate control can close and also the siren is alerted.

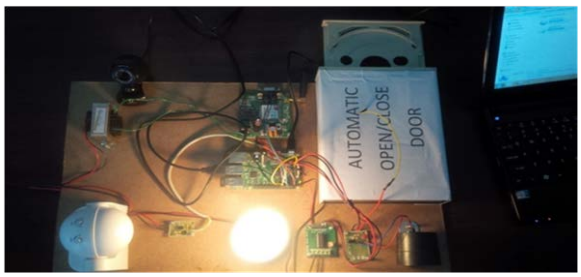

Figure 4 after the PIR Detection

The figure 5 shows that when theft happens the owner gets the call.

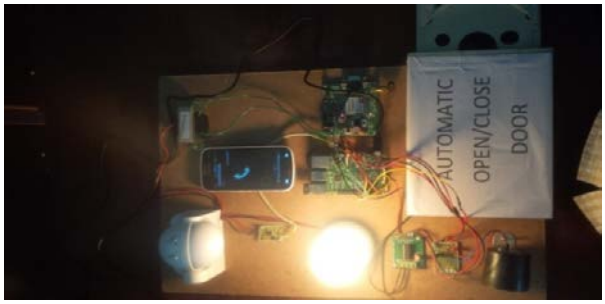

Figure 5 Calling to the Phone

The figure 6 is taken when the WIFI interfacing with devices (laptop or mobile phone) to raspberry pi and owner get the video and he can control the system. This can be viewed by this picture.

Figure 6 Video Steaming to Laptop

4. CONCLUSION:

In this project, the process of avoiding theft in industries is fruitfully avoided with the help of PIR sensor, Siren, Light and closing of gate is controlled by Raspberry PI. It will give the immediate intimation to owner through GSM module. The PIR sense the human and give signal to Raspberry PI it control the light, siren and gate to turn-on. The PIR sensor directly connected to the light then Power also save this project. Video streaming also finished in this project, so owner easily understand the thief face.

REFERENCES

[1] Sadeque Reza Khan, Ahmed Al Mansur, Alvir Kabir, Shahid Jaman, Nahian Chowdhury, “Design and Implementation of Low Cost Home Security System using GSM Network”, International Journal of Scientific & Engineering Research Volume 3, Issue 3, March -2012.

[2] Riyadh, Saudi Arabia,“Intelligent Home Monitoring Using RSSI in Wireless Sensor Networks”, International Journal of Computer Networks & Communications (IJCNC) Vol.4, No.6, November 2012.

[3] Jer-Vui Lee, Yea-Dat Chuah and Chin-Tin Chai, “A Multilevel Home Security System (MHSS)”, International Journal of Smart Home Vol. 7, No. 2, March, 2013.

[4] Abhishek s.Parab, Amol Joglekar, “Implementation of Home Security System using GSM module and Microcontroller”, International Journal of Computer Science and Information Technologies, Vol. 6 (3), 2015.

[5] N.Chintaiah , K.Rajaseher and V.Dhanraj , “Automated advanced industrial and Home security using GSM and FPGA”, Department of Electronics and Communications Engineering, B V C Engineering College, Odalarevu, Amalapuram, India.

[6] GSM based Home Security System”, Microtronics Technologies.

[7] Chun-Pai Jimmy Hsieh & Yang Cao, “Home Security System”, a Cornell University ECE 476 Final Project.