Theft Detection System

SANJANA KUTE[1], RUTHVIK PIMPALKAR[2], VAIBHAV MORE[3], M.R. GORBAL[4]
[1, 2, 3, 4] *Department of Information Technology, Shivajirao S. Jondhale College of Engineering,Dombivali*

Abstract- ***The advent of Internet of Things is the network of physical objects or "things" embedded with electronics, software, sensors and network activity that enables objects to collect and exchange data. The IOT allows objects to be sensed and controlled remotely across existing network infrastructures, creating opportunities formore direct integration between physical world and computer-based systems resulting in improved efficiency, accuracy and economic benefit. IOT with Raspberry pi has been implemented for Home security through embedded system and an interface has given to all cell phones which belong to members of home. Theft detection is a trackingtechnology used to identify and authenticate tags that are applied. This project has IRsensor that senses the culprit and camera clicks the picture, so that an image along with an alert message is sent to server from which the owner get notified through SMS message. In this system, the doors are automatically locked and alerts the surrounding by blowing an alarm as soon as the motion of the intruder is detected. The camera records the video and uploads it on the cloud server. The camera in this system also works in dark environments.***

Indexed Terms- Raspberry Pi, IR sensor, Pi camera, Cloud, SMS message.

I. INTRODUCTION

Now-a-days, Security has become the most challenging task. Everyone wants safety but in present scenario, nothing is safe not even in their own houses. Home is a place where we keep our assets and our capital. But we can never be sure about the securityof that asset behind us and the possibilities of intrusion are increasing day by day. Wegenerally lock houses when going out of the house. But just locking the home is not enough, there must be a system which safety our home, belongings and income from theft is the necessary requirements for home security system and keep track of the activities and report to the owner accordingly and works according to the response ofthe owner.

II. PROBLEM DEFINITION

Security and safety has always become a basic necessity for urban population. To Monitor and to detect we use CCTV camera. It reserves too much space for continues recording and also require manpower to detect the unauthorized Activity. To overcome, we came across with Raspberry PI using IOT. Compare to Existing System Raspberry Pi is much cheaper with better resolution and low power consumption features.

III. LITERATURE SURVEY

Title	IOT Based Theft Detection using RaspberryPi
Authors	Anjum Umera, Babu B
Year of Publishing	2017
Summary	In this system, author as use a camera along with raspberry pi along with a circuit with LCD display, IR for night vision and USB drive for storage. As soon as camera motion is detected in camera, the system uses image processing to detect an exact area of motion occurrence and highlights it accordingly. The system now transmits the images of the occurrence over IOT to be viewed by the user online. Also, it stores the footage in a USB drive

	for further reference. Conclusion from this paper, it has demonstrated how to get a fully functional embedded product developed from scratch. This system is suitable for small personal area surveillance. i.e. personal office cabin, bank locker room, parking entrance.

Title	Theft Prevention System using Raspberry Pi& PIR Sensor
Authors	Neha Barve, Shivani Deshpande, Sadhana Godbole, Sakshi Galim
Year of Publishing	2017
Summary	In this system, author as used raspberry pi as a central unit and PIR for motion sensing, After motion sensing relays are triggered by RaspberryPi. Relays are responsible for turning lights ON/OFF. System provides a facility of notification to the user through GSM. After activation of system, PIR sensor is the only component which is active all the time. It senses radiations continuously and sends signal to Raspberry Pi. Signal is in binary format, i.e. 0 and 1 for motion detection it will send binary value 1; else it will keep on sending value 0 to Raspberry Pi.

	After receiving value 1 from PIR sensor, Raspberry Pi triggers the furtherfunctioning. Raspberry Pi is responsible for activating relay module. Relay module is used to turn high voltage devices ON or OFF. Raspberry Pi allowsuser to turn ON/OFF these devices from remote location through web page. At the same time, Raspberry Pi also activates buzzer to start ringing. When lights are turned ON by relay, Pi Cam captures image of intruder. Captured image is stored on SD card.

Title	IOT Based Theft Detection Using RaspberryPi
Authors	Dev Ganesh, Karthick, Jagadish
Year of Publishing	2018
Summary	In this framework, we utilize a camera alongside raspberry pi alongside a circuit with LCD show IR for night vision. and USB drive for storage. When camera movement is recognized in camera, the framework utilizes picture handling to distinguish a correct territory of movement event and features it in like manner. The system now send notifications to the user when motion is detected

	Also, it stores the footage in a USB drive for further reference.

Title	IOT Based Anti-Theft Detection and Alerting System Using Raspberry Pi
Authors	D. Pooja Sri N. Gayathri K. Heshma
Year of Publishing	2020
Summary	This system monitors the entire floor for movement. One single step anywhere on the floor is tracked and user is alarmed through mail over IOT. In this system, secure flooring tile connected with IOT, when the system is to be turned on, then whoever comes inside the houseit passes the information over IOT. Whenever the thief enters in the house, and steps on the floor immediately it is sensed by the sensor which passes on the signal to raspberry pi controller. The controller in turn processes it to be valid signal and then moves the camera tothe area where movement was detected.The research work that will be carried out in this thesis would be mainly focused to design and develop efficient and convenient motion surveillance i.e. an Anti-Theft device to solve security problems which will help to reduce/stop theft. This system is suitable for small personal area surveillance.

IV. CONCEPTUAL OVERVIEW

- RASPBERRY PI:

1) In this project raspberry pi 3B (model) is a ARM processor based board with 2 to 4 gb ram been used as heart of system. This proposed system is an intelligent system and it eliminates the need of continuous by human resource. Thus, any human extra workis ruled out.
2) This system continuously checks the status of place by sensors that Is anyone enteringin the shop or not. And sends the alert message to the owner with live images by rotating camera with different angles.
3) In this security system human bodies are detected by PIR sensor.
4) Capture the image upload on cloud and turn on buzzer get notify to user.
5) The main aim of this project is to make an automated security system for Home, Banks and jewelry shops.
6) Pi for high processing speed act as the brain of project Will control & perform coordination between hardware & cloud

- Wi-Fi Module (Signal):

Wi-Fi is a wireless technology that provides high speed connectivity. It is trademarkedas IEEE 802.11x. it is supported by many applications such as video games, home networks, mobile phone etc. The Wi-Fi is the most favorable choice for IOT now days which will increase the speed of connecting the network worldwide. In this system theRaspberry pi has a in-built Wi-Fi, hence accessing it from anywhere, controlling the raspberry pi

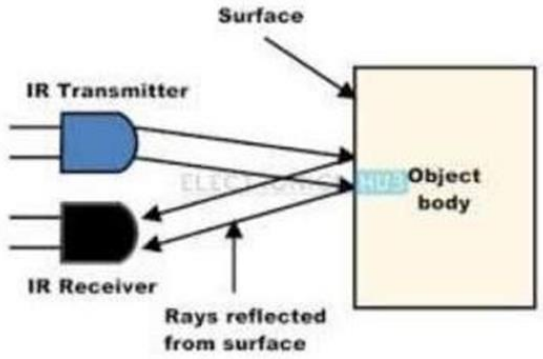
- USB Camera:

IT-306 WC WEBCAM NIGHT VISION Camera used with Raspberry Pi for recording Will takes images Passive Infrared sensor has been used to detect human. &record videos at upload on cloud server and live videos to user.

- INFRARED SENSOR:

The key of this project is Human sensing technology. In this project Infrared sensor has been used to detect

human. Infrared radiation exists in the electromagnetic spectrum at a wavelength which is longer than visible light. it can be detected though it cannot be seen. Objects that generate heat also generate infrared radiation and those objects include animals and the human body whose radiation is strongest at a wavelength of 9.4um .IR sensor is able to detect the change of radiation 11 of these infrared radiations. A picture of working principle of IR sensor is given below IR sensorgenerates signal when any human or animal passes in front of the sensor or any movement is detected of human or animal in front of this. The sensor converts the resulting change in the incoming infrared radiation into a change in the output voltage, and this triggers the detection. Objects of similar temperature but different surface characteristics may also have a different infrared emission pattern, and thus moving them with respect to the background may trigger the detector as well security system using IR sensor + Pi + Alarm = door locking! systems IR sensors Will be connected to the Raspberry Pi Will be used to sense if someone enters & alert the Raspberry Pi to take an image.



- DOOR LOCKING

1. Initialize Raspberry pi, camera module, IR sensor etc.
2. If person arrives, he/she will get detected by IR sensor.
3. In front of the sensor or any movement is detected, then the image iscaptured by the camera and will send a snap on a smart phone.
4. To sending the notification and turn on buzzer and upload picture to user.
5. Quickly to lock door.
6. Stop.

- Cloud Sever:

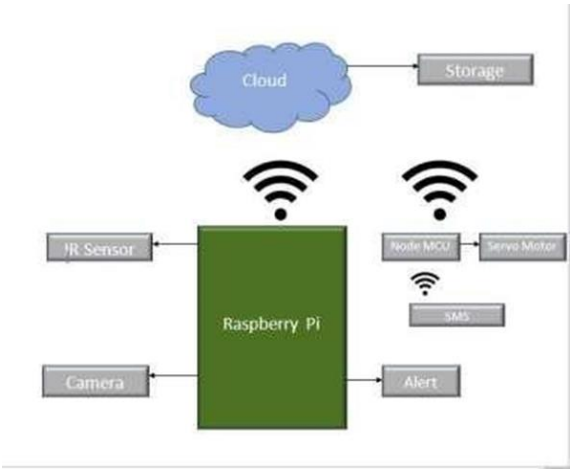
Cloud service to send images from Raspberry Pi Enable use to monitor house remotely.

- Alarm:

Will be connected directly to Raspberry Pi Trigger when sensor has been used to detectmotion someone breaks in & alert surroundings.

- Alert:

After detecting the motion, sms message will be automatically sent to the user.



V. WORKING

Step 1: Initially the camera will be recording the movements in the room.

Step 2: IR sensor is used to detect the motion of the intruder. If the motion is detectedit will perform the flowing steps and if motion is not detected, the camera will keep recording the video.

Step 3: If the motion is detected in IR sensor, it will capture the image of the intruderand this image will be uploaded on the cloud server for further reference.

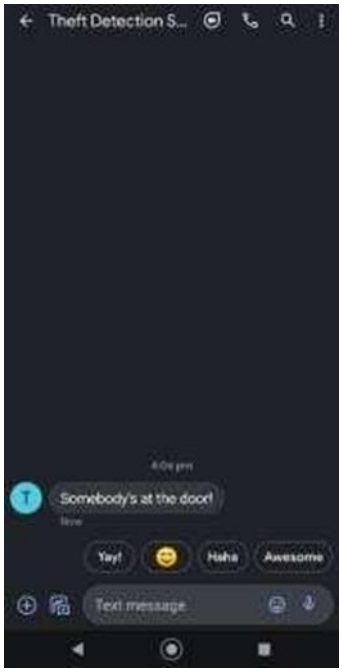
Step 4: Simultaneously the doors of the room will be locked automatically, to trap the intruder and sms message will be sent to the user.

Step 5: A buzzer will be blown to alert everyone in the surrounding area and an snap will be sent to the authorized users.

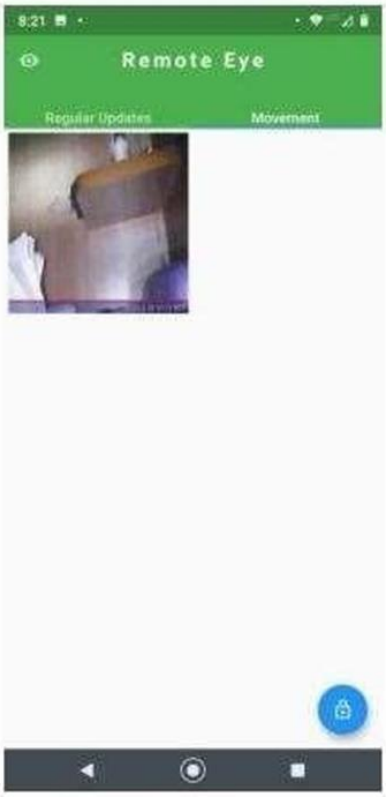
VI. RESULT

- Regular Updates.

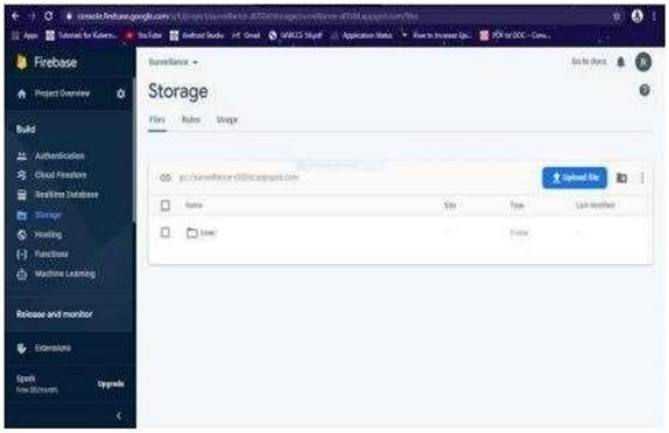
- Alert Message



- Movement Capture with Door locking/unlocking button.



- Firebase Storage.



CONCLUSION

The research work that will be carried out in this thesis would be mainly focused to design and develop efficient and convenient motion detection surveillance i.e. an Anti-Theft device to solve security problems which will help to reduce/stop theft. This system is

suitable for small personal area surveillance. I.e., personal office cabin, bank locker room, parking entrance. Whenever the motion is detected through. The main Advantage of the project is Easy to implement, Low cost with High quality. Captured image can be used as strong evidence for further investigation. Also, this system is scalable and flexible. By covering all these objectives, we can conclude that system issuccessfully implemented. We have successfully implemented and designed a cost-effective Raspberry PI based home security system. The proposed system provides home security and surveillance. Deploying sensors, webcam helps to detect, report andmonitor intrusion events to users. Also, the system informs to the neighbourhood using buzzer, thereby reducing damages caused by burglary. The use of cloud network in the system allows for storage of captured images and recorded videos. By integrating cloud networking and wireless communication a fully functional home security systemcan be designed and built.

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