

IOT BASED RASPBERRY PI HOME SECURITY SYSTEM WITH EMAIL AND MESSAGE ALERT

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Abstract—In the world of Internet of Things (IOT) to revolutionize our life, it's a great idea to develop a system which can be controlled and monitored from anywhere with the modern technologies. The existing security systems which includes Close Circuit Television (CCTV), Finger print detector founds to be less reliable, expensive with more power consumption. The drawbacks of getting SIM card Corrupted, network issue using GSM Module with raspberry pi can be overcome by proposed system. The proposed IOT based Raspberry Pi Home security system is used to prevent theft in highly secure areas like Home, Automated Teller Machine and authorized investment centers with less power consumption, and flexible security device for Intruder detection and door security. This proposed system manage the security concerned issues in a cost effective by using Passive Infrared sensor (PIR) and Magnetic sensor. This sensors recognizes the face and capturing the process using Pi camera and sending text messages, emails alert within a fraction of seconds. The proposed system is validate with python 3 coding programming.

Keywords- Raspberry pi, PIR sensor, pi camera, magnetic sensor, intruder detection, home security system, etc.

Introduction

In the era of technological advancement, crime has become ultra modern key aspect due to which many incidents happened in day to day life like robbery, stealing unwanted things like wallets, credit cards, cell phones and wealth. So in order to rescue from theft there is need to implement secured [1].

The system considered to be best only if it offers protection and monitoring that guard against a number of threats, protecting home against the element as well as break-in and home invasions. Whenever the user is away from his home for some reason, it happens sometimes that he is left unconnected with people who visit his place [4]. These visitors may be known or unknown to user. For this the proposed system consists of different sensors such as PIR and magnetic door lock sensors. Working of this Project is very simple. A PIR sensor is used to detect the presence of any person and Pi Camera is used to capture the images when the presence it detected. Whenever anyone or intruder comes in range of PIR sensor, PIR Sensor triggers the Pi Camera through Raspberry Pi [1].

I. SYSTEM DESCRIPTION

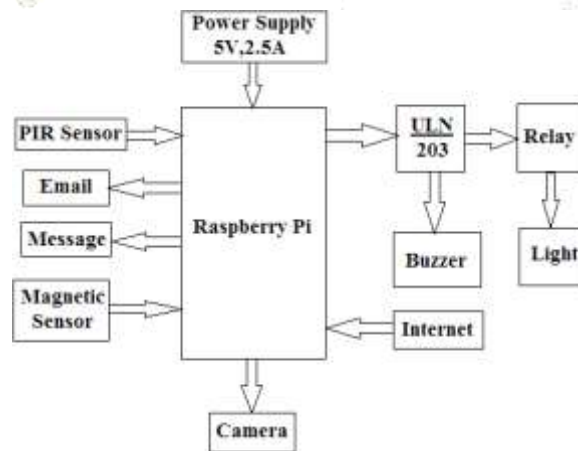


Figure 1. Block diagram of propose system



Figure 2. Actual View of Raspberry pi

The block diagram of proposed system is shown in figure 1. which defines the working of IOT based Raspberry Pi home security system. The propose system was implemented on a raspberry pi module in Linux environment, which supports SMTP (simple mail transfer protocol) is shown in Figure 2. In propose system raspberry pi detects the motion and capture by giving notification to mobile with email and message. When input to Raspberry Pi is provided using power supply unit. The Pi Camera interfaced with Raspberry Pi detects visitor's motion at Door and capture images. Captured images with time and date are saved on SD card and email. Raspberry Pi configured for enabled camera. When PIR sensor detects any presence of person, [3] the light gets on and then at the door, magnetic sensor helps for the door access, simultaneously it will produce voice alert through buzzer. Further Pi camera captures the intruder image and Raspberry pi sends commands to Pi camera to click the picture and save it. After it, Raspberry Pi creates a mail and sends it to the defined mail address with recently clicked images. The mail contains a message and picture of intruder as attachment [6].

The propose system comprises of magnetic sensor and PIR sensors which is shown in figure 3 & 4. In the propose system magnetic sensor senses the operating condition of the door. This magnetic sensor is preferred as it senses even for a short range of distance and due to its orientation which can damped door from front and side view. PIR sensors allows to sense and detect the motion that is whether human being is in prescribe range or not. After sensing the pi camera captures the clear image of intruder as shown in figure 5.



Figure 3. Actual View of Magnetic Sensor



Figure 4. Actual View of PIR Motion Sensor



Figure 5. Actual View of Pi-Camera

The flowchart describing the functionality of proposed methodology is shown in figure55. If the value of the sensors exceeds the threshold value then the message alert will be send by the Raspberry pi through internet. When the value of PIR Sensor exceeds threshold value the light is ON, but if value of magnetic sensor reaches to threshold value the signal is given to camera there by enabling the internet by sending email and message alert to intruder.

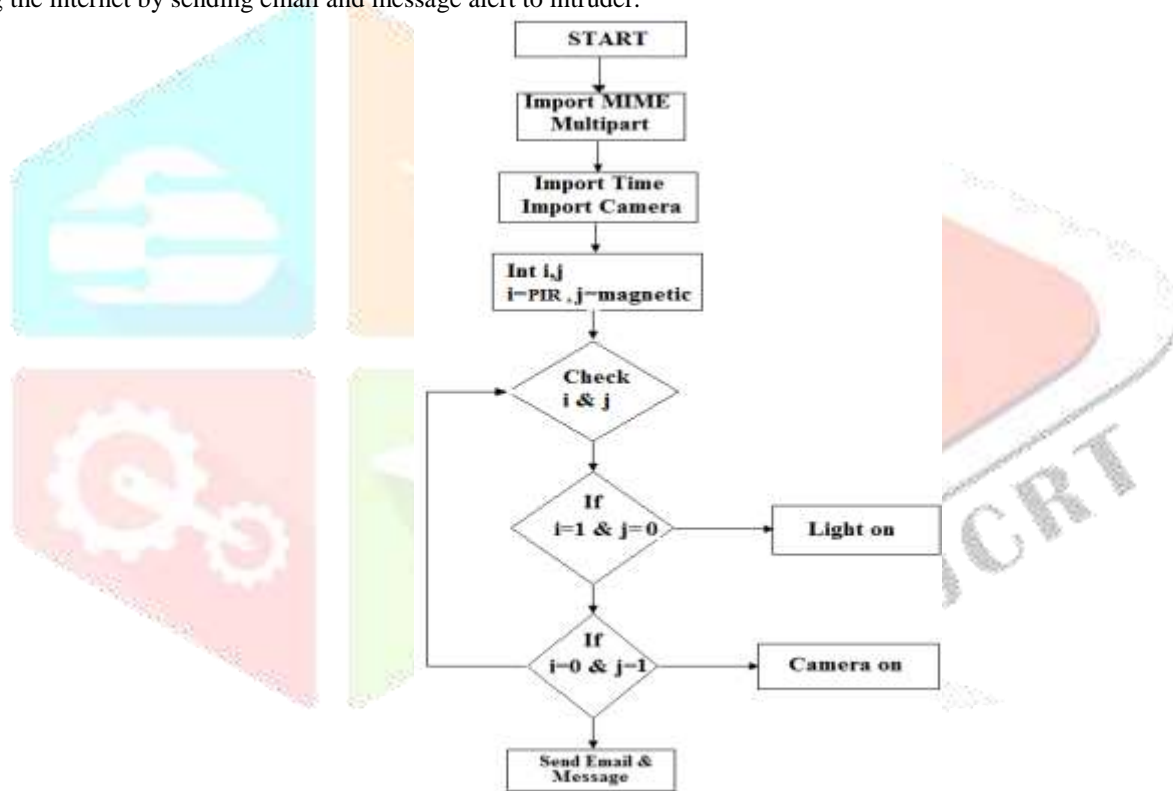


Figure 6. Flow Chart

Result And Conclusion

This paper presents the design and the implementation of an home security system with email alert and message alert by the using of raspberry pi and pi camera with single chip processor. Which can get the information about the intruder by capturing the clear image of that intruder and sending the image file via email and message..



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