

# Multi-Language Voice Control Automation (IOT) Using Voice Assistant

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**Abstract**— In today's world the automation is becoming a huge part of our life, most of the things related to electronics are now getting automated as the time is going on. The main purpose of this is to make stuff easier comparatively faster than the manual work. It is helping to our busy scheduled life, so motivating to do such research in this field. Using different types of IOT devices such as Node-MCU microcontroller and online services like IFTTT. we have tried to make an automation of our domestic electronic devices. The interesting outcomes of the project include that devices can be controlled remotely, irrespective of the distance of operator. The study definitely answers the question related to automation of electronic equipment when it comes to distance problem. IoT has made man's work convenient and simpler. Human can now control the devices with just voice commands and few clicks on their smart phones. Just a click has got the ability of performing a huge set of actions.

**Keywords:** Automation, Voice Assistant, Node MCU, Wi-Fi

## I. INTRODUCTION

Internet of Things is a concept where each device is assign to an IP address and through that IP address anyone makes that device identifiable on internet. Basically, it started as the "Internet of Computers." Research studies have forecast an explosive growth in the number of "things" or devices that will be connected to the Internet. The resulting network we get is called the Internet of Things. The recent developments in technology permit the use of Bluetooth as well as Wi-Fi have enabled the different types of devices to have capability of connecting with each other. Using a WIFI shield to act as a Micro web server for the Arduino which eliminates the need for wired connections between the Arduino board and computer which reduces cost as well enables it to work as standalone device. The Wi-Fi shield needs connection to the internet from a wireless router or wireless hotspot and this would act as the gateway for the Node MCU to communicate with the internet. By keeping these ideas focused, an Internet based automation system for electronics devices, and home appliances is designed.

## II. PROPOSED SYSTEM

Home automation in an project to control the devices in timely and systematic manner. The devices can be controlled wirelessly from other places using wireless technology. RTC with EEPROM can be used record all the working parameters in the devices or appliances. Basically, the project is done with concept to bring automation in the industry and home. All the home appliances will be controlled by mobile Using Google Assistant. The Devices in the industry or home will be interfaced with centralized micro-controller by NODE MCU for the systematic working. The inbuilt EEPROM presened in the mcu will be activated for the operation to be done. The controller also

interfaced with WIFI to receive the control commands from Wi-Fi shield (Wi-Fi hotspot). The operator will be provided with Google Assistant having to give voice commands. If operator wants to switch the Light to turn on or off he needs to give voice command on google Assistant. Once he gave the command, will send the data to Wi-Fi present at microcontroller. As and when the request is received the microcontroller activates the RTC and EEPROM and as per request received the operation will be done. In the same way any other appliances or devices can be controlled.

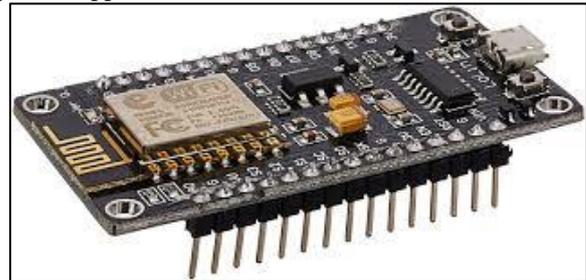


Fig. 1: Node MCU microcontroller



Fig. 2: Relay Module (2 Channel)

### A. Configuring Adafruit

First, created account at [www.adafruit.io](http://www.adafruit.io), Now, create Firstly, created account at [www.adafruit.io](http://www.adafruit.io), and, create dashboard at Adafruit. This dashboard is an user interface to control things remotely. Now, create feeds (user interface) to control light On or Off. To create it, just click on '+' plus symbol and select toggle feed as shown. After selecting toggle feed, pop-up window appears. Enter name of our feed and create it. After creation, select the created feed and then click on Next step, Here, We used 0(OFF) and 1(ON) text for button and then click on create. This will create toggle button on the dashboard which can be used to control things remotely. Here, This will create toggle button on the dashboard which can be used to control Appliances remotely Irrespective if distances.

### B. Configure IFTTT Server

Create an account on IFTTT server by using same e-mail id which you have used for Adafruit. After account creation, click on My Applets and then select New Applet After selecting a new applet, we get a new page in which we

should click on to This button as shown .Then search for Google Assistant and select Now, enter a voice phrase which we will use as a command for google assistant. We can enter any phrase as per our Requirement. As you can see, the phrases entered in the fields is for making Light ON and for making Light OFF, we have to create another applet with different phrases. Now, we get another page on which we have to click on to that option which is used to connect Google Assistant with the Adafruit. Now enter, what data we need to send to which feed of Adafruit dashboard Click on the Create Action.

### C. Work flow

So, when we use the Google Assistant on our mobile and give the voice command as “Ok Google, Turn LED ON”, applet created in the IFTTT server receive this command and will send the data as ‘1’ to the Adafruit feed section. This will triggers the event on the Adafruit dashboard which is being continuously monitored by the microcontroller i.e Node MCU. This microcontroller will take actions as per the data changes on the Adafruit dashboard.

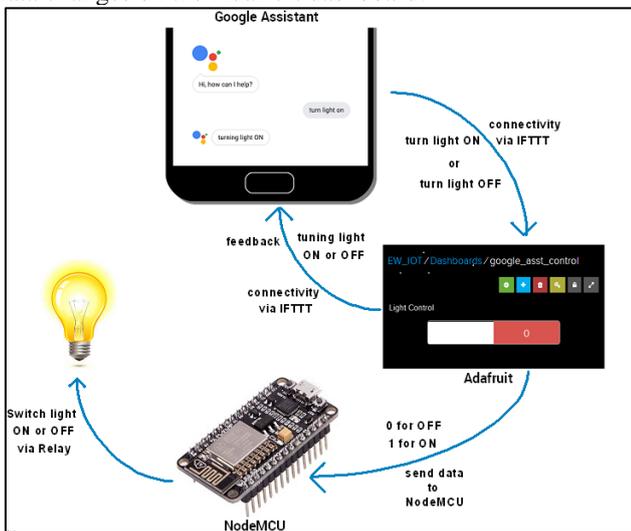


Fig. 3: Google Assistant Node MCU Cycle

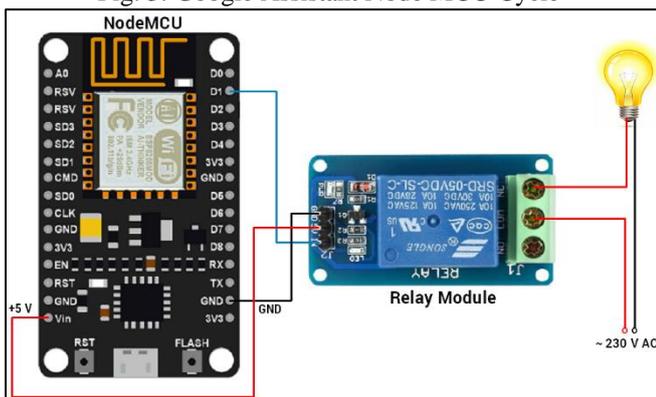


Fig. 4: Google Assistant Node MCU Cycle

### III. SYSTEM ARCHITECTURE

This home automation system uses the google assistant to control the devices at home. So, it also supports all the languages supported by google assistant.

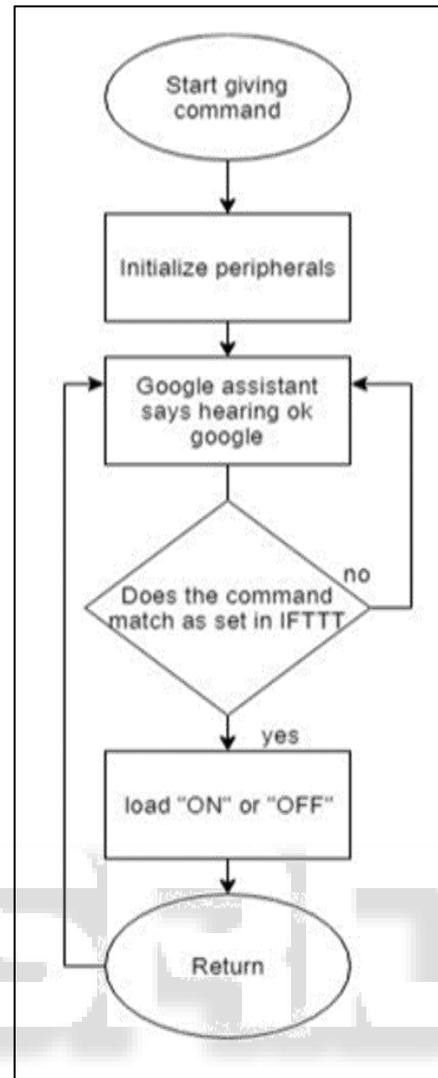


Fig. 5: System Flow Design

Firstly when operator gives a voice command using a google Assistant , it checks weather the command provided matched with the statement set in the IFTTT Server or not, if not matched it provided the usual result form the google engine , and if the command gets matched with the statement set in server then it invoked the Adafruit .The feeds are set already according to the users need, these feeds consist of the digital toggle button for ON and OFF operations , the action is set accordingly. Node MCU is programed in such a way that the 1 resembles that the relay should be triggered to ON and 0 resemble OFF operation. After the Command is Processed and Control is again transferred to the Google Assistant for further input.

### IV. PROBLEM OF STUDY

High cost of ownership, inflexibility, and difficulty in achieving security are the main challenges to home automation systems. The existing smart home systems have either been implemented or proposed have an elaborate procedure to interact with the home appliances. Some include pressing a button in a static location while some others include giving the commands through the smart phones. One of the main drawbacks of the existing home automation systems is the range Problem. Most of the

existing home automation systems have been implemented using technologies like Bluetooth. These restricts the usage of application within a certain area of range. Another drawback that exists with few application is that the users are forced to use the commands into a predefined way. This restricts the flexibility of the user to use system.

## V. RESEARCH DESIGN

This research methodology defines that how the development work should be carried out in form of research activity. Research methodology can be understand as a tool that is used to investigate in some area, for which data is collected, analyzed and on the basis of analysis and conclusions are drawn. The whole research of synopsis is divided into the four stages.

- 1) Implementing IFTTT protocol and finding out performance of IFTTT protocol.
- 2) Implementing Voice Assistant on IFTTT protocol and finding out performance of IFTTT protocol with Node MCU.
- 3) Implementing modification in IFTTT protocol and finding out performance of modified IFTTT protocol with Node MCU.
- 4) Result analysis.

## VI. FUTURE SCOPE

The whole design of this project is developed to target Senior citizens and physically challenged people. The main aim of this system is to control electrical appliances (Lights, Fans) in Home, offices or in industries. The HAS's input is fed with Voice Commands by the user through a mobile application. This system uses wireless network using ESP 8266 Wi-Fi module for its efficiency and low power consumption

The main contributions of this work are: The IoT based Home Automation will enable the user to use a Home Automation System based on Internet of Things (IoT). The modern homes are automated using the internet and the home appliances are controlled. The user give commands over the internet will be obtained by Wi-Fi modems

Future work will involve:

- Different control functions can be combined for improving design's flexibility for providing the regulatory instructions rather than giving a simple ON/OFF instruction. For example, Increase or decrease speed of fan, rise temperature etc.
- Powerful modem can be integrated in the design to increase the range or Impact area which helps into control the appliances from a very long distance
- online Home appliance control system on smartphone can also be designed.

## VII. CONCLUSION

we have shown the design and the features of a Smart Home Automation System. It is Wi-Fi module ESP8266 also called NodeMcu based, hence wireless transmission od data can be achived and it is also flexible in terms of cost. It has a special feature as a smart speech sense, which would decode the user's sentences into an appropriate command. It

requires authentication and details as a medium of security to execute given input commands, thus preventing use of the application by unauthorized users. In the future, the system could be using more concepts of Artificial Intelligence so as make more user friendly, increase the automation.

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