

RASPBERRY-PI BASED ANTI-THEFT SECURITY SYSTEM WITH IMAGE FEEDBACK

¹DIXIT SURAJ VASANT, ²BABAR APEKSHA ARUN, ³MEHER PRIYA SHIVAJI

^{1, 2, 3}Department of Electronics & Telecommunication Engineering,
Shivnagar Vidya Prasarak Mandals College of Engineering
Malegaon (BK), Baramati, Pune, India

¹surajdixit0077@gmail.com
²apekshababar980@gmail.com
³meherpriya04@gmail.com

ABSTRACT:

The main of this paper is to illustrate the technology used for security purpose. This paper presents the development process in security system that uses cctv for security purpose. This security system is implemented using raspberry pi B. By combining the software's and camera this system is used as an intelligent monitoring sytem. Total security is provided to owner in a face of image at any instant in which area it is implemented. Image is send through IOT(on 'Gmail account of owner'). Technology has reached a stage where mounting cameras to capture video imagery is cheap, but finding available human resource's to sit and watch is imagery. Like other systems it does'nt require continuous surveillance of human resource's, machine will do the whole work.

KEYWORDS :Raspberrypi, sensors, camera, IOT, Gmail, Gas emitting machine, putty software

1. INTRODUCTION

This is an Intelligent Monitoring system. An intelligent monitoring system is an application which is developed from the security point of view. The basic objective of this project is to develop a system that monitors the area in which it is implemented. This system is applicable in the area where no one is permissible to enter, also in area where we need to detect the misdeed activity . In this system CMOS camera is used and along with that different sensors have been used. The camera is used to catch the live images of crime happening, in different direction through the presence of servomotor. The captured images are stored in particular folder in raspberry-pi. The images will be then usefull to work on. As soon as sensors detect motion, captured images are sent to mobile through IOT. So that the owner(user) will get aware of crime taking place and will get real time image of that. After feedback from owner gas emitting machine will turn to take required action on crime. Through this system owner can get real time image of area anytime in different direction.

2. OBJECTIVE OF PROJECT

Now a days most of the crimes occurs in lavish shop(jewellery). Secondly in such areas cctv is used. But work of normal cctv camera is continuous surveillance of that area under the human resource. And crimes are usually found out after it is being

committed. By observing all these parameter we decided to make an intelligent security system which will detect crime or any kind of misdeed action and required action will be taken at that instant only. Owner will have to no worry even in his absence due to real time image feedback used in this system

3. SYSTEM BLOCK DIAGRAM

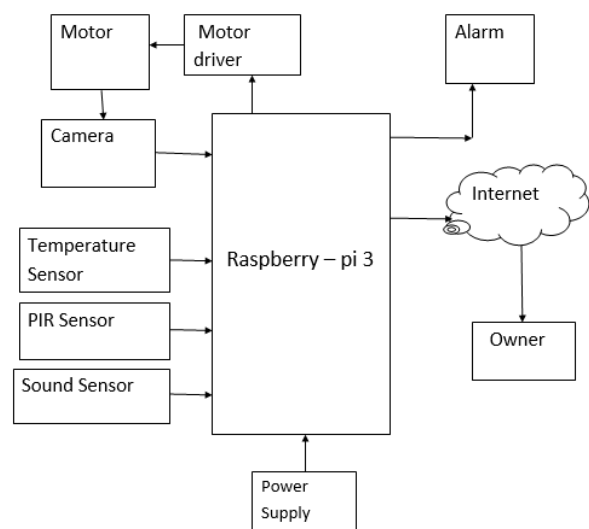


Fig. 1 Block diagram of Raspberry-pi based anti-theft security system with image feedback

4. BLOCK DIAGRAM DESCRIPTION

1.Rasp-pi Camera:-

OV5647 color CMOS QSXGA is a 5 megapixel camera, which is capable of capturing real time images and video. The fps(frames per second) of this camera is 120.

Picture formats	JPEG (accelerated), JPEG + RAW, GIF, BMP, PNG, YUV420, RGB888
Video formats	raw h.264 (accelerated)
Effects	negative, solarise, posterize, whiteboard, blackboard, sketch, denoise, emboss, oilpaint, hatch, gpen, pastel, watercolour, film, blur, saturation
Exposure modes	auto, night, nightpreview, backlight, spotlight, sports, snow, beach, verylong, fixedfps, antishake, fireworks
Metering modes	average, spot, backlit, matrix
Automatic white balance modes	off, auto, sun, cloud, shade, tungsten, fluorescent, incandescent, flash, horizon
Triggers	Keypress, UNIX signal, timeout

2.Stepper motor:-

A stepper motor is a brushless DC electric motor that divides full rotation into a number of equal steps. The motors position can then be commanded to move and hold at one of these steps without any feedback sensor, as long as the motor is carefully sized to the application in respect to torque and speed.

3.PIR Sensor:-

PIR sensors allow you to sense motion, almost always used to detect whether a human has moved in or out of the sensors range. They are small, inexpensive, low-power, easy to use and don't wear out. For that reason they are commonly found in appliances and gadgets used in homes or businesses. They are often referred to as PIR, "Passive Infrared", "Pyroelectric", or "IR motion" sensors

3.RASPBERRY PI3 (MODEL B):-

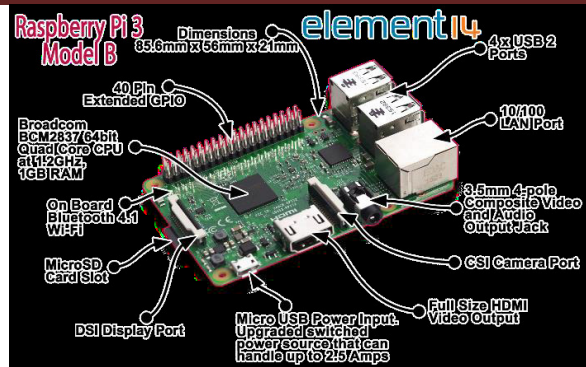


Fig. 2 Raspberry pi3(model B)

Raspberry pi is Broadcom BCM2837 64bit ARMv7 Quad Core Processor powered Single Board Computer running at 1.2GHz

Inbuilt::

- * BCM43143 WiFi on board
- *Bluetooth Low Energy (BLE) on board
- *Micro SD port for loading your operating system and storing data
- *1GB RAM
- *40pin extended GPIO
- *4 x USB 2 ports
- *4 pole Stereo output and Composite video port
- *Upgraded switched Micro USB power source (now supports up to 2.4 Amps)
- *CSI camera port for connecting the Raspberry Pi camera.

4.Sound detector:-

The sound detector is a small board that combines Microphone and some processing circuitry. It provides not only an audio output, but also a binary indication of the presence of sound, and an analog representation of it's amplitude.

5.Temperature sensor:-

A temperature sensor is a device, typically, a thermocouple or RTD, that provides for temperature measurement through an electrical signal. A thermocouple is made up of two dis-similar metals that generate electrical voltage in direct proportion to changes in temperature.

6.The main module of the Project

- 1.Camera interfacing
- 2.Image capturing and storing
- 3.Hardware interfacing
- 4.Motion Detection
- 5.Explosion Detection
- 6.Sound Detection

5. WORKING

This proposed system is an intelligent system and it eliminates the need of continuous surveillance by human resource. Thus, any human extra work is ruled out. In this project raspberry pi 3B(model) has been used as heart of system.

This system continuously checks the status of place by sensors that is anyone entering in the shop or not. And sends the alert message to the owner with live images by rotating camera with different angles.

In this security system human bodies are detected by PIR sensor while other, that are detected by ultrasonic sensor.

The main aim of this project is to make an automated security system for lavish shop(jewellery).The project consists of raspberrypi with camera,sensors and alarm. The whole system is placed in that place.if system detect someone in shop it sets the alarm,capture the live images and sens it on e-mail. And wait for the feedback. After getting positive feedback it sets the gas emitting machine.

6. FLOWCHART

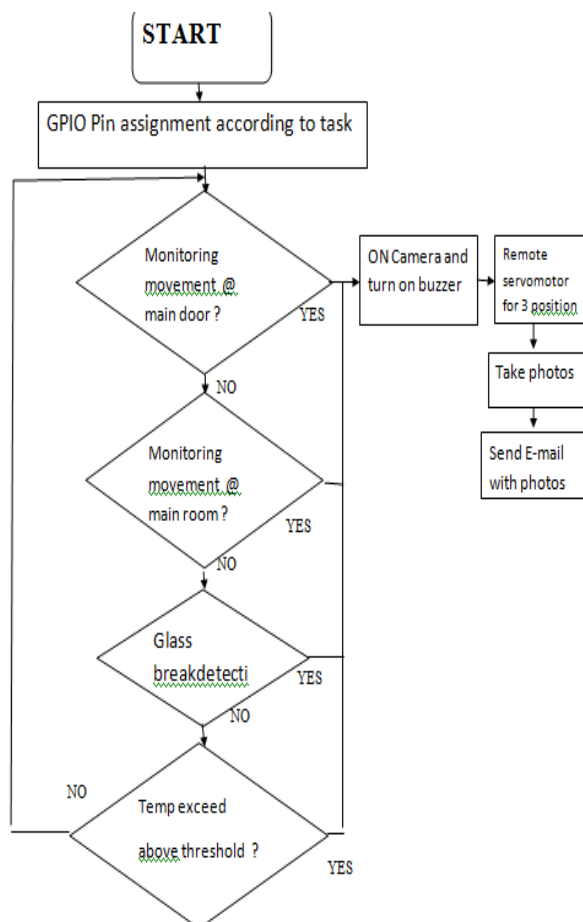


Fig:- flow chart

7.RESULT

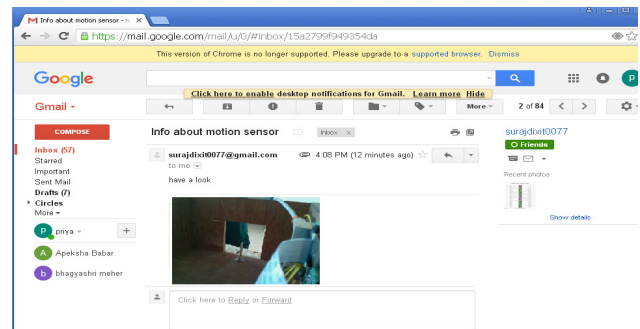


Fig. 3 Image sent on Gmail.

Image given above is sent on owner's G-mail id or whats app account.

8.CONCLUSION

The expected aim of this project is to make an automated system for security purpose. Timestamped image capturing let users capture details of events precisely at that instant .Advances in PC based surveillance software now allow anyone with a webcam to setup a robust, effective and inexpensive surveillance system.

9.APPLICATIONS

- 1.Jewellery Shop
- 2.Army Surveillance
- 3.Bank Security
- 4.Museum Security
- 5.Home Security

10.REFERENCE

- 1."AkshadaDeshmukh,HarshlataWadaskar, Leenazade","Webcam based intelligent surveillance system",
2. Research inventory;international journal of engg and science-vol.2 issue8(march 2013),pp38-42.
3. An Improved Motion Detection Method for Real-Time Surveillance Nan Lu,JihongWang,Q.H.Wu and Li Yang(19 February 2008).
4. Implementation of Webcam based system for surveillance monitoring ,BrahmanandhhaPabhuR,ArulPrabharA,GarimaBohra ,Proceeding of ASCNT-2010,CDAC,Noida,India.
5. Mohamed F Abdelkader,Integrated Motion Detection and Tracking for Visual Surveillance(ICVS2006).