International Journal of Advance Research in Science and Engineering
Volume No.06, Issue No. 11, November 2017
www.ijarse.com
IJARSE
ISSN: 2319-8354

ROBOT: HOME AUTOMATION SYSTEM USING RASPBERRY PI AND SENSORS

Shete Kajal B.[1], Valhavankar Shraddha N.[2], More punam R.[3], Kakade Rachana R.[4]

[1,2,3,4]*Department of Computer Engineering, JCOE, Pune university, Maharashtra, (India)*

ABSTRACT

Smart Home automation system is mobile based application that allows the user to monitor and control the home using their mobile device .This system used micro SD card and Raspberry Pi operating system. The main aim of the system is to automate all the devices i.e, home appliances through robot using raspberry pi as well as provide the security by using sensors like PIR sensor, Temperature Sensor, MQ-6 sensor. So by using the system for avoiding the problem coming in day today life.

Thus implement the proposed system for Smart Home Automation technique with Raspberry Pi and it is done by integrating cameras and motion sensors into a web application. To design this system, we are using a Raspberry Pi module with Computer Vision techniques.

Using this, we can control home appliances connected through a monitor based internet. Raspberry Pi operates and controls motion sensors and video cameras for sensing and surveillance. For instance, it captures intruders identity and detects its presence using simple Computer Vision

Technique (CVT). Whenever motion is detected, the cameras will start recording and Raspberry Pi device alerts the owner through an SMS and alarm call.

Technical Keyword: Artificial intelligence, Home Automation System, Computer Communication Network, Wifi, Computer Vision Technique

I INTRODUCTION

Robot:Smart home automation system is mobile based application that allows the user to monitar and control the home using thrir mobile device. Using the cctv and cameras thrir are less or insufficient security is provided to user .for example if cctv or camera is damaged due to any reason then that particular time footage is not present for future playback thats why lots of problems are created. Another reason is cctv cameras are not moveble so that

particular area which are allocated or cctv is fitted only that footage is available to user. Using robot :Smart home automation system using sensors all these problems are overcome.

1) Safety: When the resident is away from home. Or if any hazardous fire accident that might occur at the home while the resident being away need be alerted for taking rescuing .

2) Security: Only autherized person are access that system. User can give password to our smart devices.

3)Live Streaming: User able to see live streaming at that particular incidence.

Hardware and software Requirement:

1. Raspberry Pi B+ (along with a microSD card, a microUSB cable, and an HDMI cable).
2. USB WiFi dongle.
3. Diptrace: pcb (printed circuit board) . design software.
4. Proteus: circuit simulator.
5. Sensors:-Temprature sensor,PIR sensor used for the motion detection.

Hardware and software Description:

1. **Raspberry Pi:**

The Raspberry pi is a credit card-sized single-board computer. There are currently five Raspbreey pi models in market i.e the model b+, the model A+,the model B, the model A .and the compute module (currently only avilable as part of the compute module developement kit) .all models use the same SoC (system on chip – combined CPU and GPU), the BCM2835, but other hardware features differ.

2. Sensor.

(1) Temperature sensor lm35.
(2) Gas leakage detector using mq 6.
(3) Light dependent resistor (LDR) sensor.

3. Wireless security camera:

Wireless security cameras are closed circuit television (CCTV).Cameras that transmits a video and audio signals to a wireless receivers through a radio band. Many wireless security cameras required at list one cable or wire for power;" Wireless" refers to transition of video and audio. However ,some wireless security cameras are battery-powered, making the cameras truly wireless from top to bottom.

International Journal of Advance Research in Science and Engineering
Volume No.06, Issue No. 11, November 2017
www.ijarse.com
IJARSE
ISSN: 2319-8354

4. DC motor:

A coil of wire with a current running through it generates an electromagnetic field aligned with the center of the coil. The direction and magnitude of the magnetic field produced by the coil can be changed with the direction and magnitude of the current flowing through it. A simple DC motor has a stationary set of magnets in the stator and an armature with one or more windings of insulated wire wrapped around a soft iron core that concentrates the magnetic field. The windings usually have multiple turns around the core, and in large motors there can be several parallel current paths. The ends of the wire winding are connected to a commutator .

Motivation:

Now a day it is very important and neccessary fact that to make our home secure from unauthorized person.In there 24 hours our home is visible to our eyes using the live streaming and web cameras.

During emergency condition or intruders attacker we can secure and protect our home using wireless cameras.

Goals and Objectives:

- To provide low cost,reliable and scalable home automation system.
- To remotely control home appliances and monitor them.
- To save time and utilize the energy efficiently.
- To maintain the houses are also getting smarter.
- Securing the home and to take care of elderly person..

II PROPOSED SYSTEM

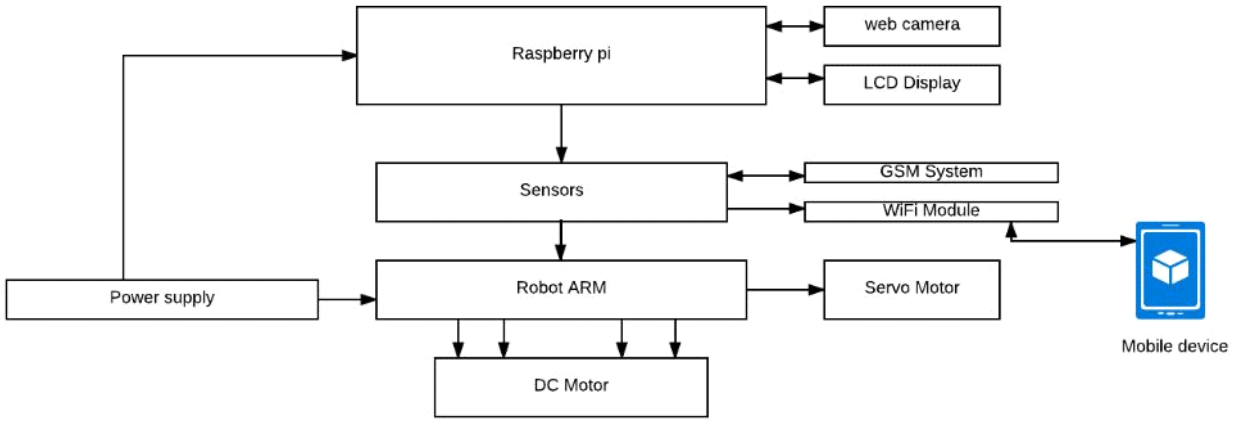

Fig 1 System Architecture

The proposed system design attribute-based different function such as Obstacle detection ,image processing etc and GSM system.This all task complete by using the different software and hardware components.

The system contains four modules,

1)Obstacle detection.

2)Image Processing.

3)GSM System.

1. Obstacle detection:

This proposed system are used for the image processing sensors first is PIR sensors used for motion detection, Human detection and smoke detection another one is Ultrasonic sensors used for the obstacle detection.

2. Image Processing:

In this system Raspberry Pi used for image processing.Image capturing camera,Raspberry Pi board run image recognition programs on it.

3. GSM System:

GSM(Global System for mobile communication) is a digital moblie telephony system.GSM is an open and digital cellular technology used for transmitting moblie voice and data services at 850MHz,900MHz,1800MHz,1900MHz frequency bands

Actual Working:

Our main focus is to provide security and privacy to human.

Now a days it is very important and necessary to humans to provide security and privacy because there is lots of chances to stolen our important and useful data and thing from thefts.

Robot: Home Automation System Using Raspberry pi and Sensor is useful useful system mainly used for provide security. Using these system user take attension to our home. This system work through Raspberry pi pictures are delivered through using sensors. Using WiFi device we see live streaming of robot and our home also.

Advantages of proposed system

- Security
- Energy Efficiency
- Savings
- Convenience

•Comfort

•Peace of mind.

IV CONCLUSIONS

This paper presents the development work of remote monitoring prototype system using a Wi-Fi controlled using robot for smart home automation system driven by a Raspberry Pi.

With a fully functional prototype, this project may be used for monitoring purposes in a building, in a hazardous area and other such locations. Several improvements can be made to enhance the capability of the project. For example, the camera maybe upgraded to a higher-quality camera to boost the quality of live streaming.

REFERENCES

1. "Hazardous (classified) locations. - 1910.307", Osha.gov, 6.[Online].Available:https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9884. [Accessed: 23- May- 2016].
2. V. Kadiam and G. Pavani, "Smart Phone Controlled Two Axes Robot for Video Surveillance Using Wireless Internet & Raspberry Pi Processor", Hyderabad, India, 2014.
3. "RPi USB Wi-Fi Adapters - eLinux.org", Elinux.org, 2016.[Online]. Available: http://elinux.org/RPi_USB_Wi-Fi_Adapters. [Accessed: 23- May- 2016].
4. "RaspbianAbout - Raspbian", Raspbian.org, 2016. [Online].Available: https://www.raspbian.org/RaspbianAbout. [Accessed:22- May- 2016].
5. K. Dumbre, S. Ganeshkar & A. Dhekne,"Robotic VehicleControl using Internet via Webpage and Keyboard",International Journal of Computer Applications (0975 – 8887), Volume 114 – No. 17, March 2015.
6. S. Rathod, V. Bansal & K. T. Patil, "Android Controlled RC car Unit", International Journal in IT and Engineering, Vol.04 Issue-04, (April, 2016).
7. C. Pornpanomchai, P. Sukklay, "Operating Radio-Controlled Cars by a Computer", IACSIT International Journal of Engineering and Technology, Vol.3, No.3, June 2011.