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MEMORY MANAGEMENT AND SECURITY SURVEILLANCE IN CCTV FOOTAGE

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ABSTRACT

As an essential constituent of many associations' security and safety priority, video surveillance has established its importance and benefits numerous times by providing immediate supervising of possessions, people, environment, and property. This project deals with the design approach of an Embedded Real-Time Surveillance System Based Raspberry Pi for intruder detection that reinforces surveillance technology to provide essential security to our life and associated control and alert operations. This Raspberry Pi based Smart Surveillance System presents the idea of monitoring a particular place in a remote area. This project will present the idea of motion detection and fire detection by providing good security.

Keywords: *Surveillance, Embedded system, Raspberry Pi, Monitoring.*

INTRODUCTION

Surveillance is one of the important aspects in various fields such as banking sectors, military areas, or personal security. Due to exponential rise in burglary and theft activities, surveillance systems are proving to be a great source of security. Due to ever increasing technology people are relying on advanced technologies for their security purposes. Security systems such as CCTV have proven to be hugely popular for security purposes due to their cost-efficient nature and easy maintenance. Surveillance is very helpful for law enforcement to investigate/prevent criminal activities, for recognizing and monitoring threats. Also, surveillance systems have always been playing a vital role in dealing with the burglary cases. These CCTV systems tend to monitor activities continuously. This results in memory wastage. Moreover, it does not give alert on any suspicious activities detected.

LITERATURE REVIEW

Jun Hou has proposed the system by using Zigbee to monitor locations inside a home which are important by using surveillance camera. When the sensor activates then the notification will be sent through the SMS & Multimedia Message Service (MMS) to the user. The Different sensor like

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temperature Sensor, Gas sensor, Infrared sensor & smoke sensor were connected to the Main system board by using the Wireless Sensor Network (WSN). ZigBee technology which is used in the intelligent home monitoring having the moderate transmission range and larger network capacity to achieve rapid rate, low cost, low power & most advanced communication system WSN.

Yu Qiongfang has proposed a fire alarm monitoring system using fuzzy neural network. In this system it collects data from sensor & process data and calculates model of fuzzy neural network based on fire detection signal characteristics, so this fire detection system has a self-learning and adaptive capacity However, it is only a study on proposing a new approach for fire detection. In order to verify the feasibility of this algorithm, simulation is done using MATLAB software.

EXISTING METHOD

Wireless home security systems use battery-powered radio transmitters and receivers to connect the various components such as cameras, sensors. These types of security systems are usually available at a local hardware store or on the Internet and are often designed for do-it-yourself installation. Wireless system design specifications can limit the distance between sensors, cameras, and the central controller, they require periodic replacement of batteries. Till now we have CC cameras which can record and store the whole information resulting in memory wastage.

DRAW BACKS IN EXISTING SYSTEM

- It will record the entire video even when there are no changes in surroundings, which will result in lot of consumption of memory.
- Through present system we cannot detect fire, and we cannot alert the people immediately.
- Security surveillance was not possible through the present system, and it cannot warn the people about suspicious movements in surroundings.
- In existing system we don’t have a single device which can provide multiple features like security surveillance, fire detection, memory management using single operating system.

PROPOSED METHOD

The paper proposed here uses raspberry Pi, Camera, PIR and Fire Sensor. If PIR is detected, then the camera records the video and will be sent to the owner and if any fire activates then an SMS will be sent.

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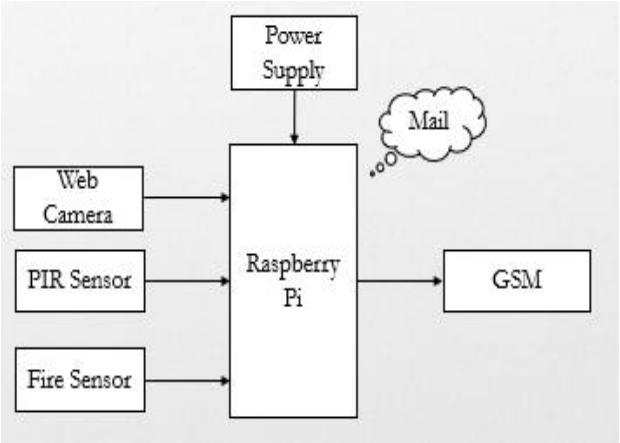

Fig.1: Block diagram for proposed method

METHODS OR TECHNIQUES USED IN OUR PROJECT

In this paper we are using Raspberry Pi which provides and receives instructions from the components interconnected to it. PIR sensor function is to detect the infrared radiation emitted or reflected from objects and fire sensor is designed for detecting as well as responding to the occurrence of a fire or flame. Whenever radiation is emitted from surrounding to PIR sensor or fire is detected then automatically calls and messages will be sent to the owner of that surroundings through GSM module and recorded video can be sent to Gmail.

RESULT

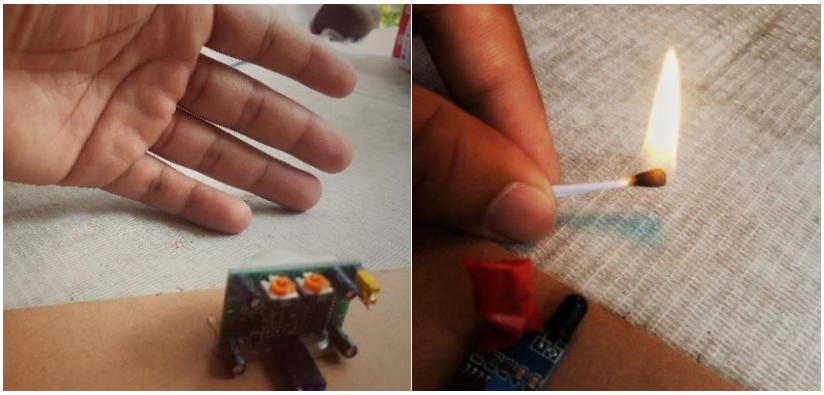

Fig.2: PIR and fire detection

From fig:2. We can observe that presence of living being and fire was detected by sensors

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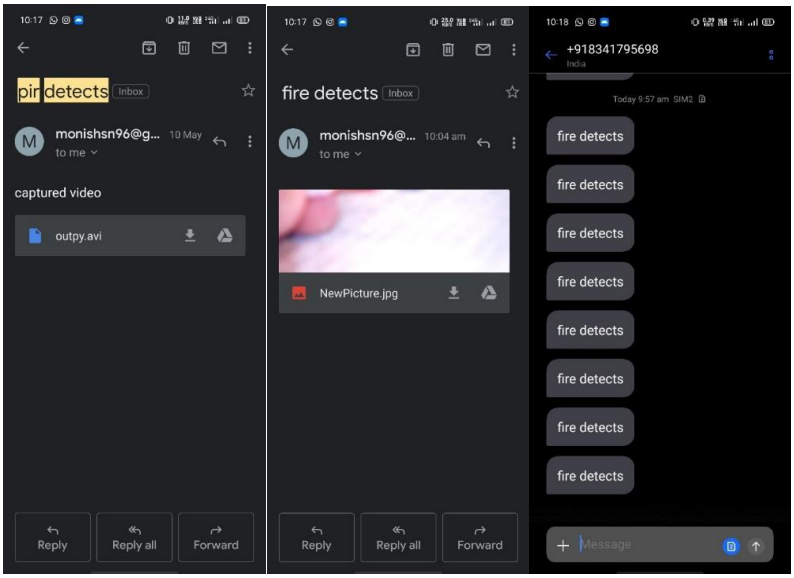

Fig 3: Alert Messages and Received Data

After detection of living being automatically video will be captured and recorded video was sent as shown in Fig:3 and alert messages for detection of fire had been sent to the user.

ADVANTAGES

1. In CCTV systems there should be a dedicated PC for the module which is eliminated here.
2. A PC can be hacked, and the files can be erased while this system overcomes these problems.
3. Authentication is required on the user side in order to view the streamed video in the browser and the camera captures a wide area.
4. Less expensive when compared to the other existing systems.
5. The camera motion can be controlled by the user.
6. It doesn't require more power, and battery can be used as a source of power also

APPLICATIONS

1. Industries.
2. Homes.
3. Office
4. Remote places
5. Militaries etc.,

CONCLUSION

Thus, we have designed a smart surveillance system capable of recording/capturing video/image and transmitting to a smart phone. It is advantageous as it offers reliability and privacy on both sides. It is authenticated and encrypted on the receiver side; hence it offers only the person concerned to view the

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details. Necessary action can be taken in short span of time in the case of emergency conditions such as elderly person falling sick, military areas, smart homes, offices, industries etc., Future work is to locate the number of persons located exactly on that area and their position so that accurate information can be obtained on the receiver side.

FUTURE SCOPE

In future this type of multi functionalized embedded webcam is used to monitor which reduces manpower and provides proper security and surveillance.

REFERENCES

1. M. Surya Deekshith Gupta, Vamsi Krishna Patchava, and Virginia Menezes have implemented a system which continuously captures the surroundings and if there is any moment, it turns on the light and captures the screenshots that results in sending of those to authorized person as an alert.
2. Aruni Singh, Sanjay Kumar Singh, Shrikant Tiwari have implemented comparison of various face recognition algorithms including eigenfaces, fisher faces, Principal Component Analysis, Local binary Pattern. In holistic based algorithms PCA has range of accuracy from (51-72) %, LDA (48.50-76.50) %, ISVM (63.5-79) % while texture-based algorithm LBP shows the identification accuracy (6-94.5) % and feature based algorithm SIFT demonstrates the accuracy range (61-94) % at various image compression levels.
3. Aamir Nizam Ansari, Mohamed Sedky, Neelam Sharma, Anurag Tyagi have implemented a system in which Raspberry Pi executes the processing of all the data and after the data is analyzed then the set actions are triggered for example sending an email on detection of motion and uploading images and videos to the ftp server.
4. Charles Severance, “Eben Upton: Raspberry Pi”, published by IEEE computer society, October 2013.
5. Ikhankar, kuthe, Ulabhaje, Balpande, Dhadwe, “Pibot: The raspberry pi controlled environment robot for surveillance & live streaming,” in Industrial Instrumentation and Control (ICIC)