

Home Automation Using Raspberry Pi with Android Application

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Abstract- The project presents low cost, flexible and expandable home control using a raspberry pi, with IP connectivity for accessing and controlling electronic devices using smart phone. The main focus of this project is to provide the ease of access to handicapped and old age people his system is based on Sensors, Detectors, Relays, which is connected with raspberry pi. There will be the server where the live updates will be stored in database. We are using python for programming software and android application for remotely controlling. If you are not at home than also you can check the temperature of your home and according to it you can turn on ac from app. We have planned to implement live streaming so that if any motion detected in the home than motion detector will detect it and send signals to raspberry pi and get update in android app.

Keywords- Raspberry pi, Relays, Sensors, Detectors, Python, Android application.

1. INTRODUCTION

Internet of things (IOT) can be connect with daily using gadgets like mobile-phones, Television, Sensor, Actuators to the world wide web. Where we can connect gadgets together and can start unique form of communication between people and things.

In this fast forward life, people want to make it better and proper. Main purpose of develop this system is to store time and human resources with privacy. In this busy life, we all have hectic schedule and one can think of living in a comfort zone. Home automation is best idea to live in comfort zone.

Home automation is the controlling and monitoring the entire electronic device in our home. Various types of home automation available in the market. All systems are developed depends on our requirement. Smart phones are using in this system because we can access internet from anywhere so we can control all devices from anywhere and anytime. If any light is forgot to turn off than also, we can also turn off it from outside.

2. LITERATURE REVIEW

Major headings should be typeset in boldface with the words uppercase.

2.1 Home automation system using internet of things.

[1] Internet of things is an increasing network of day by day object-from industrial machinery to consumer electronic gadgets that can share data and total assignments while you are busy with other things. The IoT is purpose to merge whole things in this world under a general construction, providing us not only control of items around us, but keep in touch with which is far away from us. smart home with the

growth of Internet of things is better now, several devices such as, Apple, Amazon, Google, Samsung, are all intersect into this space to give the base and solutions for automated homes. Present research addresses IoT idea by technical research of best review papers, relating clear papers, and professional meets with specialized and internet information. Mainly purpose of this paper gives a summary of Internet of Things, design, and different technologies and use in day-to-day life.

2.2. Home Automation using IoT

[2] Smart home has become more and more famous in upcoming time. Goal of this system to supporting human the electronic devices easily and developed an autonomous atmosphere around us. Main purpose of this report is the smart home with protection and operating the smart devices using Wi-Fi developed this system with the execution of corporate software and hardware. For providing protection the motion sensor and vibration sensors are using for sensing the movement and vibration to prevent from theft. Aware the user through buzzer and starts to record it by web camera. The temp and humidity of every room is detecting and manage at room temperature using temperature and humidity detector which start the exhaust fan to manage the atmosphere. The water level detector is utilized to fill the water tank without miss use of the water. For monitoring reason Arduino mega 2560 and ESP8266 is used because the Arduino has the beneficial for easy to use and modify. The Arduino board is particularly developed circuit board for coding and sample with ATMEL microcontroller. The microcontroller used in this Arduino is AT-mega 328 which is fixed in Arduino board and the programming are done in java script

2.3. Home Automation Using Internet of Things

[3] Advance smart home, tasks are becoming comfortable and easier in all appearance. Nowadays smart systems are becoming favorable over non-automatic system. Increasing the numbers of users internet over the previous years. Internet is an important part, and IoT is the newest and become a visible internet technology. Internet of things is an improving network of day by day devices-from industrial machinery to consumer goods that can share information and full tasks while you are busy with other things. Wireless Home smart home using IoT is a system that uses desktop or android devices to control basic device and features automatically by smart phone from everywhere. It is better to save the power and human power. Smart home system differs from other system through permitting the user to control the system from his destination. In this research we described a Home Automation system using Intel Galileo that employs the connecting of cloud networking, wireless communication, to give the user with remote control of several AC, switches, and appliances within their home and saving the data in the cloud. The system will automatically change on the basis of detectors information. This system is developed to be low cost and expandable allowing a various devices to be managed.

2.4 Home Automation using IOT and Arduino

[4] This paper is to develop smart home-gadgets which can be used to manage the electronic devices through android apps. The electronic device that you develop can be combination with all devices and can be used to manage them remotely from anywhere. For providing the wireless connectivity with the system, the Arduino Uno will be embedded with a Wireless connectivity. This establishes the internet connection to the system and all the electronic devices can in turn be interfaced and managed by phones. This gadget can also be connected to a mobile application which you can design in software. By using this application, you will be able to observe and manage the electronic gadgets from anywhere. User also include a motion detector with project to make it turn ON non-manually the gadgets whenever a human enters the room and switch OFF the gadgets whenever the human left the room.

3. DISCUSSION

In all the home automation system we can add more flexibility by using android application and raspberry pi model. This system is design for easy to access and overcome the limitations of existing systems. This home automation system using raspberry pi and controlling through mobile applications. For

programming, we are using python language which is open source and easy language. In all the existing system there are wired system, but in this system, we are using wireless communication and easy installation. In latest version of raspberry pi model there is in-built Wi-Fi module. Using android application and raspberry pi user can monitor and control electronic device from remote location. Existing system is also consisting smart tools but they are connected by wire so that is too much complex system and have some limitations. For wireless system we can use Wi-Fi or Bluetooth for communication. Home automation can be expanding in various systems.

4. SYSTEM OVERVIEW

Item one Mainly consist things in this home automation:

4.1. Android application: Mainly user can control all the connected devices by Smartphone through android application. In that application there is a login page for new connection of devices. It consists number of buttons which is using for controlling connected devices by one touch. In this android application user get live notification of connected devices to control device. Main advantage of using android application is can control device from anywhere.

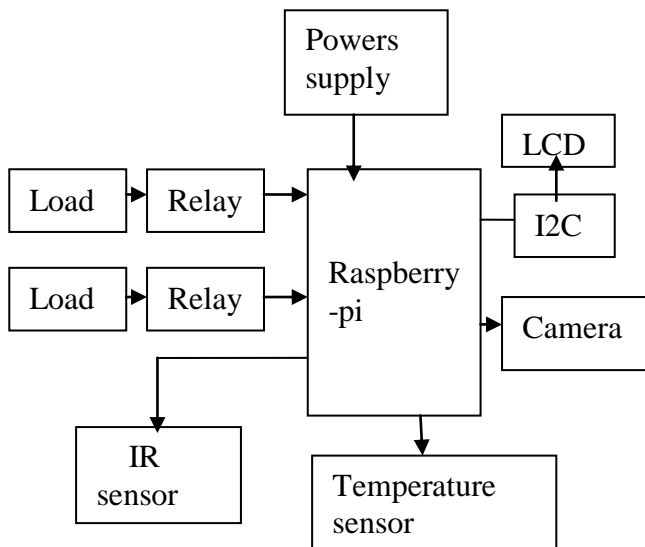
4.2. Python: It is a high-level programmable language. It is using for generic function programming. It is used for web-development, software development, mathematics, and system scripting. Python has automatic memory management. Python is available for many operating systems. The python is open source software. Python works on windows, Linux, Mac, Raspberry Pi etc. it has simple syntax. The python has syntax that allows completing programs in fewer lines. It is working on interpreter system; program is executed as soon as written. It supports object-oriented, functional and procedural programming. It has large and comprehensive standard library

4.3. Raspberry model 3B: The Raspberry Pi 3 Model B is the newest version of the Pi computer. This compact device is use for various applications and more advanced than the exists pi models

4.3.1 Technical specification of pi 3B model

Sr. No.	Features	Values of pi 3b
1.	Ethernet port	Yes
2.	GPU	Video core 4
3.	Processor speed	1.2GHz Quad-main processor
4.	Wi-Fi	In-built
5.	Bluetooth	In-built
6.	Storage	1 GB
7.	RAM	1 Giga byte SDRAM of 400MHz
8.	GPIO	40 pins
9.	USB 2.0	4* USB pots
10.	Maximum power draw/voltage	The highest power is about 2.5A and voltage is 5V

5. DIFFERENT APPLIANCES



6. ADVANTAGES AND DISADVANTAGES:

Numbered items Advantages:

- Control all the devices remotely.
- It is easy to install new devices.
- Maximize the protection of home.
- Help to save the power.
- Easy for disable users.
- Provides comfort to users.

Disadvantages:

- Uneducated people cannot use it.
- May be leakage of data.
- It is extremely reliant on internet connection

7. CONCLUSION

We can easily install different kind of smart devices in our life to make it easy and comfortable. We can also add some features like light, fans, smart lock etc. to take special benefits like simplicity, security, and accessibility.

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