GPS BASED AUTOMATIC IMAGE CAPTURING AND EMAIL ALERTING SYSTEM

M.SOUMYA[1], P.POOJWALA[2], L.USHA RANI[3], Dr.S.SATISH[4]

[1,2,3] UG Students, Department of ECE, *Malla Reddy Engineering College for Women (UGC-Autonomous) Maisammaguda, Hyderabad*, Telangana, India.

[4] Professor, Department of ECE, *Malla Reddy Engineering College for Women (UGC-Autonomous) Maisammaguda, Hyderabad*, India.

ABSTRACT:

In this paper we have to design and implement surveillance system by use of smart sensors like ultrasonic sensors or infrared sensors (IR) to detect an intruder in a home, ATM, Industries, Bank Locker room or a storehouse. The IR sensors are placed on the ceiling, and the ultrasonic sensor module consists of a transmitter and a receiver which are placed vertically on the wall. We are going to use the camera to capture images of the people those are coming under the surveillance area. And we are sending these images to authorized and related personnel via e-mail to avoid the storage cost. This system will also help to reduce the power consumption.

Keywords: IOT (Internet of things), IR sensor, Camera, Online webpage.

1. INTRODUCTION

Recently surveillance systems have become more important for everyone's and everywhere for the purpose of security. The embedded surveillance system, frequently used in a home, an office or a factory [1-3], uses a sensor triggered to turn on a camera [4-5]. Some designs use different types of sensors to achieve reliability by means of the different features of each sensor [6-7] but they do not provide any facilities like sending an image through internet. In this paper we have to extend this previous system not only by using both multiple PIR sensors and ultrasonic sensors as a sensor group, but also by using the Maximum Voting Mechanism (MVM) [8-11]. Ultrasonic receivers and transmitters are located at opposite ends to reduce the interference from other frequencies in ultrasonic signals. Some research explores the influence of attenuation in air and crosstalk of ultrasonic signals. In our system, We have to use Raspberry Pi credit card-sized computer to send an Email of

captured image to the specified Email ID. So that there is no issue of storing images as well no issue of losing the confidential data (captured images). A human intrusion detection system is designed to detect an unauthorized entry into a building, shops or a protected area and deny such unauthorized access to protect personnel and property from damage or harm. Security systems are mainly used in inhabited, commercial, manufacturing, and army properties for protection against burglary or property damage, as well as private safety against intruders. This system provides proper detection of intruder and provides security. By using this system, we can reduce robbery by detecting the intruder. So we can respond quickly such that no harm takes place in our home. In the designed system, the camera is kept outside the room and the continuous video is captured by the camera. We designed our system in such a way that as soon as intruder enters the room, the processing takes place at the client. All of which could be enabled through the software or dedicated apps, and capture the intruder image by using the Raspberry Pi. Camera only provides functions such as capture image, storage image and upload image for the user. The PIR sensor detects a movement of human and it sends the signal to the raspberry pi through its GPIO and we define what the Raspberry Pi should do as it detects an intruder through the Python coding. Our basic idea is to develop a system which will detect and capture the image of the intruder in the premises via raspberry Pi camera. Perform face recognition on the raspberry pi .It should immediately captured the image of the visitor and intruder if any. The users image it was already stored in the database .The system will compare the image with the datasets provided in the database. If the captured image is not matched with the dataset image, Raspberry pi sends commands to Pi.

2. RELATED STUDY

This paper present principle of a traffic management and road monitoring application using the latest generation of IT and mobile telecommunication systems based on an intelligent system with self-learning function for urban traffic junctions. (2) This system will allow automatic adjustment of green times depending on road intersections traffic. For the implementation of

this IoT project, we use a Raspberry Pi, a webcam and Thing Speak server to analyses traffic on a busy highway using image processing (6). With Simulink we design and deploy a traffic monitoring algorithm to the Raspberry Pi, and we analyse and visualize the traffic patterns using ThingSpeak, an IoT analytics platform. A remote road monitoring system principle is also described.(7) This system uses modern communications equipment for periodically reading and transmitting parameters such as road temperature, humidity, wind intensity and vehicle weight using different type of sensors. From this research paper we were going to know the traffic at a particular area and also the weather conditions, road types and accidents. It will share this information with the help of IOT module for avoiding the accidents.

EXISTING SYSTEM:

The MEMS sensor and Piezo electric sensors will always read the values and send to the raspberry pi meanwhile GPS will start tracking the location all the time. MEMS sensor gives the analog readings but in raspberry pi we won't have inbuilt analog to digital convertor so we use the adcmcp3208 for conversion, (1)

we specify the thresholds values for mems sensor if we get beyond that values then the raspberry pi will send the command to webcam, gsm and start taking the gps values. Now send this gps location to gsm modem and then the start sending the alert message with that location to the specified mobile number. (3) In the meanwhile, webcam start taking video upto specified duration and capture the image of the victim then send the both video and image to raspberry pi then the raspberry pi send this video and image to the mail id given by us, then start working like initially. The same process for the Piezo sensor also when it on.

3. AN OVERVIEW OF PROPOSED SYSTEM

The system consists of a Raspberry Pi and Pi camera which is used to acquire video continuously and taking a snapshot of intruder. The camera continuously monitors the area and acquires the video. From the acquired video, images are taken for every period of time. The obtained images are converted into RGB images. These pictures are again processed, to check whether the intruder is present or not. The processing stops in the case if intruder is not present. If the intruder

is present, the system differentiates between pets and human beings. If not, the information is send to the server. The server displays the images of intruder with date and time. And further, the processed image is compared with the database in the system. If the Person's image matches with the images in the storage of the system, the processing terminates. If not the user gets a mail and a message to the developed app which has status of the intruder's presence and the image of the intruder. From the app the user controls the system by giving an alarm from any place which helps to alert the people.

When a person enters into the shop and sensor will be activated which in turn activates a hidden Pi camera. The camera will capture the image of the intruder and pass it to the microcomputer through HDMI cable for further processing.

Experimental results:

Raspberry PI interfaced with sensor and camera module. After the shop is closed .The system will be started .PIR sensor detects the person and using the camera the face is detected and compares with the predefined database .If it is an intruder, then it will send the call alert and the image of an intruder

will send to the owner through Wi-Fi. At the same time the buzzer will ON in the surrounding of the shop.
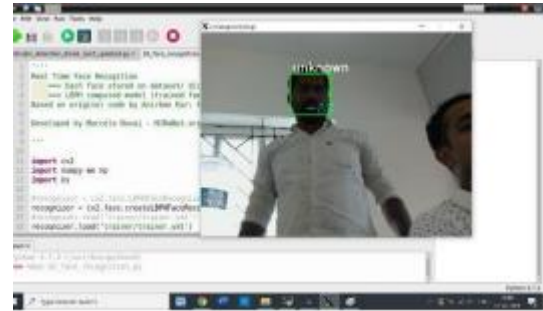

Fig.1. Output Results.

4. CONCLUSION

Our framework would right away tell the client about the in-house situation alongside the live streaming. The framework consolidates security utilizing IoT (Internet of Things). The security module effective sends notices after distinguishing intruder utilizing wireless and wired procedures where administrator /owner further can make essential moves along these lines upgrade accommodation and security, save energy proficient.

REFERENCES

[1] Sivakumar, Swetha, and R. GomathiBhavani. "Image Processing Based System for Intrusion Detection and Home Security Enhancement." In 2018 3rd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT), pp. 1676-1680. IEEE, 2018.

[2] Bhanse, Vivek Kishor, and M. D. Jaybhaye. "Face Detection and tracking using Image processing on Raspberry Pi." In 2018 International Conference on Inventive Research in Computing Applications (ICIRCA), pp. 1099-1103. IEEE, 2018.

[3] Kakadiya, R., Lemos, R., Mangalan, S., Pillai, M. and Nikam, S., 2019, June. Ai based automatic robbery/theft detection using smart surveillance in banks. In 2019 3 rd International conference on Electronics, Communication and Aerospace Technology (ICECA) (pp. 201-204). IEEE.

[4] Wang, Jin-xiang. "Research and implementation of intrusion detection algorithm in video surveillance." In 2016 International Conference on Audio, Language and Image Processing (ICALIP), pp. 345-348. IEEE, 2016

[5] Tian, Y.L., Brown, L., Hampapur, A., Lu, M., Senior, A. and Shu, C.F., 2008. IBM smart surveillance system(S3): event based video surveillance system with an open and extensible framework. Machine Vision and Applications, 19(5), pp.315-327

[6] Cuppens, F., &Miege, A. (2002, May). Alert correlation in a cooperative intrusion detection framework. In Proceedings 2002 IEEE symposium on security and privacy (pp. 202-215). IEEE.

[7] Bhardwaj, R., Bera, K., Jadhav, O., Gaikwad, P. and Gupta, T., 2018. Intrusion Detection through Image Processing and getting Notified Via SMS and Live Streaming.

[8] Menaga,S., Paruvathavardhini.J., Kalaivani, P. and Haribabu, S., 2019. Air quality monitoring system using vehicles based on the IoT. IRJET, 6(3), pp.3250-3254.

[9] Himel, M.S., Bar, K. and Bappy, M.H., 2019. Human Face Recognition Using Image Processing.

[10] Sharma, R., Kumar, D., Puranik, V. and Gautham, K., 2019, April. Performance Analysis of Human Face Recognition Techniques. In 2019 4th International Conference on Internet of Things: Smart Innovation and Usages (IoT-SIU) (pp. 1-4). IEEE.