

TONE GUARDED INTELLIGENT HOUSE HOLD AUTOMATION

R.VEERA SANTHYA¹, M. SWETHA², A.ASHINA³

^{1,2,3}ELECTRONICS AND COMMUNICATION ENGINEERING,
Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY

ABSTRACT:- In this paper we can survey on house hold automation using Raspberry Pi module and echo dot for the monitoring of the system. The intention of the project is to force electric and electronic gadget by interfacing them with smart device through internet Raspberry Pi 3. This helps us to access the gadget from any part of the world conveniently, thereby reducing the usage of conventional switches present today and establish secured and authentication network. This ensures that the power usage is minimized to the maximum extent and the system has a vast scope and limitless application in today's technology driven market where everything connected to the network.

Keywords: Raspberry Pi, echo dot, webserver, mobile application.

INTRODUCTION:

Internet of Things or IoT is a global network of physical devices connected to the Internet. The world is becoming more and more connected. Your smartphone can be connected to your toaster or refrigerator and there is no denying it. That is our future. Nobody knows what we can expect in even 5-10 years. We are completely surrounded by technologies that are designed to make our lives better but not everything is so simple. One such technology is called the Internet of Things (IoT). These devices are equipped with sensors and other information transfer mechanisms. The devices are usually combined by means of connection to a control and/or processing units. IoT states that inanimate equipment will be able to speak. Usually the Internet means computers and mobile devices. But Internet of Things refers to all unconventional electronic devices that exchange data through the Internet using a wired or wireless network. It can be a consumer's electronics like home appliances like web cameras, voice assistants, refrigerators, or washing machines. And even industrial Internet of Things - equipment like robotics, sensors and so on. The main principle of IoT means that everything that can be connected will be connected.

"Things", in the IOT sense, can refer to a wide variety of devices such as heart monitoring implants, biochip transponders on farm animals, cameras streaming live feeds of wild animals in coastal waters, automobiles with built-in sensors, DNA analysis devices for environmental/food/pathogen monitoring, or field operation devices that assist fire fighters in search and rescue operations. Legal scholars suggest regarding "things" as an "inextricable mixture of hardware, software, data and service".

These devices collect useful data with the help of various existing technologies and then autonomously flow the data between other devices. The quick expansion of Internet- connected objects is also expected to generate large amounts of data from diverse locations, with the consequent necessity for quick aggregation of the data, and an increase in the need to index, store, and process such data more effectively. In recent years with the massive growth in global cyber threat, there has been a significant rise in exploitation of IoT technologies for committing cyber terror crimes.

A. Raspberry Pi

The Raspberry Pi is of a credit card-size, single-board computer launched in the United Kingdom by the raspberry pi foundation. The main objective of this is to encourage basic computer teaching in institutes. The Raspberry Pi has a broad com BCM2835 system on chip, which comprises of an advanced RISC Machine 76JZF-S 700 MHz processor, video core IV GPU, and was originally distributed with 256 megabytes of RAM, later it is improved (Model B & Model B+) to 512 MB. It does not contain any built in hard disk or solid-state drive, but it uses an SD card for booting and persistent storage, with the Model B+ using a Micro SD. Figure show the Raspberry Pi Model B+ that used in this project. In order to use Raspberry Pi device it's required to start by installing an operating system onto an SD card. The Raspberry Pi operates on a LUNIX based open source operating system called Raspbian OS. This allows more control and flexibility in the software therefore making it easy to program the Pi. The Raspberry Pi communicates with the attached devices and sensors through C/C++ codes with addition library to control their functions. The model connected to a network using an external user supplied USB Ethernet or Wi-Fi adaptor. On the model B and B+ the Ethernet port is provided by a build-in USB Ethernet adaptor using the SMSC LAN9514 chip. The raspberry Pi 3 is equipped with 2.4 GHz Wi-Fi and Bluetooth in addition with Ethernet port. The raspberry Pi may be operated with any generic USB computer keyboard and mouse.

B. ECHO DOT:

Amazon Echo (shortened and referred to as Echo) is a brand of smart speakers developed by Amazon.com. The devices connect to the voice controlled intelligent personal assistant service Alexa which responds to the name "Alexa". This "wake word" can be changed by the user to "Amazon", "Echo" or "Computer". The device is capable of voice interaction, music playback, making to-do lists, setting alarms, streaming podcasts, playing audiobooks, and providing weather, traffic and other real-time information. It can also control several smart devices acting as a home automation hub. Amazon had been developing Echo devices inside its Lab126 offices in Silicon Valley and Cambridge, Massachusetts since at least 2010 in confirmed reports.



C. BLOCK DIAGRAM DESCRIPTION

This project consists of VPU, Relay driver, I/O devices, Raspberry Pi, Modem, Power supply. The input is given through Internet and external devices are controlled according to it. The various blocks of the project are given in figure 2.1.

BLOCKDIAGRAM

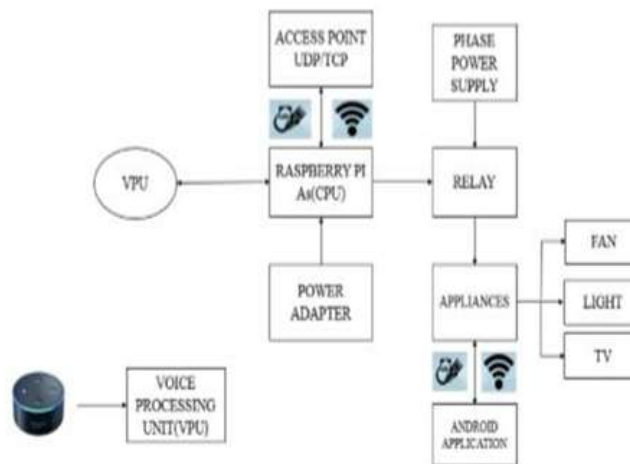


Figure (i) Block Diagram

The internet of things is of greater importance in promoting and getting things to be done within our hand. Now-a-days population has been increasing day by day which is directly proportional to power consumption. Communication between human and devices has become enormous even though manual operations exist. By automating all the devices we can create a network between human and devices to work and it also reduces power and labour work. Now the input may be from application, webpage or VPU. The processing of the input in interface with some micro seconds and updating in all the three modes takes place. Each and every module is connected in same router called Raspberry-pi(CPU). Monitoring and maintaining of the household ecosystem through webpage, apps or VPU these processes are completely controlled with help of Raspberry-pi. Bygiving the input to Raspberry-pi. It get trigger the optocoupler relay and the phase to the appliances 230 V has been given. These all are maintained under single router. By this the existing system also contains SHA 1 algorithm which is used for local authentication purpose. Through this existing method we can establish home appliances with user accessible anywhere from the world. Now-a-days peoples are comfortable with automation.

RESULTS AND DISCUSSION



The above figure represents the turning on the television appliances through voice recognition, so it can be updated in web page, application and VPU through the router by AWS which could call the lambda service for accessing. By establishing this module in household and industries can access the appliances anywhere in the world by authentication service and it can reduce the power.

CONCLUSION

This work establishes secured automation in home appliances using (SHA-1 algorithm) and authentication service using lambda service, for smart home automation. Future direction of this project is to implement industrial devices and it can be accessible globally.

REFERENCES

- [1] Intelligent Smart Home Automation and Security System Using Arduino and Wi-Fi by J. Chandramohan, R. Nagarajan, K. Satheeshkumar, N. Ajithkumar, P.A. Gopinath, S. Ranjithkumar, International Journal Of Engineering And Computer Science, Volume 6 Issue 3 March 2017.
- [2] Smart Home Automation: GSM Security System Design & Implementation by Computer Engineering & Informatics Department, University of Patras, Greece. Received 30 June 2015; Accepted 15 January 2016.
- [3] Industrial Automation using IoT with Raspberry Pi by H. K. Merchant PG Student and D.D.Ahira Assistant Professor, Department of Electronics and Telecommunication, Matoshri college Engineering and Research centre, Nasik Savitrabai Phule Pune University, Pune, India, International Journal of Computer Applications (0975 – 8887) Volume 168 – No.1, June 2017.
- [4] A Raspberry Pi Based Global Industrial Process Monitoring through Wireless Communication by Priyanka S Lonare , Dr. Mahesh Kolte Department of ENTC, MIT COE, University of Pune, India Professor, Department of ENTC, MIT COE, University of Pune, India, International Journal of Advanced Research in Computer and Communication Engineering ISO 3297:2007 Certified Vol. 5, Issue 9, September 2016.