

IOT based Theft Detection and Monitoring System

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Abstract— In this paper, we utilize raspberry pi and raspberry pi camera and a monitor to detect the motion of a human. When a motion of a person is recognized in camera, a email alert is sent to the owner. The owner can see the live streaming of the video to know who has entered the premises. This IOT based theft detection and monitoring system would be helpful to monitor the house or premises.

Keywords: Raspberry Pi, Raspberry Pi Camera, Monitor

I. INTRODUCTION

This paper describes the use of Raspberry Pi which is of small size with remote web. This paper is mainly concentrated on to detect stranger and to capture the image. The captured image can be transferred to administrator office based remote module. This system utilizes PC, raspberry pi and camera to detect the intruder [1]. The framework can be administrated by administrator from any workstation. The new innovation is more affordable and longer existence of remote battery controlled units [2]. The task plans to build up an observation inserted framework which catches and facilitating, continuous interloper pictures and emerges of cautioning alerts. This system has several advantages for different applications, for example, yet not restricted to, making sure about remote region, domain offices, distribution centers and encompassing wall [3]. The proposed arrangement offers productive independent, adaptability to overhaul and modest turn of events and establishment also as financially savvy observation arrangement [4].

II. LITERATURE REVIEW

Embedded system frameworks is quickly growing its range, topic identified with this field is accessible in plenty [5]. While dealing with this undertaking we have contemplated matter from different sources, for example, books, online articles, and journals [6]. The information picked up from this action has been of extraordinary assistance to us in understanding the fundamental ideas identified with our venture and has lighted further enthusiasm for this theme.

III. DESIGN OF THEFT DETECTION & MONITORING SYSTEM

The IOT Based Theft Detection and monitoring system using Raspberry PI is as shown in figure 1. This system detects movement and gives detected signal to raspberry pi to take identified camera image [7]. The captured image can be processed to check whether any intruder has entered the premises. This system is used to capture the images over internet of things and send a mail to the client on the web.

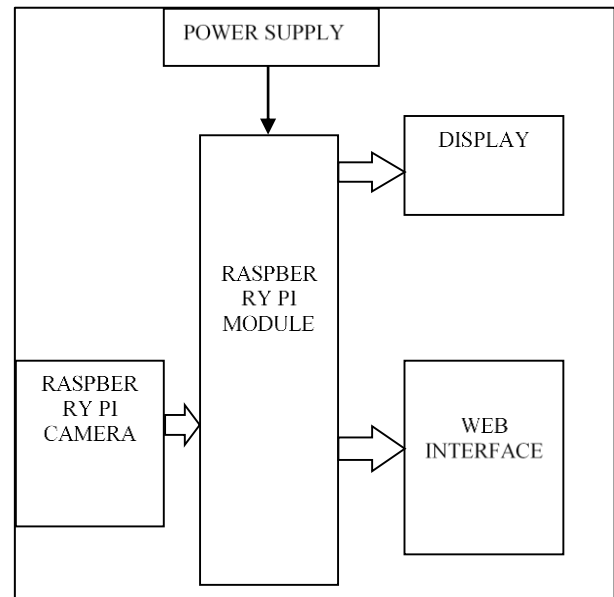


Fig. 1: Block diagram for IOT Based Theft Detection and monitoring system

A.

The hardware required for this system are Raspberry Pi, Raspberry Pi camera and a monitor. The Raspberry Pi is a small computer which has been built mainly to provide developing open source game. Raspberry pi is a tiny credit card measured PC fit for performing different functionalities, for example, in observation frameworks, military applications, and so on.

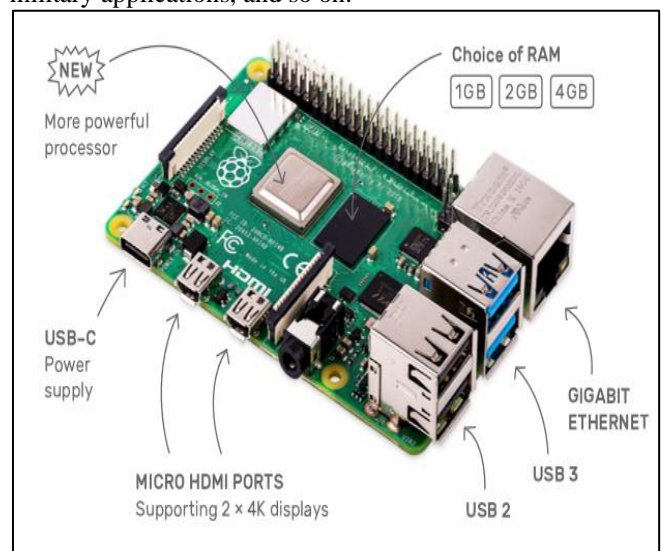


Fig. 2: Raspberry Pi 4

The Raspberry pi Camera is a small little PCB with a camera on Raspberry pi. The Printed Circuit Board is associated with a lace which could be extended. The PCB having a camera is extremely little (5MP camera)[8]. This pi camera is extremely useful in capturing the images.

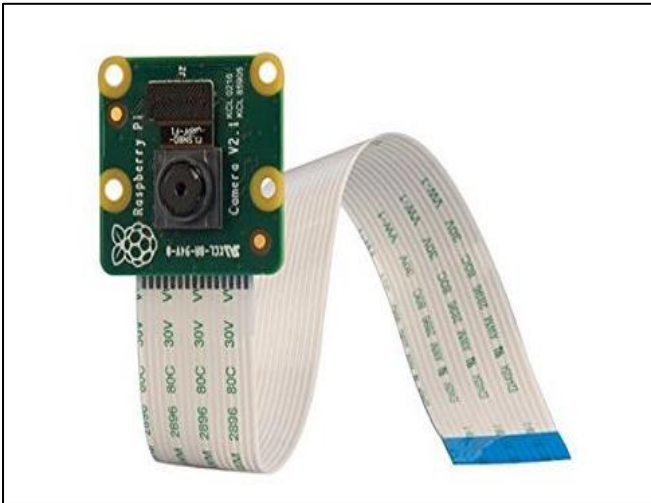


Fig. 3: Raspberry Pi Camera

B. Software Module

In this paper we have proposed an IOT based Theft detection and monitoring system. Here we are initializing the modules to observe the daytime. A camera to capture the image and processing of imaging is done through image processing techniques. A image captured has to be transmitted over internet to client via mail. The software tools required are NOOBS, Putty, OpenCV, RASPBIAN OS and a PYTHON. NOOBS software is dumped on SD card in the Raspberry pi. Initially SD card is formatted then OS is written. Putty is a terminal used to transfer the file through serial port. OpenCV is a computer vision which has many modules for the problems in computer vision. Raspbian OS is used to run Raspberry pi in real time. Python code is used to code raspberry pi. It is a very flexible language compared to embedded C[9]. Python is a programming language for raspberry pi using IDLE which provides flexibility of the programmers.

C. Flow diagram of IOT based Theft detection & Monitoring System

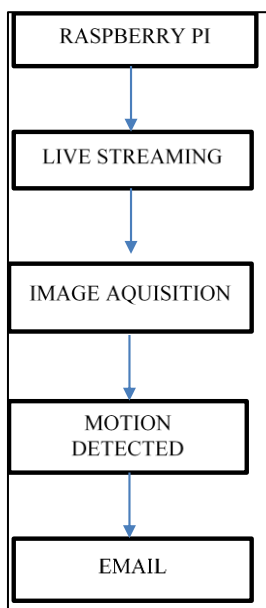


Fig. 4: Flow diagram

The system focusses on safety of the things at home or at offices and this system can be used to obtain for the pilfering.

The system is initialized and configured. The python code of this project incorporates codes for Video, to detect motion, for monitoring and to send a mail. These codes are incorporated to perceive that the first client is utilizing the framework or an unknown hacker is attempting to utilize.

The image is then sent and image processing traits of the individual utilizing the framework is altogether checked and contrasted and the models that is being set by the client through a remote systems administration channel. If the face/body and the qualities coordinate with the endorsed guidelines, at that point the alarming module gets latent and the hinder is headed to zero. In the event that the face and trait doesn't coordinate with the measures, at that point the hinder is headed to one and the control is given to the administrator notice framework. The image of the unknown person is caught & it is recorded. This picture is then sent as an email for the email-id given by the client. At that point the safety enactment is embraced [10]. The image of the unknown person is captured & an email is sent which will unmistakably recognize the picture of the gatecrasher.

D. Result

The email notification is sent by the motion detected by the raspberry pi camera. The program is written in python to send a email alert. A SMTP allows us to write a code to capture the image and detect the motion. The detected motion image can be used to monitor who can entered the premises. Then the administration can use the live video streaming and check who has entered the campus.

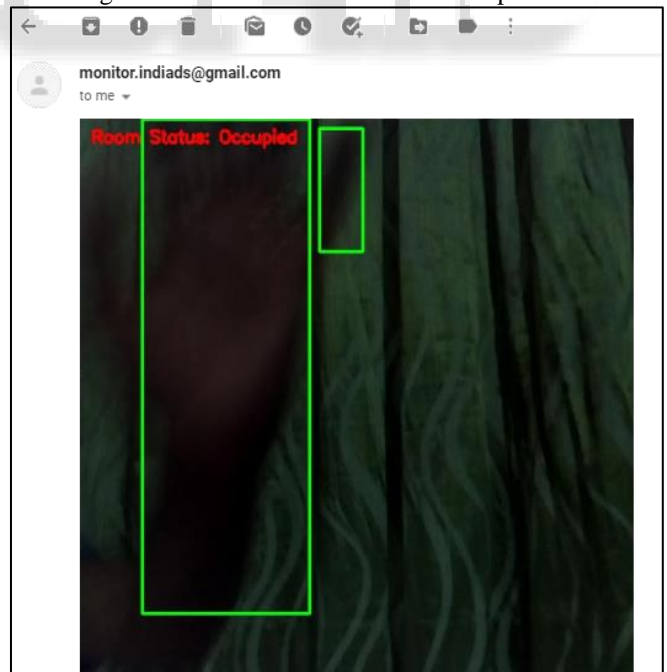


Fig. 5: captured image

E. Conclusion

In this paper we have implemented a theft detection and monitoring system equipped for recording/catching video/picture and transmitting to an administrator. This

system offers better quality and security. It is verified and encoded on the beneficiary side moreover. IOT approach offers a substitute way to plan a framework contrasted with regular CCTVs. The forthright expense of the frameworks is possibly lesser contrasted with customary frameworks.

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