

Automation by Voice Commands

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Abstract

Automation is one of the most growing things now days. It increases the productivity & decreases the time, it is also very useful thing for special able people or those we needs to control machinery, electricity or many things from a single system. This paper attempts to describe how we can improve our automation systems. There are many limitations or draw backs in automation system. This innovation will improve many of the things like range, user specification & accessibility. There is no limitation of range i.e. this system can be control form anywhere. This system works by simple voice command to the Google assistant available in our android phone so even an illiterate person can easily access this system in any language. This system can be control by multi user as well as single user by a single e-mail account. This system is very secure because it can't be access without specific e-mail & password combination.

Keywords: IoT, embedded system, relay, wi-fi.

1. Introduction

This system is prepared by the use of concepts and facilities of internet of things (IoT) and embedded system. IFTTT is a web application, which provides triggering from one server to another server. Blynk is an android app which provide interface from hardware by providing different types of buttons and sliders. Google assistant is a service of Google Inc. which is use to search or do many task by just voice commands. NodeMCU is a microcontroller chip which connects hardware through internet using inbuilt wi-fi and get instruction from internet and gives to hardware. This system connects the servers of Google assistant and Blynk App by using IFTTT. Google assistant takes voice command and give instruction to Blynk App through IFTTT.

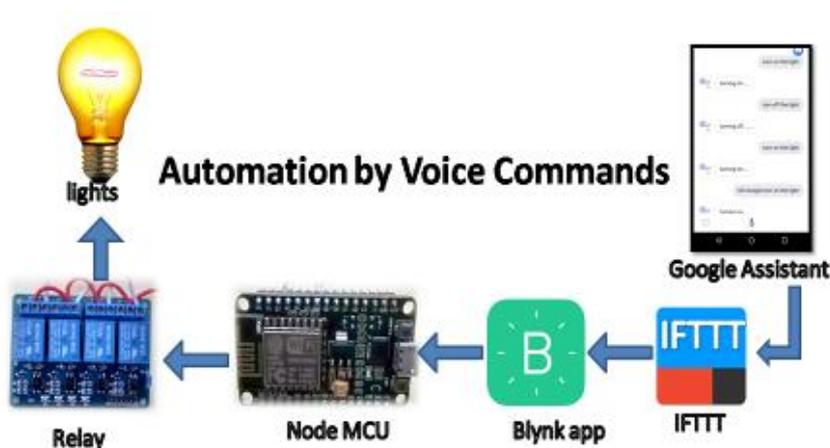


Figure 1: Illustration of working principle of project

Blynk App sends data to the micro controller chip NodeMCU ESP8266. NodeMCU connects to Relay, which Switch the electricity to be flow or stop.

1.1 Working of System

As the system is completely IoT & embedded system based we use Google assistant to operate the system and at the output side we use Microcontroller.

- **Configuration of IFTTT**
IFTTT simply means “IF THIS THEN THAT”. IFTTT create a condition on a server and if condition is fulfilled it perform task on another server.Using IFTTT we can simply set commands of the Google assistant and trigger them to blink App.
- **Configuration of Blynk App**
We can create button on Blynk App and then it generate a auth key, which we put in code of NodeMCU. Then NodeMCU will accept instruction from Blynk app.
- **NodeMCU**
NodeMCU accept instruction from Blynk App for particular pin and we connect relay to output pins of NodeMCU. So by switching through relay we can control our home appliance.

1.2 Problem Definition:

The many of the automation system have limitation as

- Specific Range:
- Not accessible for everyone
- Single user control
- Unsecure
- Costly

2 Problem Solution

- Whole process is running on internet, so there is no fixed range between system and controller.
- Works on simple voice commands, which can be set in any language so easy to access by everyone.
- It can control by multiple user. Google assistant links with Google account & multiple user can access that single account to control the system
- Without knowing Google account and password nobody can access or control this system, so it is secure.
- A single NodeMCU can control 16 appliance at a time so it is not so much costly.

3 Methodology

The complete project consists of 3 components

1. Node MCU ESP 8266:

It is an open source firmware setup which is used by developers to prototype their IoT based systems with Lua Script. Node MCU ESP 8266 works on Lua Scripting language. Lua is specially designed for volatile programming i.e. it provide the facility to change at a time in Software Applications. Its firmware based on ESP8266 Wi-Fi SoC which provides internet connectivity to hardware or circuit along with it.



Figure 2: Node MCU ESP8266

2. Relay:

Relay provides the switching in any electrical circuit. It is an electrically controlled switch and works on direct current. Relay consist an electromagnet to provide switching mechanically. There are some solid state relays, which does not work mechanically although it contains semiconductors. In this project electromagnetic relay is used while demonstration.

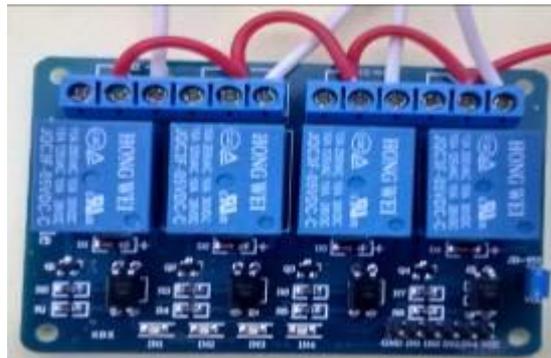


Figure 3: Relay

3. Android phone (with active Google assistant):

Google assistant is a virtual assistant provided by Google. It enables the feature of two way conversation. Google assistant can set alarm, send SMS, make calls, schedule event and also control hardware settings by voice commands.

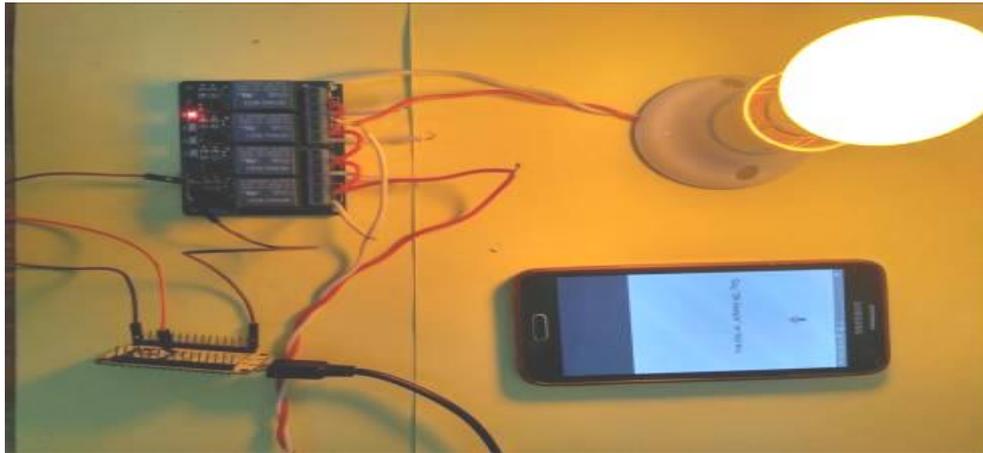


Figure 4: Real view of our

4 Conclusion

The “automation by voice command” system is capable to control our electrical appliance by Google assistant and mobile app. Implementation of voice recognition technique for appliance control system can make our life much easier. This type of project can be applied to the situations where it is not feasible to manually control the appliances. This project is also helpful for disabled and elderly living at home.

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