Home Automation with Speech Recognition Using Google Voice

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Abstract:- This paper proposes home automation using voice by a Google assistant. In same way, introducing home automation technology this year. It is a new trends in these days. In this paper, we can using Google Assistant control the home appliences. In this system, uses General domestic mechanisms, tongue voice commands are passed to a Google Assistant and commands be translated using IFTTT and then passed to a microcontroller. Controls the connected relay as needed by rotating the device with related relay on or off as requested by Google Assistant. The microcontroller be utilized NodeMCU also the interface during the microcontroller. The system is accepted through internet.

Keywords:- Google Assistant, IFTTT, NodeMCU.

I. INTRODUCTION

Home is a place where a person gets tired or wants after a very exhausting day. After many hard works, people come home tired. Some are so tired that when they sleep on their bed they find it difficult to move. So find the device / technology that can turn their lights on or off or any home appliance, etc. with the help of their mobile phones that will make their home more restful. In addition, things like heating the bath water and adjusting the room temperature will only work if the voice commands are done before they arrive at their home. Therefore, when people arrive home, they will be adjusted to reside temperature, bath water according to their proper liking, as well as they can immediately become less tense and feel comfortable also more at home. In the past, helpers were like millionaires houses, like homeworkers. Even though technology is working well now, people in the community have been bear blessing these new perceptive home appliances, as the cost of this appliance is a piece higher. But, every person is not rich sufficient to be able to bring the expense of a person assistant or around intelligent residence kit. This is way want to find an affordable and intelligent helper for ordinary relatives is increasing.

In this paper, proposed that very a cheap system. They use Google Assistant, IFTTT [1] application, Blynk [2] application and NodeMCU[3] microcontroller being main parts with relay board with ULN 2803 IC with 4/8 relay. Natural language voice is used to command Google Assistant[4]. This system under IoT maintains, every parts are joined to the Internet through Wi-Fi [5].

II. SYSTEM ARCHITECTURE

The system is divided into two parts,

i. Hardware:- The ability to attach the router. It will be enabled turn on / off an identified device. These are called 'control units'.
ii. Software:- Blynk App, IFTTT App and Google Assistant create software for this invent and this approach will be combined into an Android device.

The control unit consists of microcontroller-NodeMCU and 4/8 channel relay board. Relay board utilizes ULN 2803 IC to manage the relays. The Blynk app on an Android device interfaces along the microcontroller also sends proper signal through WiFi.
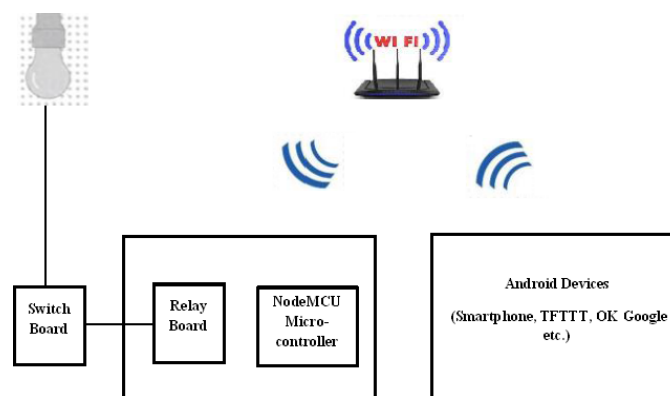

Fig 1:- System Architecture

Hardware, also known as a control unit of NodeMCU microcontroller and relay board. The digital output pins of the NodeMCU are connected to the relay at the pin end after relay board, every relay attached a device. In Fig.1, relay is attached to a bulb.

III. IMPLEMENTATION

A. NodeMCU (ESP8266)

NodeMCU (Node Micro Controller Unit) is an open source software and hardware development environment create about ever much cheap system-on-a-chip (SoC) known as ESP8266. Develop and create by ESP8266 extract, it has all the important components of a modern computer: CPU, RAM, networking (Wi-Fi), and even modern operating systems also SDKs. This makes it a great choice for system design.

NodeMCU's mission is to facilitate ESP8266 development. It has two key components.

i. Open source ESP8266 firmware built on top of the SDK owned by the chip manufacturer. The firmware supply a easy programming domain found on eLua (embedded Lua), which is pretty easy also rapidly scripting language with the built developer group. Learning the Lua scripting language is simple for newcomers and can also be programmed with Android IDE to add to the NodeMCU.

ii. A development kit board as include the ESP8266 chip on a standard circuit board. The board has a integrated USB port that beforehand has a chip, a hardware reset button, Wi-Fi antenna, LED lights, also a standard-sized pin that can be plugged in the bread board.

B. RELAY BOARD

The relay is an electromagnetic switch. When a small current of microcomputer seeked to it, it becomes active. Typically a type of switch is used as an automatic switch in the relay circuit. In this, different variety of relays and they run on to varying voltages. When a circuit voltage made it must be evaluted that it will trigger the voltage. The relay circuit equipment is used to turn on / off. The high / low signal is provided by the NodeMCU microcontroller. The device relay is turned off when it is given low voltage and it is switch on when high voltage is stated. The relay circuit can be revised to user demands to increase the number of devices in the home automation system.

C. ULN 2803 IC

ULN 2803 IC [6] is utilized for the relay driver. This is a high voltage, high current transistor array IC that is use to in microcontrollers that we want to load more power. There are eight NPN Darlington attached transistors with normal clamp diodes for load attached to the output. Make extensive use of this IC such as lamps, relays, motors.

Nearly chips operate along low level signals which operate in the range of (0-5) V also are unable to carry high power inductive loads. But this chip get held on a low level input signal (TTL) and utilizes it to turn on / off the high voltage load attached to the output.

The ULN2803 IC has eight NPN Darlington pairs that provide actual current amplification desired by the load. The Darlington pair has 2 transistors that work as single transistors, which provide high current gain. In this pair, the next transistor providing high current to the output terminal increases the current transmitted by the first transistor.

D. BLYNK APPLICATION

Blynk [1] is a platform for controlling Arduino, Raspberry Pi, NodeMCU also additional boards on the Wifi, including iOS and Android apps. Blynk was designed for the Internet of Things. It can remotely control hardware, display sensor data, store data, visualize also much more. Blynk app setup needed; put it up that required. We start by developing the project and after that choosing the microcontroller we will be applying. Then which we develop on/off buttons for every relay corresponding to the digital pin of the microcontroller. As soon as this is done, Blynk sends an authentication reminder to the email address registered for this certain project. This reminder should be kept in mind also protected for apply when setting up NodeMCU programming and IFTTT applications.

E. IFTTT APPLICATION

IFTTT [2] called from the Programming Conditional statement, "If so, then that's it." IFTTT is both a website and mobile app and has the declaration "Keep the Internet working for you". The IFTTT application is utilized narrow the space during the Google Assistant command and the Blynk app.

To set up the IFTTT application we need to log in, next which we want to develop a let palette, and after that on the "Yes" trigger, we choose the Google Assistant and next type the commands we will reply with Google. The command should control the corresponding device / relay. Response command from Google Assistant can also be typed as desired.

Once the trigger is configured, we need to configure the application to be "this". What to do once we hear the recently configured commands with Google Assistant? This is determined by placing the app's "it". We press "it" and next choose webhook [7] and press connects. Webhooks will grant you to send commands to the Blynk server. In the URL we type in the IP address of the Blynk server go after by the authentication recognition sent by Blynk and next the pin number of the microcontroller that the device is to control. The URL is in the following format:

http://188.166.206.43/AuthToken/pin/Corresponding DigitalPinNo

After that by procedure we choose 'PUT' and the content type is 'Application/JSON' [8] and in the body we write ["1"] to turn ON and ["0"] to turn OFF. This establishes operation for the prompt, i.e. a Google Assistant

command. The operation to be brought is clearly sending a message to the Blynk app to switch the connected device on or off.

Finally, the microcontroller is programmed accompanied by the operations it requires to perform after receiving a signal from the Blank application. Behind that, Blynk and microcontroller should interface also interface will be done through the internet and being a microcontroller, NodeMCU is approach with integral Wi-Fi module, once plugged in is programmed to attach to the required network. The 'C' language is used to program microcontrollers and is programmed in Arduino IDE[9].

IV. CONCLUSION

The purpose of this paper was to propose effective voice control (Google Assistant) home automation to control common appliances found in one's home. The approach discussed on the paper was successful because the Google Assisted Controlled Home Automation) design was successfully implemented. The system is extremely reliable and efficient for older people and a different capable person on wheelchairs who cannot reach the switch to turn the device on / off and rely on others.

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