International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 9, pp: 600-602 www.ijaem.net ISSN: 2395-5252

Voice Enabled Switch Using ESP8266+Google Services

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Date of Submission: 15-11-2020 Date of Acceptance: 30-11-2020

ABSTRACT – As technology is getting advanced so houses are also getting smarter and energy efficient. New era homes are slowly shifting from old conventional switches to control system, involving IR controlled switches. Even it becomes more difficult for the elderly or physically handicapped people to do so. Voice enabled switch system provides a most effective solution with phones. To create this system ESP8266 [1] is connected with android Google Assistant. A Google Assistant App [2] on the cell phone takes voice commands as input. By saying things to assistant loads are controlled. The loads are operated by ESP8266 board through relay module.
Keywords – **NodeMCU** /ESP8266 [1], Google Assistant , Dialogflow [5], Firebase, Arduino IDE.

I. INTRODUCTION

House, a place where one spends relaxed time after long tiring day. One comes home after a long hard working day. They are so much tired that it is difficult to move even. Things will get awesome when people will be able to control things from their devices and it will be comfortable to them. We have IR controls for our television sets and AC, which have made our lives awesome and hassle free. Ever thought came to your mind that things can be monitored and controlled using phone with giving voice. Yes, you might have heard of that and even you might have used also but are they economical? I know the answer to this question is no. To overcome this problem I have designed a system that is economical and is very easy to use. The system uses Assistant and Esp8266 and cost less than a toy car(remote).

II. LITERATURE REVIEW

World is going towards 5G technology but why? The answer is Internet of Things. Internet of Things is the technology of interconnected devices to the internet. The main benefit of connecting things to internet is that they can be monitored and controlled from anywhere. Based on the Real-time situation of the device you can perform physical action with that device. So to implement the Inter of Things high speed connectivity is required and for that world is moving towards 5G. Our proposed system is the implementation of Internet of Things. As we give command using Assistant and that affects the values in firebase. Those values are retrieved by the ESP8266 which needs to be always connected to the Internet to fetch real-time values from firebase. One the most concerned issue with Internet of Things is Security.

For Security one need to have the Google Account so that it can be used to access the system to authorized user only. As all services used are from Google so authorization is done at Google's end.

III. EXISTING SYSTEMS

There are lot of smart systems present in the market that are used to control the loads. But these smart systems are either Bluetooth enabled or can only be controlled from short distances. These systems are based on IR, RFID or Bluetooth.

Moreover if there are systems that can be controlled from anywhere using internet are not feasible. Systems like Zigbee, Alexa are not cost effective.
They cannot be bought by everyone and used.

IV. PROPOSED SYSTEM

The proposed system does not cost more than cost of a toy car. All the hardware and software used in the proposed system are interconnected with the Internet. Therefore loads can be turned on and off from anywhere in the world no matter how far you are from your home. The system uses ESP8266 microcontroller, relay module as hardware and firebase [4] for real-time database, dialog flow to create Google actions, and web hook to change the values in firebase from assistant.

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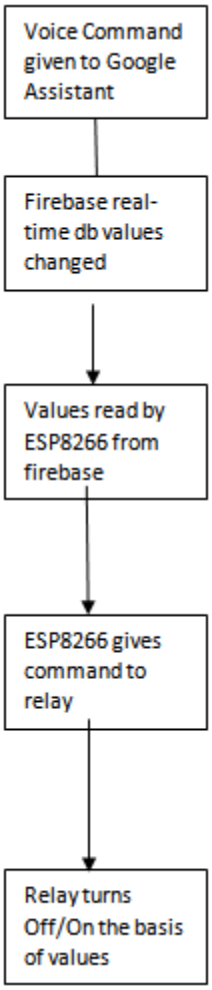
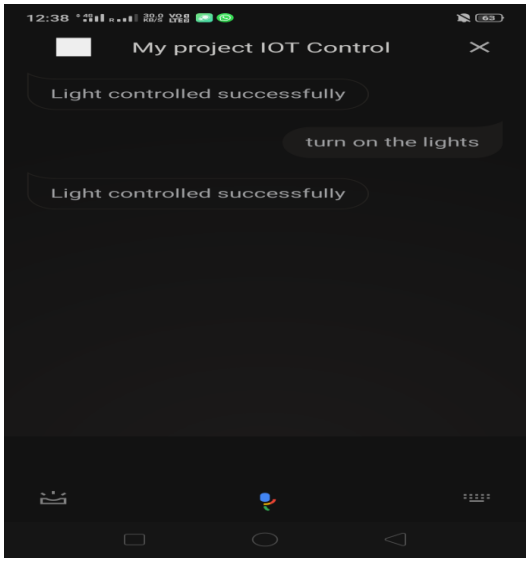


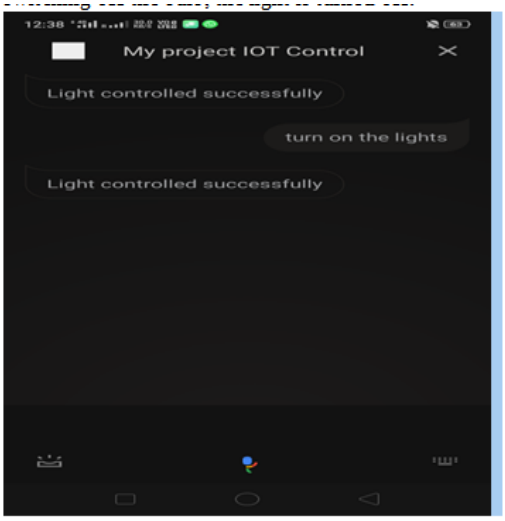
When voice command is given to Google Assistant it changes the values of variables in the firebase real-time database. These variable values are fetched by the ESP8266 constantly. On the basis of the values in firebase the relay is turned on or off. When relay is turned on/off, the loads attached to the relay are turned on/off.

V. RESULT –

When command is given through Assistant the lights gets turned on.



When command is given through Assistant for switching off the bulb, the light is turned off.



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VI. CONCLUSION

Smart home is the future and the necessity. Our country is in the phase of digital transformation. In the next ten to fifteen years things are going to change. They will not be same what they are today. People will depend on technology and smarter devices. One can argue over the dependency of humans more on machines than each other. But these solutions give hope and easy way to access thing to those who are not able to move due to physical disability or old age. Everything has its pros and cons. If pros overcome the cons then things should be taken into account. In the coming era of 5G things are going to get smart. So what is better than providing better and cost effective smart solutions to the world?

Future Scope – In future this project can be developed into whole system

1. It can be used to control, monitor 'n' number of appliances attached to the board.
2. Instead of only using a Google Assistant a web application or Smartphone application also be developed to handle the devices attached.
3. Google Assistant actions can be customized according to the needs and can be made more smarter.

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