

SMART HOME AUTOMATION USING IOT (Internet of Things)

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Abstract

Nowadays, old manual systems are getting replaced by the automated ones. In day to day life, humans have made internet an integral part of their everyday life without which they are helpless. Internet of things (iot) provides a platform that allows devices to connect, sensed and controlled remotely across a network infrastructure. We have at the touch of a button access to large amounts of information due to the capability of computers and the Internet. Not only technology has given us more information, but also has given us the ability to communicate, organize, and manage our time. Smartphones are handheld faster processing devices that are becoming more popular as the means by which everyone manages personal information, accesses and enters corporate data. In this proposed system raspberry pi is used as gateway between web dashboard and actual system devices as well as sensors. For faster communication point of view in this system MQTT protocol is used which access the sensors data and devices from anywhere in the world. Sensors and devices are communicating to the raspberry pi through the wireless connection. Multiple appliances can be controlled and monitored using IoT in propose system. Web portal will play an interface between appliances and android app to be developed. Raspberry pi which will control devices and sensors in propose system; relay controller will be used to automate the home appliances.

Key Words: - IOT (Internet of things), Home Automation, Cloud computing , Wi-fi module, Raspberry pi.

1. INTRODUCTION:

In this paper, with a goal to achieving expansion of automation we have reported an good implementation for Internet of Things used for checking and controlling regular conditions by using low cost sensing system. It would create a relay of machines that provide stimulus to each other and require the least human interference. The details about the interconnected network architecture and it is the evolution of manually controlled devices or appliances such as Microwave oven, Washing Machine, Fan, Air conditioner, etc to smartly managing devices. The IOT application have become this popular in this 21st century is due to the dominant use of the internet, evolution of smart phone technology and raised standards of mobile communication

IoT is very big and contains different variety like smart phones, tablets, digital cameras and sensors. Every devices are connected to each other , they enable more and more smart processes and services that support our human basic needs, economies, environment, health etc. Such number of devices connected to internet provides many kinds of services and produce huge amount of data and information details.

This propose system will help in reducing the energy wastage by continuously monitoring and controlling the electrical & electronics appliances. Smart Home or home automation introduce technology for home atmosphere, temperature , pressure which is usage to provide ease and protection to its occupants. By using the technology of the Internet of Things, The internet of things (IoT) is the network of physical devices, vehicles, buildings and other items embedded with electronic, software, sensors, actuators, and network connectivity that enable these objects to collect and changing or modified the data.

1.1 Raspberry Pi

The Raspberry Pi Compute Module (CM1), Compute Module 3 (CM3) and Compute Module 3 Lite (CM3L) are DDR2-SODIMM-mechanically-compatible System on Modules (SoMs) containing processor, memory, eMMC Flash (for CM1 and CM3) and supporting power circuitry. These modules allow a designer to leverage the Raspberry Pi hardware and software stack in their own custom systems and form factors. In addition these module have extra IO interfaces over and above what is available on the Raspberry Pi model A/B boards opening up more options for the designer. The CM1 contains a BCM2835 processor (as used on the original Raspberry Pi and Raspberry Pi B+ models), 512MByte LPDDR2 RAM and 4Gbytes eMMC Flash. The CM3 contains a BCM2837 processor (as used on the Raspberry Pi 3), 1Gbyte LPDDR2 RAM and 4Gbytes eMMC Flash. Finally the CM3L product is the same as CM3 except the eMMC Flash is not fitted, and the SD/eMMC interface pins are available for the user to connect their own SD/eMMC device. Note that the BCM2837 processor is an evolution of the BCM2835 processor. The only real differences are that the BCM2837 can address more RAM (up to 1Gbyte) and the ARM CPU complex has been upgraded from a single core ARM11 in BCM2835 to a Quad core Cortex A53 with dedicated 512Kbyte L2 cache in BCM2837. All IO interfaces and peripherals stay the same and hence the two chips are largely software and hardware compatible. The pinout of CM1 and CM3 are identical. Apart from the CPU upgrade and increase in RAM the other significant hardware differences to be aware of are that CM3 has grown from 30mm to 31mm in height, the VBAT supply can now draw significantly more power under heavy CPU load, and the HDMI HPD N 1V8 (GPIO46 1V8 on CM1) and EMMC EN N 1V8 (GPIO47 1V8 on CM1) are now driven from an IO expander rather than the processor. If a designer of a CM1 product has a suitably specified VBAT, can accomodate the extra 1mm module height increase and has followed the design rules with respect to GPIO46 1V8 and GPIO47 1V8 then a CM3 should work fine in a board designed for a CM1.

2. Experimental setup:

The sensors advanced sensing features and their increasing more accuracy enable the development of smart home applications that offer advanced automation. The most essential & important element that is required for making a smart home is an IOT based information centre which will act as a platform for the architectural building block of the over all system. The IOT architecture enables smarter, connected and human healthcare and wellness services to the persons in smart homes . IOT based home automation is applying new technology to make the housework and household activities more convenient, comfortable, healthy, green, safe and economical.

The PHP programming language is used to create a point to point web socket and a web application. After creation of such a socket, it is connected to the cloud server with the help of the internet connection. Once the data is received, it will show notification and will refresh the data. This refreshed data will be send to the control user interface. The control user interface is everything that the user has to act upon. The received data in the control

user interface is shown in the monitor or on the control screen.



Fig1.1.: Experimental setup

In home automation system we have design a experimental setup as shown in Fig1.1. we used raspberry pi as a main controlling unit. And to control electrical home appliance.

2.1. Proposed System :

The block diagram of proposed system is shown in Fig2.1. The Infrared sensor (IR) is a low cost object detection unit that we can be applied at home using IR LED's. It gets triggered when light is detected. When the sensor is sensed it sends a signal to raspberry pi. From the raspberry pi, by means of WIFI configuration and IoT concept we can turn ON/OFF the light & Tv. Similar to IR, the PIR sensor is used to detect the human being presence and accordingly the fans are turned ON/OFF. The lights and fans and television can be controlled by creating web server in personal computer, tablet or we can create an app in mobile.

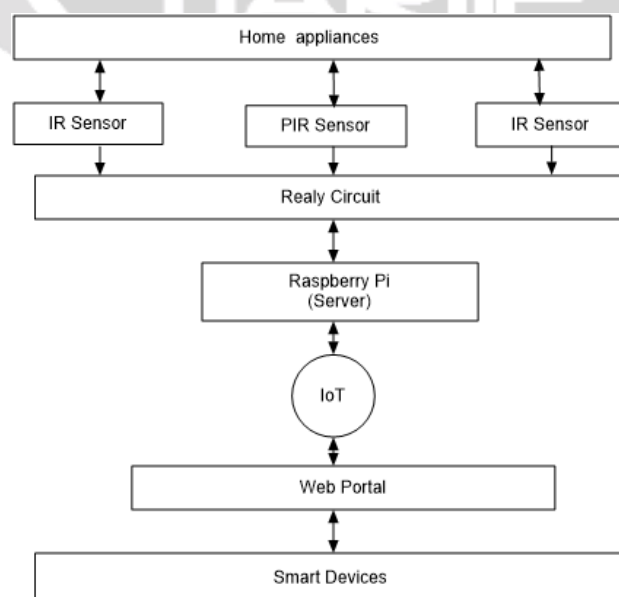


Fig.2.1: Proposed System

3. Literatural Servey:

For propose system we look related paper as a follows:

In[1] These paper state that Home automation for the older and disabled people .That will offer raised quality of life for persons. It may provide an interface to home appliances or the automation system itself, via telephone line or the internet, to supply management and observance via a smart phone or personal computer.

In[2]In this paper, we have reported an effective implementation for Internet of Things used for monitoring regular domestic conditions by means of low cost ubiquitous sensing system.

In[3]The Internet of Things (IoT) is a omnipresent Internet-based network. However, the IoT exhibits characteristics that pose considerable risks: heterogeneity, inherent openness, and terminal vulnerability

In[4]In Resent year Popularity of Home automation has been increasing because of low cost and simplicity through tablet and Smart phone connectivity. It is an automation of home or house hold activity.

4.Conclusion:

In this paper we focus on the process of operating or controlling various equipment, machinery, and other electrical and electronic appliances using various control systems remotely. This method of operating or controlling such applications is referred to as automation which has become an integral part of everyday life for human beings. The model has its roots on an IOT platform that allows devices to synchronize with the IOT platform so that it can be controlled remotely. The platform uses the IOT technology to create a network between the main server and the other electrical and electronic appliances making home a smarter place to live in. The whole network consists of admin which makes our model a secure one as the admin only have the authority to access all the nodes present under each user. In this paper, we developed a new architecture, TEES as an initial attempt to create a traffic and energy efficient encrypted keyword search tool over mobile cloud storages. We started with the introduction of a basic scheme that we compared to previous encrypted search tools for cloud computing and showed their inefficiency in a mobile cloud context. Then we developed an efficient implementation to achieve an encrypted search in a mobile cloud. The security study of TEES showed that it is secure enough for mobile cloud computing, while a series of experiments highlighted its efficiency. TEES is slightly more time and energy consuming than keyword search over plain-text, but at the same time it saves significant energy compared to traditional strategies featuring a similar security level. Based on TEES, this work can be extended to more other novel implementations. We have proposed a single keyword search scheme to make encrypted data search efficient. However, there are still some possible extensions of our current work remaining. We would like to propose a multi-keyword search scheme to perform encrypted data search over mobile cloud in future. As our OPE algorithm is a simple one, another extension is to find a powerful algorithm which will not harm the efficiency.

5. REFERENCES

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