Google Assistant using Voice Controlled Home Automation via Raspberry Pi

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Abstract— This paper present an era of smart home automation using Google assistant. This system is very useful and efficient it also provide the support of old age people and physically disabled people for one's who cannot able to do various activities efficiently. This system will accessible to anytime and anywhere and make it life easier. The idea behind this is to control home devices with voice. We will install Google assistant in the raspberry pi and Raspberry pi will be attached with a Smartphone which takes all the voice commands through which it will automatically control the home appliances. As the user give the voice command to the Smartphone according to that the home appliances can be switched ON/OFF accordingly. This project mainly focused to develop a system that will voice control the home appliances using Google assistant. The proposed system using internet of things for monitoring or controlling electrical appliances via Google assistant through wireless medium.

Key words: Google assistant, IFTTT, Raspberry Pi, Relay Driver Circuit, IoT

I. INTRODUCTION

In this modern revolution automation is the need of this generation to control systems and information technology. It is flexible and provides security when user is not present in home. The developed system uses Google assistant to communicate with the Raspberry pi and the user. The user give voice command to the device to control home appliances. IOT is new revolution of the internet and the expand of internet services and also provides information for better operation.
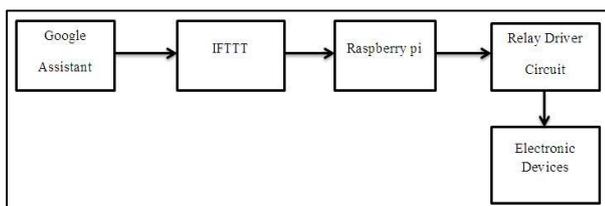
II. BLOCK DIAGRAM

Fig 2.1: Google Assistant using voice control home automation via Raspberry pi

First we give voice command through Google assistant. It converts voice command into text message. Then we use IFTTT platform for storing the command comes from Google assistant using Web hook server. This IFTTT platform passes data information to Raspberry pi. Based on python coding Raspberry pi is work. According to the input, relay driver circuit is switched. In this way electronic device are worked according to input voice command.
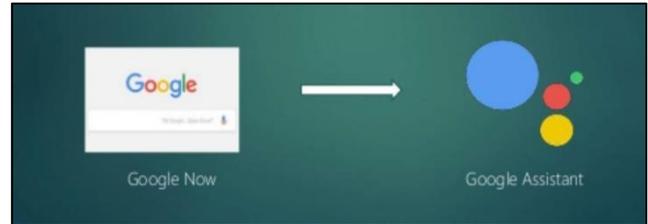
A. Google Assistant

Fig. 2.1.1: Google Assistant

Usually, people interact with Google assistant through natural voice but keyboard input is also available its similarly works as Google Now. It also uses the previous inputs to provide better answer in future.

Google assistant is Google"s next generation way of searching with Google. Rather than providing links to websites, Google assistant is designed to have communicate with you in order to complete tasks.

B. IFTTT

In this method, we will add an additional feature to control the device using your own voice using Google Assistant and IFTTT.

IFTTT is called as „If This Then That". We can create our own applets and connect them with the available services. We will create a trigger and then connect it to an action to perform our specific task. In our case, the trigger services will be „Google Assistant" and the action will be „Web hooks". Actions are the "that" part of an applet. They are the output that results from the input of the trigger.

In this applet consist are basic data available from a trigger to from the email trigger, for example; subject, body, attachment, received date and sender"s address.

C. Raspberry PI

Raspberry pi 3 model B+ features a 1.4 GHz 64-bit quad-core ARM Cortex- A53 CPU Broadcom processor. This single board computer provides dual-band 2.4 GHz and 5 GHz wireless LAN and Bluetooth 4.2. The Raspberry pi 3 offers faster Ethernet (Gigabit Ethernet over 2.0) and Power- over-Ethernet (PoE) capability. This single board computer also provides improved Preboot Execution Environment (PXE) network, USB mass storage booting and improved thermal management.
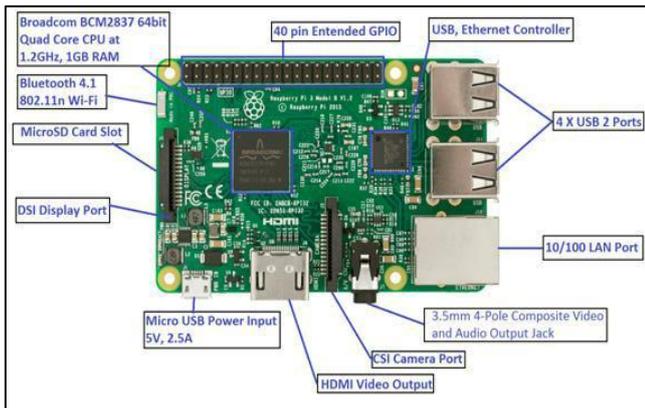
Fig. 2.4.1: Raspberry pi 3 kit

It is having 1 GB SDRAM memory,5V/2.5A DC power input (micro USB) power supply, wireless connectivity, 4 x USB 2.0 ports. It also provides extended 40-pins Genere Purpose Input Output (GPIO) header, Full size HDMI video port, composite video port, Micro SD port for loading your operating system and storing data.

Raspberry pi is also called as minicomputer It is having DSI port, Audio jack, In-built Bluetooth and WIFI.

D. Relay Driver Circuit

For this purpose the circuit requires relays, acting as controlled switches .The relay consists of continuous power supply and whenever it gets driven or other control signal then the relay gets activated and loads can be turned ON or OFF.

Relay is electrically operated switch. Relay is used when we want to use a low voltage circuit to turn ON and OFF the device which required high voltage for its operation to perform certain task. Relay acts as switch depending on required input command. For example, 5V supply connected to the relay is sufficient to drive the bulb operated on 230VAC mains.
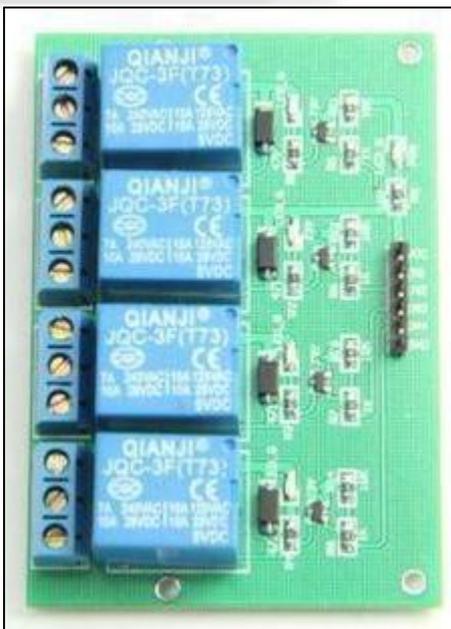

Fig. 2.5.1: Relay Driver Circuit

1) Pin Description:

Input:

- Vcc: positive voltage supply

- Ground : ground
- IN1-IN4: relay control port

Output:

- Connect a load.
- DC 30V/10A
- AC250V/10A

Relay having three terminal: Normally closed(NC), Normally opened(NO), and common(COM). By using proper combinations of the terminals electrical appliances may turn ON or OFF.

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