

Sensors Enabled for Anti-Thefting System

T. Akhil, B. Aruna, S. Praveen , K. Bharathi

Abstract:As the population in the world is rapidly increasing, the theft count is also increasing. The number of theft cases is mostly towards Home/Offices, Warehouses, Banks etc. Home security is the major problem to get resolved. With the vast improvement in technology, this problem can be minimized with the help of the Internet of Things. Integrating more sensor is avoided and maintained, minimal architecture to increase the performance of the system. The proposed devices consist of PIR sensor as an input. When the input activates due to the intruder arrival immediately the camera captures the image with the microprocessor command and activates the panel to send the messages through the SMS gateway.

Index Terms: Internet of Things, PIR, Microprocessor, Raspberry pi, SMS Gateway

I. INTRODUCTION

The low power utilization, efficient and minimal effort inserted to control framework for Smart home security [1] dependent on movement identification is very essential for a wide scope of business and security application. 'N' numerous nations are step by step embracing keen into the safety of home security control framework. Today a large portion of the home and offices are collaborating to secure with the anti-theft devices. These devices are a client interfaced, yet numerous clients end up baffled with the troubleshoot with sensor accuracy in the devices. We are building up a minimal structure that enables clients to cooperate with device with message support. Advanced mobile phones are great applicants for giving interfaces since they are normal, have correspondence capacities to enable association with devices, and areas of now being utilized for a wide scope of diverse applications. Our proposed incorporates PIR sensor that activates with the suspicious human moment, a two-way correspondence convention, and programmed interface age programming that enables the microprocessor to alert the system [2]. The most essential piece of any home security framework is precisely recognizing guest who enter and leave through the entryway and that is verified by the camera fixed with the

processor get the image footage[3].The framework distinguishes the guest's quality, catch, what's more, exchanges the picture through server consequently to the home proprietor to perceive the guests. This device has an assortment of highlights, for example, vitality proficient, knowledge, minimal effort, convenience and superior.

II. LITERATURE SURVEY

In the field of security, the work is carried out with RFID, Wireless sensor network, Zigbee etc. The literature survey of the papers are proposed in the below given description. Huang et al. [4] has proposed that the home security alarm system incorporated with the wireless sensor network and GSM. The sensors are used to collect the information and pass to the centric device and activates the multi devices to perform respected tasks. Here the price is increasing in the system. Xiang Yang et al. [5] proposed with security system with the internet support, as to monitor in the real time. This system is used with AT91SAM260 host micro controller and increases the scope of advantages towards low cost, easy maintenance etc. Rajadhurai et al. [6] proposed an passwords-based system, as per the OTP entered. The motion is checked and detect. If there is an intruder immediately the messages are updated in to the emergency android device users. The limitations are range as the android can mostly range only range 10m. Jun-wook Back [7] proposed the smart home security with the ZigBee technology. The main limitations are the range of the alert sent and also range is 50m.

III. METHODOLOGY

As the entire system is built on the Internet of things architecture, the methodology of the Internet of Things based sensors enabled anti-theft systems is designed in the Fig.1. The following fig 1. Shows the detailed description of the methodology of the Internet based on sensors enabled with anti-theft systems.

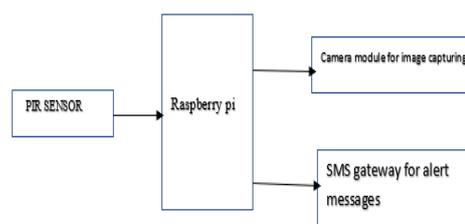


Fig.1. Methodology of the Proposed design

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IV. PROPOSED DESIGN

The proposed design is maintaining the minimal architecture with the Internet of Things. As the IoT is about connecting devices. The proposed device for Home security is to use PIR Sensor for Detecting Human activity. If Human activity is detected, Raspberry pi initiates the camera to capture the image and this image is stored in the server and immediately alerts the emergency contacts with messages using SMS Gateway. This system is more reliable and reduces cost.

V. SYSTEM REQUIREMENTS

The system requires both hardware and software for the best performance. The hardware and software co-design are mentioned below.

Hardware Requirements: -

(a) Infrared sensor

A PIR-based movement locator is utilized to detect development of individuals, creatures, or different articles. They are regularly utilized in criminal cautions and consequently enacted lighting frame works is shown in the Fig.2.



Fig.2. IR Sensor

With this PIR Sensor, when the Human presence is detected immediately the Raspberry pi gets activating the whole system.

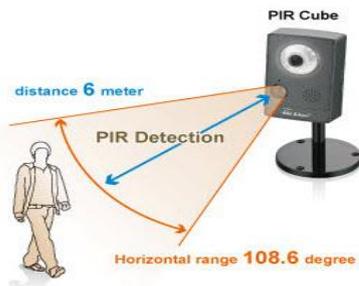


Fig.2(a) Horizontal range detection of PIR Sensor

(b) Raspberry pi

The Raspberry Pi is a small single board system computer developed in the UK by the foundations of Raspberry Pi. This system pi 3 Model B has been released in the month of Feb 2016. It has on-Board Bluetooth, Wi-Fi and USB requirements. It has the ARM central processing unit and the On-chip Graphic processing unit. The system memory ranges from 256MB to 1GB. The system has external SD card to connect for the device. The Microprocessor consists of the 40 GPIO Pins and 8P8C Ethernet port. This system primarily acts as a central unit which gets activating the webcam for taking the image and also send the SMS from the gateway.



Fig.3. Raspberry pi 3 Model b

(c) Webcam

The webcam used additionally for raspberry pi is 16 MP resolute interpolation cam. It is ease to plug and play and has the high quality of CMOS Sensor supported with the external micro sound systemzzzzz.

Software Requirements: -

(a) Python IDLE 2.7:-

The system source code is developed in Raspberry pi by Python IDLE 2.7. As the other languages such as Java, C++ can be used but the python has its own following advantages. Python programming is readable easily and environment friendly language to understand and learn quickly. The system has its own dynamic simple typing.

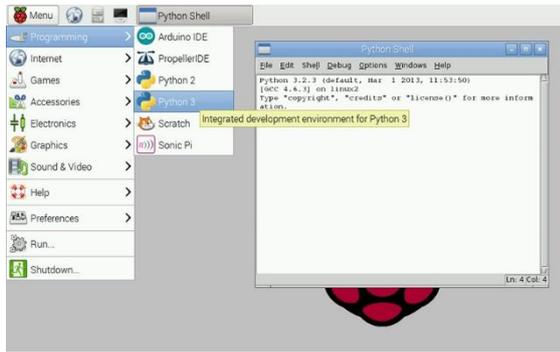


Fig.4. Python IDE on RPi Home

Python is a high-level, interpreted and general-purpose dynamic programming language that focuses on code readability. The syntax in Python helps the programmers to do coding in fewer steps as compared to Java or C++.

For the software development we preferred Python language because of its versatile features and fewer programming codes.

(b)SMS Gate-Way:-

An SMS entry permits a laptop to send or receive Short Message Service (SMS) transmissions to or from a telecommunications network. Most messages are eventually routed into the mobile networks. several SMS gateways support media conversion from email and different formats. Here we are using text local for sending the messages.

(c)VNC viewer:-

The VNC server is that the program on the machine that shares some screen and permits the shopper to share management of it. The VNC shopper (or viewer) is that the program that represents the screen knowledge originating from the server, receives updates from it, and presumptively controls it by informing the server of collected native input. The VNC protocol (RFB protocol) is extremely straightforward, supported transmittal one graphic primitive from server to shopper ("Put a parallelogram of picture element knowledge at the required X,Y position") and event messages from shopper to server.

(d)Advanced IP scanner:-

A port scanner is associate application designed to probe a server or host for open ports. Such associate application could also be employed by directors to verify security policies of their networks and by attackers to spot network services running on a bunch and exploit vulnerabilities.

A port scan or portscan could be a method that sends consumer requests to a variety of server port addresses on a bunch, with the goal of finding a full of life port; this is often not a villainous method in and of itself. the bulk of uses of a port scan aren't attacks, however rather straightforward probes to work out services out there on a distant machine.

VI. RESULTS

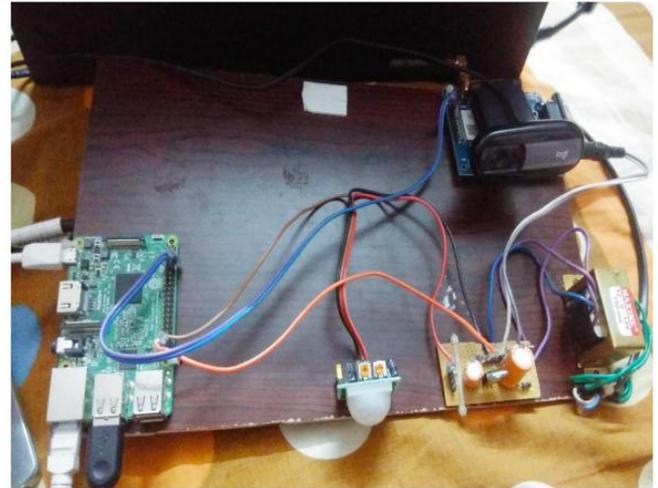


Fig.5. Prototype

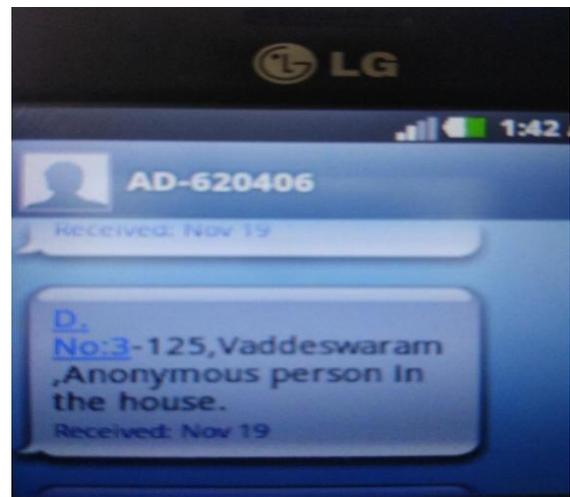


Fig.6. Message delivered to the house owner through mobile

The proposed system shown in figure:5 consists of a PIR motion sensor ,Raspberry pi, webcam and a isolation transformer. Here PIR and web cam are connected to the Raspberry pi board and Raspberry pi is connected to the isolation transformer. If there is any movement in the room Pir will sense the motion and the web cam will turn on and starts detecting the faces. If any face was detected then the sms alerts will be send to the house owners through the sms gateway shown in fig 6

VII. CONCLUSION

The main aim of the proposed design is to improve the security system with minimizing cost and improve the ability of security. This avoids the human requirement at the places such as houses, malls, stores etc. This makes the devices smarter and even accurate than CC Cameras. Through this minimal smart device, we can get the intruder identification and alert the authorized persons with SMS gateway.

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