iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** XII **Month of publication:** December 2021

DOI: https://doi.org/10.22214/ijraset.2021.39226

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue XII Dec 2021- Available at www.ijraset.com

Survey on Smart Security Surveillance System

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Abstract: ***As an integral part of the safety and security many organizations, video rental has established its value and benefits many times by providing immediate management of property, people, the environment and property. This project operates in the form of the Embedded Real-Time Surveillance System Based Raspberry Pi SBC for internal detection that enhances monitoring technology to provide critical safety in our lives as well as consistent performance and alert operation. The proposed security solution depends on our integration of cameras and motion detectors into a web application. Raspberry Pi operates and controls motion detectors and video cameras for remote hearing and monitoring, streams streaming video and recording for future playback. This research focuses on the development of a detection system that detects strangers and responds quickly by taking and transferring images to wireless modules based on owners. This Raspberry Pi program based on Smart Surveillance System provides a remote location monitoring concept. The proposed solution provides a fully functional, efficient and easy-to-use global solution. This project will also introduce the concept of motion detection and tracking using image processing. This type of technology is very important when it comes to surveillance and security. The live video stream will be used to show how things can be found and tracked. The detection and tracking process will be based on the pixel threshold.***
Keyword: Internet Of Things (IOT), Raspberry pi, Picamera, PIR Sensor, Dropbox.

I. INTRODUCTION

Today safety and security is becoming increasingly popular day by day because of its many benefits, and rather the progress that is taking place, the safety of one's home should also not be left behind. These days the increasing efforts are therefore being made to create a security system that will handle this issue effectively and keep the user away from the fear of home security in all matters. The system is considered to be the best only if it provides protection and monitoring that monitors the number of threats, home protection against such things as burglary and domestic violence. Whenever a user is not at home for some reason, it is sometimes possible to be left offline by people visiting their site. These visitors can be known or anonymous to the user. In this case the proposed system has various sensors such as PIR, Vibration, air quality and magnetic door lock sensors.[1]

The PIR sensor detecting the presence of a human face that will notify the user using a message via GSM and a picture captured by the camera via email using the Internet .After checking the email with the image user decides whether or not to enter the visitor's home. If known, the guest should be allowed to enter the home using the GSM message on the open Raspberry pi door.[3]

There are only two entrances to our home which are the doors and windows. Entry from windows is illegal and in this protection program the window entry point uses a vibrating sensor mounted on the window glass. Air quality sensor to detect various types of pollutants in the home such as wood smoke, cigarette smoke, gas burners, and mosquito coils that are harmful to family members. Anyone can control pollution home remotely from this program using a user warning message.[2]

The project focuses on building a monitoring system that detects movement and responds quickly by taking a picture and transferring it to the controller device via the Internet. The system will need a Raspberry Pi module, motion sensor, camera and internet connection. It will trigger the implementation of a surveillance system that introduces the concept of remote monitoring in remote areas. The program can be monitored by user form anywhere in the world.[4]

II. LITERATURESURVEY

A. IOT Based Smart Surveillance System [Gunnemeda Leela Krishna,(2018)]

Internet of Things provides user interaction and communication between devices, systems, services, networks and especially control systems. This paper describes the design and development of an IOT-based security monitoring system using a Raspberry Pi Single Board Computer (SBC) with a Wi-Fi network connection. Adding wireless reliability to the systems will open up various feasibilities such as worldwide monitoring and control, reliable data storage etc. This system use to comprises of sensor nodes and a controller section for surveillance. Remote user alerts, video recording are the prime features of the system. Wi-Fi enabled microcontroller processes based on sensor events upon receiving the event notification, the controller enables the camera for capturing the event, alerts the user via email and SMS and places the video of the event on client mail.

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1) Technique Used

- Motion Detection
- Tracking
- Communication

2) Merit

- Video Recording
- Command Input

B. Real Time Embedded Video Streaming Using Raspberry Pi [Aditi Shrikant Jadhav,(2016)]

In this paper they have developed a home-based monitoring system that monitors the development of a low-cost security system using a small PIR sensor built next to a very low-power warning system. Embedded Real-time Live video monitoring system is designed, in which the embedded chip and the programming techniques are used. The monitor which take Raspberry pi is the core of the whole system. Real time video transmission is mostly used in surveillance, conferencing, media broadcasting and applications that include remote assistance.

1) Technique Used

- Live Streaming
- Sever Storage

2) Merit

- Maintain Security
- Support Linux System

C. Wireless Security Camera System [Aishwarya S Lande,(2019)]

This paper suggests the working of an wireless CCTV camera. The article provides a brief overview of the various technologies or software used for security purposes. The main goal of our design was to develop a network that allowed for the sending and receiving of images from camera nodes to a base station. The main objective is self automated wireless security camera. This is the basic alarm sensor you receive when a person enters a place. When a criminal is found, he or she compares the image with the image described on the site and opens the alarm. Our body generates heat in the form of infrared that is invisible to human eyes. But it can be detected by an e-sensor.

1) Technique Used

- Intruder Tracking
- Motion Library

2) Merit

- PIR Motion Sensor
- Direct Connection
- Online Access

D. An Advanced IOT based Antitheft Security System with Video Monitoring Facility [V.Krishnaven,(2019)]

For this project we are designing an electronic system developed using small PIR and IR sensors built into the Node MCU controller. The PIR sensor detects the presence of the attacker & The controller reads the sensor signal and when the culprit is detected, compares the detected image with the predefined images on the website and then opens the buzzer and makes a notification on the predefined number. At the same time the intruder video can be viewed and made into an anesthetic. This is the basic movement sensor that you find when someone enters a scene. When a criminal is found, he or she compares the image with the image described on the site and opens the alarm. Our body produces heat power in the form of infrared invisible to human eyes. But it can be detected by an e-sensor.

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1) Technique Used

- Image Processing
- Detection and tracking

2) Merit

- Open Source Technologies
- Low cost Sensors
- User Input and output

III. COMPONENTS REQUIRED

1) Raspberry PI: This Is a small single-board device that was developed for computer science education and Raspberry PI, whose basic model costs 2000 RS is about the small board, has a 64 bit quad-core processor and uses a Raspbian Linux forits default operating system (OS).The Raspberry Pi computer is a wireless system-on-chip with 1 or more GB RAM, ports, a Micro SD card slot, camera and display interfaces and video jack. The Raspberry Pi offers several versions of Raspberry Pi,including the Raspberry Pi Zero, a 350 rs model which was released in 2015..[4]

2) Pi Camera Module: Pi camera module can be used to take high definition video recording , as well as stills photographs. It is easy to use for beginners, but there is much you can offer advanced users if you are looking to expand your knowledge. There are many examples online of people who use it for end time laps, slow motion and other video cleverness. You can also use the libraries we combine with the camera to create effects. Camera Board on Raspberry Pi is a small printed circuit board with a camera on it. The PCB is plug with a ribbon cable which connects to the Pi Camera itself on its own port. The ribbon can be extendable. The camera is very small. As for now it is the only Camera made for the Pi therefore these specifications cannot be updated. It uses 250 mA, externally powering the Pi should be sufficient enough for the camera. Specific configuration settings are required to initialize the camera and Python script to enable it take picture.[2]

3) PIR Sensor: This is use to the sense motion and always used to detect whether a human has moved in the sensors range. They are small, inexpensive, easy to use and don't wear out. For that reason theyare commonly found in appliances and gadgets used in homes or businesses. They are often use to as PIR, "Passive Infrared" sensors. When the sensor is idle, both spaces receive the same IR rate, the ambient value emitted from the room or walls or outside. When a warm body like a human or an animal passes by, it begins by cutting off one part of the PIR sensor, causing a fine separation between the two halves[1]

IV. CIRCUIT

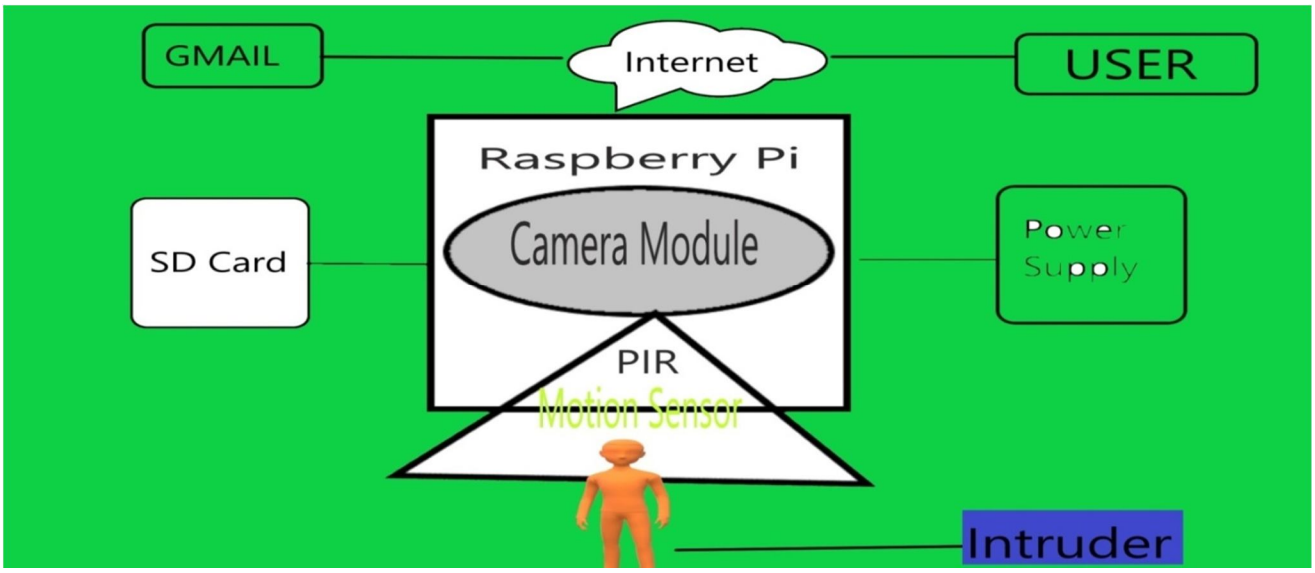


Fig. Architecture Design

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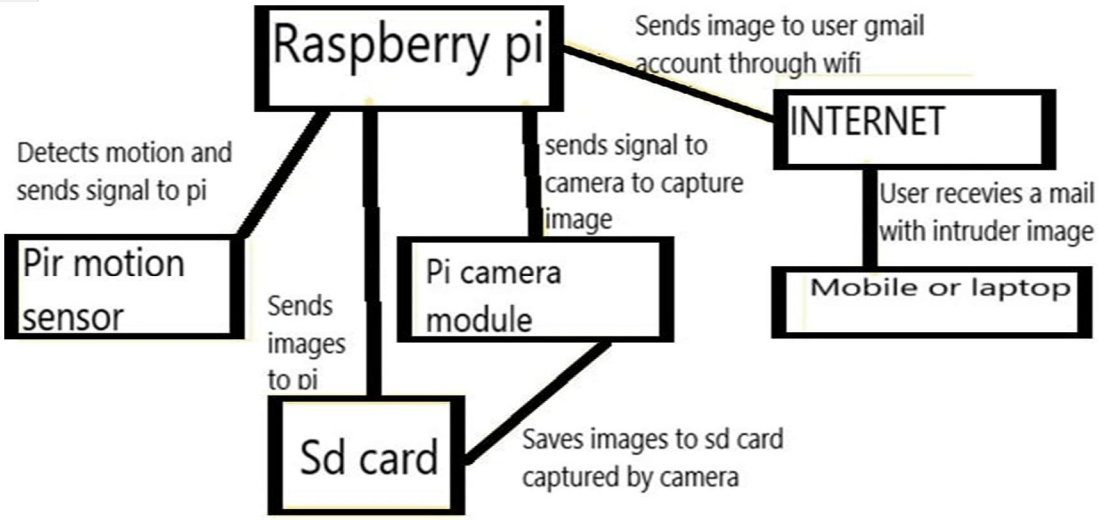


Fig. Data Flow Diagram

V. PROPOSED SYSTEM

This paper deals with the design System and implementation of Smart surveillance monitoring system using Raspberry pi and PIR sensor for mobile devices. It enhances the use of mobile technology to provide significant security in our homes and other control applications. The proposed home security system captures information and sends it to the appropriate mail using the Internet. Raspberry pi works and controls motion detectors and video cameras so that it can be heard and monitored remotely, streaming live video and recording for future play. It can also detect the number of human accessed with the help of an infrared sensor. For example, when movement is detected, the cameras automatically start recording and the Raspberry pi device notifies the holder of the entry that may have a smart phone. Raspberry- Pi has two main interactive components. We can email it automatically.

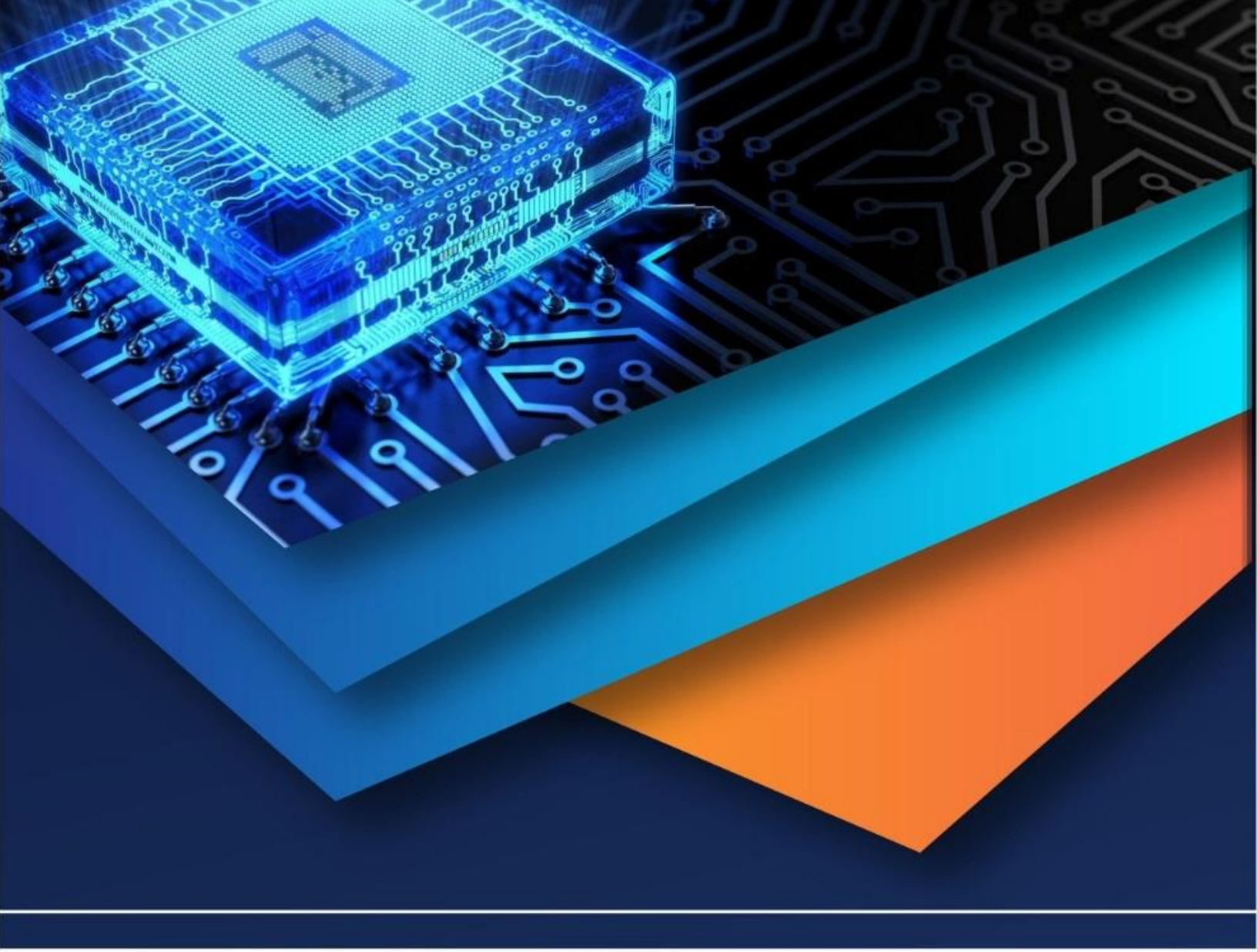
VI. CONCLUSION

So we have designed a smart surveillance system that can record / capture video / image and transfer it to smart phones. It is beneficial as it provides honesty and confidentiality on both sides. It is authenticated and encrypted on the receiver side hence it offers only the person concerned to view the details. This action can be taken for the short span of time in the case of emergency conditions such as elderly person falling sick, military areas, smart homes, offices, industries, jewellery shop etc. The task of the future is to determine the number of people found in the area and their positions in order to obtain accurate information on the part of the recipients.

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