IMAGE CAPTURING SYSTEM FOR SMART HOME SECURITY

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ABSTRACT

Home security is becoming necessary now a days as the possibilities of intrusion are increasing day by day. Home security has changed a lot from the last century and will be changing in coming years. Security is an important aspect or feature in the smart home applications. Safety from theft, leaking of raw gas and fire are the most important requirements of home security system for people. A traditional communications security based systems provides enhanced security as whenever a signal from sensor occurs, a text message is sent to a desired number to take necessary actions. This Project is based on IOT application In this paper a Web camera is placed in house premises. The camera detects the motion of the intruder (stranger) and generates the signal to the Raspberry Pi, Whenever there is a motion in front of the main door, an electronic mail is sent to the Owner.

Keywords: Raspberry Pi, PIR Sensor, Webcam, GPS.

I. INTRODUCTION

Internet of things (IOT) is an advanced automation and analytics system which exploits networking, sensing, big data and artificial intelligence technology to deliver complete systems for a service or product. These systems allow greater accuracy, performance and control when applied to any system or industry. Internet of things have many applications across industries through their ability unique flexibility to be suitable in any environment. They enhance data collection, operations, automation and much more through smart devices and powerful enabling technology.

The most important features of Internet Of Things IOT include artificial intelligence, sensors, connectivity, active engagement, and small device use. IOT essentially makes virtually anything "smart", means it improves every aspect of life with the power of artificial intelligence algorithms ,data collection, , and networks. Internet of things (IOT) loses its distinction without sensors. They act as defining instruments which transform Internet Of Things from a standard passive network of devices into an active system capable of real-world integration. IOT exploits purpose-built small devices to deliver its precision, scalability, and versatility. The advantages of IOT span across every area of lifestyle and business. IOT makes areas of improvement clear. IOT provides real-world information leading to more effective management of resources.

The internet of things allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into the computer based systems and resulting improved efficiency, accuracy and economic benefit. IOT pushes us towards our imagined future of medicine which exploits a highly integrated network of sophisticated medical devices. Today, IOT can dramatically improve medical research, devices, care, and emergency care. The integration of all elements provides more attention to detail more accuracy , faster reactions to events, and constant improvement while reducing the typical overhead of medical research and organizations.

Now a day's Security has becoming an important issue everywhere .The new and emerging concept of smart homes offers a convenient, comfortable, and safe environment for occupants. Conventional security systems keep homeowners, and their property, safe from intruders by giving the signal in terms of alarm. However, a smart home security system offers many more benefits. This project mainly focuses on the security of a home when the user is away from the place

II. SYSTEM OVERVIEW

The purpose of hardware interface unit is to provide Security to the Individual Houses. A PIR sensor and a webcam is placed at the main door. The PIR detects the motion of the intruder (stranger) and generates the signal to the Raspberry Pi, then the Raspberry Pi will activate the web camera. Web camera will capture the image of the intruder and it will send the image to authorized persons mail id through internet which is connected to Raspberry pi.

The authorized person will see the image , if the person in the image is an intruder to him then he will send a message to raspberry pi by using MQTT. Once the message is received by the raspberry pi from the authorized person then it will blow Buzzer which is fixed near main door and in the meanwhile a call and the location of the house will be sent to local police station.
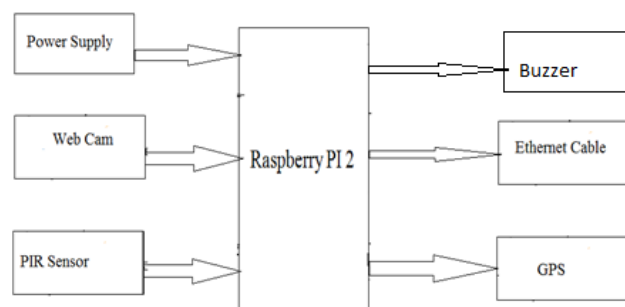

**Figure: 1 SYSTEM OVERALL BLOCK DIAGRAM**

1. A.RASPBERRY PI

The **Raspberry Pi** is a series of credit card–sized single-board computers developed in England, United Kingdom by the Raspberry Pi Foundation with the intent to promote the teaching of basic computer science in schools and developing countries. The original Raspberry Pi and Raspberry Pi 2 are manufactured in several board configurations through licensed manufacturing

agreementswith Newarkelement14 (PremierFarnell), RSComponents andEgoman.The hardware is the same across all manufacturers.

2.

Bottom view
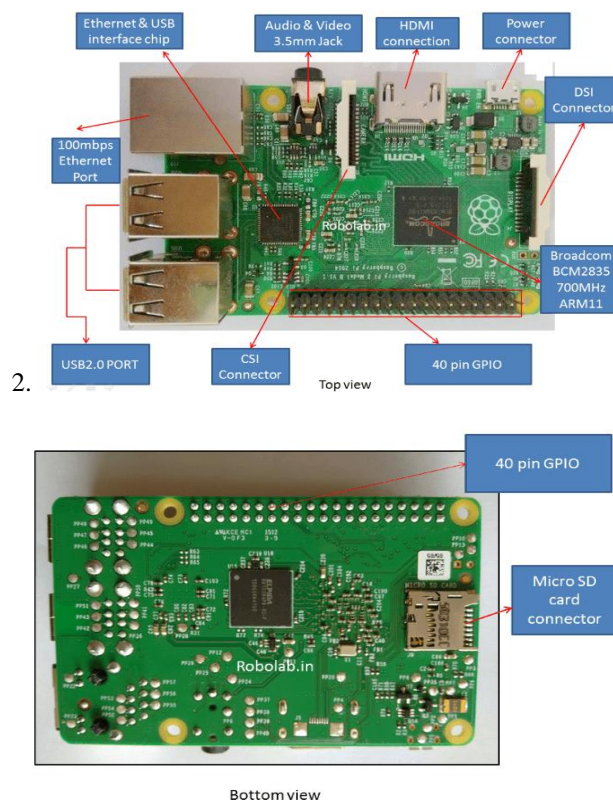
All Raspberry Pi's include the same Video Core IV graphics Processing Unit(GPU), and either a single-core ARMv6CPUcompatible CPUoranewerARMv7compatible quad-core one (in Pi 2); and 1 GB of RAM (in Pi 2), 512 MB (in Pi 1 models B and B+), or 256 MB (in models A and A+, and in the older model B). They have a Secure Digital(SDHC) slot (models A and B) or a Micro SDHC one (models A+, B+, and Pi 2) for boot media and persistent storage.

In November 2015, the Foundation launched the Raspberry Pi Zero. The Foundation provides Debian and Arch Linux ARM distributions for download, and promotes Python as the main programming language, with support for BBC BASIC (via the RISC OS image or the Brandy Basic clone for Linux), C,C++,JAVA, PERL,RUBY,SQUEAK Smalltalk and more also available.

The Raspberry Pi hardware has evolved through several versions that feature variations in memory capacity and peripheral-device support.
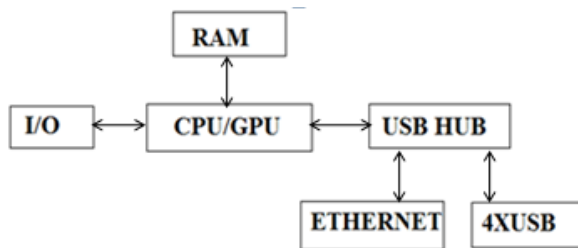
APPLICATIONS:

Pi in the sky: This board is a GPS receiver, radio transmitter designed for tracking high altitude balloon flights.

Live bots: Live bots allows users to control many robots based on Raspberry Pi over the internet.

Lap pi: The scheme features a laptop assembled from scratch which is based on the Raspberry pi board.

3. B. Web protocol:

They are different types of IOT (internet of things) protocols. In this web protocols we choose MQTT (Message Queue Telemetry Transport) protocol. For implementing MQTT protocol we use mosquito broker or Node.js. So in this project we used Node.js. Targets device data collection As its name states, its main purpose is telemetry, or remote monitoring. Its goal is to collect data from many devices and transport that data to the IT infrastructure. It targets large networks of small devices that need to be monitored or controlled from the cloud. Message queue Telemetry transport (MQTT) makes little attempt to enable device-to-device transfer, nor to "fan out" the data to many recipients. Since it has a clear, compelling single application, MQTT is simple, offering few control options. It also doesn't need to be particularly fast. In this context, "real time" is typically measured in seconds.

A hub-and-spoke architecture is natural for MQTT. All the devices connect to a data concentrator server, like IBM's new Message Sight appliance. You don't want to lose data, so the protocol works on top of TCP, which provides a simple, reliable stream. Since the IT infrastructure uses the data, the entire system is designed to easily transport data into enterprise technologies like Active MQ and enterprise service buses (ESBs).MQTT enables applications like monitoring a huge oil pipeline for leaks or vandalism. Those thousands of sensors must be concentrated into a single location for analysis. When the system finds a problem, it can take action to correct that problem. Other applications for MQTT include lighting control, power usage monitoring and even intelligent gardening. They share a need for collecting data from many sources and making it available to the IT infrastructure.

PIR Sensor and webcam are interfaced with Raspberry pi
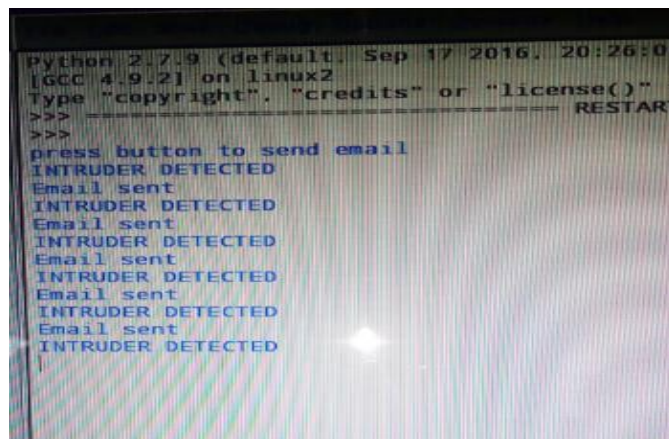
The above figures shows i.e, When an intruder is detected in front of door, image is captured and sent to the

authorized person by using
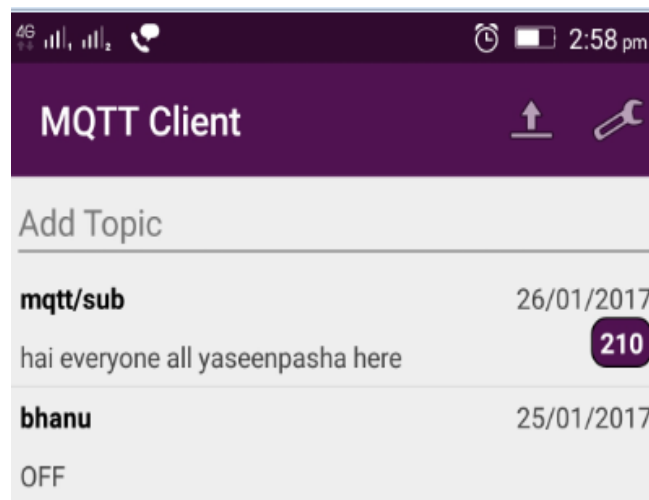
The above figure shows that i.e when the authorized person receives the image then he can send the signal to

raspbeery pi by using MQTT cloud interface software

V.CONCLUSION

Smart home security system using GPS is implemented, by this an individual can provide security to their house. Whenever receive the email the necessary action will be taken to avoid thefts in homes as well as shopping mall etc.

ACKNOWLEDGEMENT

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