



## VOICE CONTROLLED SMART SWITCH BOARD

Sahil Kumar Sondik, Dasari Bhulakshmi, Saikat Mukherjee, Sailodhar Rabha and Abhishek Bisht  
Department of C&IT, REVA University, Karnataka, India   sahilkr17@gmail.com, bhulashmid@reva.edu.in  
,saikat55mukherjee@gmail.com, sailodharrabha@gmail.com, abhishekbisht362@gmail.com

**Abstract-**The system is planned for Home automation (smart switch board) using IOT. The electronic devices such as computers, mobile, tablet can control the home automation features via Internet from anyplace. In this project we are going to implement voice based smart switch board. It will save not only human energy but also electricity (electric power). ESP8266 Wi-Fi module ,5v relay are the hardware used for this projects.The wireless communication is done between the ESP8266 and the electronic devise through Wi-Fi module. User need to pronounce through electronic device microphone instructing the appliances by telling appliances name to ON or OFF. This project facilitates the disable persons to control the home appliances without moving from its position. The limitation of this device are follows: and it always requires internet connectivity and this system fails to work efficiently in noisy environment

**Keywords-** IOT, Arduino, ESP8266, 5v Relay

### INTRODUCTION

In present time items or things are becoming smart. The invention of the gadgets through IOT is rapidly increasing which enhancing our lives. Sensors connects various devices with many other devices to communicated. As microcontroller are becoming cheaper which helps the developers to experiment and build new gadgets with the ability to take over the world. In today's world Automatic gadgets are preferred more. As the Internet users rapidly increasing over the decade, IOT becomes part and parcel of life. As IOT network growing day by day, various industries uses Internet of things to do there various task in same point of time, while others busy in doing other activities. Home Automation Systems are build to provide security, convenience, quality of life and comfort for residents. Mostly home automation system is designed for the disable and elderly people. As the gadgets are increasing rapidly, the muscle power for production goods and services are reduce, it will help the disable and elderly people for production of goods and services.

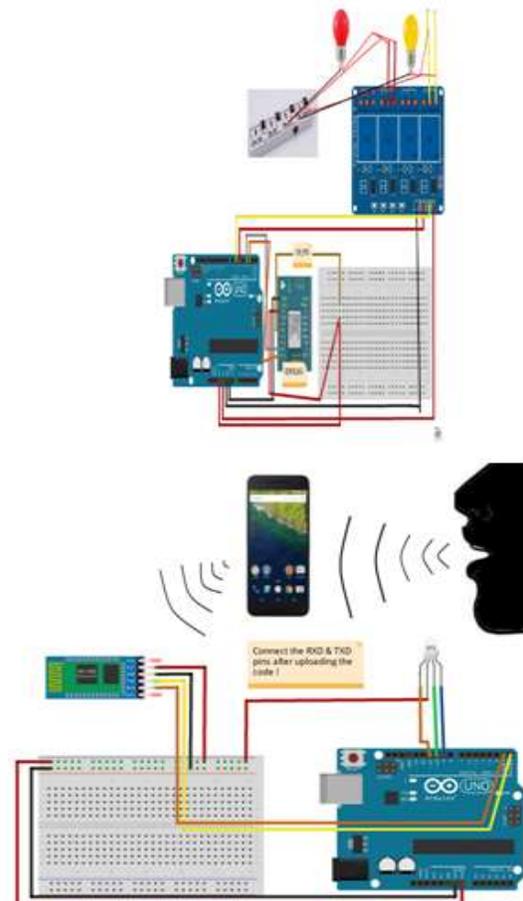


Figure 1. Voice Control Smart Switch Board

### LITERATURE SURVEY

After the survey we found that there was basically four types of Domotics system.

***Bluetooth Based Domotics System-*** In this automation system there are multiple benefits as well as drawbacks. By this we can fully control the home appliances as long as if it is in the circle of Bluetooth connectivity. The device which is a computer or a smartphone. The communication rate is very high and it also gives great security and it's cheap So, it is possible to implement it as a real time System. But the Bluetooth network have a small radius around 10 meters. If the receiver's device is not in the radius, Then it will loss the connectivity between the smart device and the home appliances. This is the major drawback of this Bluetooth based Domotics system.

***GSM Based Domotics System-*** In this the transmission between the prime component and home accessories is possible through messages between them. By this method it is possible to control and monitor the home accessories. But here the cost is directly proportional to the person who is using it and the accessory. This system is not reliable it is the major Disadvantage. Therefore, this type of system is not suitable for real time implementation.

***Internet Of Things(IOT) Based Domotics System-*** It is pliable as well as responsible.

***Voice Recognition Domotics System-*** It can be very useful for Physically challenged people and old people who cannot walk as it gives the liberty to control the home appliances just by speaking the appliance name in smartphone and telling it to switch on or off. By this anyone can control home appliances effortlessly. It provides a user-friendly interface and the user can add many more appliances as per the head into the system. Thus, this home automation system can be used in any building using electrical accessories and smartphones. The transmission between the user and voice recognition tool relay upon (SNR) is the main disadvantage of the system. If the command is too noisy.

#### **A Case Study on Voice Control Smart Switch Board**

Internet Of Things(IOT) is the new boom of this technological emerging era as it comes with a promising technology and with great potential for addressing many social challenges. It gives the liberty of controlling and monitoring red world services via internet which is the foundation of IOT. Recently this concept has been applied everywhere to make our environment safer, smarter and automated. However, In a smart home application the main serious challenges are enforcing privacy and security in smart home environments . In this paper, we have gone through recent articles and we have analyzed the common issues of cyber security and cyber attack which are the biggest enemy of smart home environments. In this paper we will suggest some security mechanism which can be more effective and can be used to make smart homes more protected and reliable.

#### **Bluetooth Based System Home Automation**

The process of Technology is never ending. Using current technology designing a product will be a huge contribution to the community as well as it is very beneficial to others. This paper consists of design & implementation which is very cost effective yet flexible and also it is very secure for cell phone base abode automation system. Our project design consists of an Arduino BT board and the abode appliances are connected using relays to the input and output ports of the relay. Wireless communication is used for the communication between the cell phone and the board. This system is scalable allowing the control of variety of devices with minimal changes to its core and is designed to be low cost. Access of appliances at home for authorized users is protected by password.

Wireless communication standards are increasing day by day because of high technology Business opportunity using Internet of Things(IOT). The aim of our project is to controlled the abode appliances & the apartment or building smart wireless home security system using the communication protocol. Automation for abode can be implemented by using different techniques of wireless communication like GSM, ZigBee, Bluetooth, Wi-Fi etc. These methods have a drawback because it works in short range. By implementing this project. we want to overcome the previous drawbacks. Our project mainly focuses on controlling fans and lights of abode and also it provides the smart security to abode by sending an image which is captured when an object is detected to the email of the owner. This project is implemented using Node MCU and it will be very helpful for the aged and handicapped people.

#### **I. METHODOLOGY**

The hardware architecture ESP8266 Wi-Fi module and. The wireless communication between the Esp8266 Wi-Fi smartphone and module is done over the internet. All the appliances that are to be controlled will be connected to relays of different capacities. Then connection between relays and ESP8266 Wi-Fi module will be done through jumper wires. ESP8266 Wi-Fi module will be configured to connect to the available Wi-Fi network or user defined access points. All the codes including internet configuration, and controlling codes will be burned into the ESP8266 Wi-Fi module. Then user's Google account will be configured with IFTTT. When Google assistant will receive voice commands it will send these to IFTTT servers, from where IFTTT module will post a HTTP request to the ESP8266 Wi-Fi module to ON/OFF the alliance. Using Adafruit/Blynk IOT platforms user can also control appliances without voice commands using mobile apps or web interface.

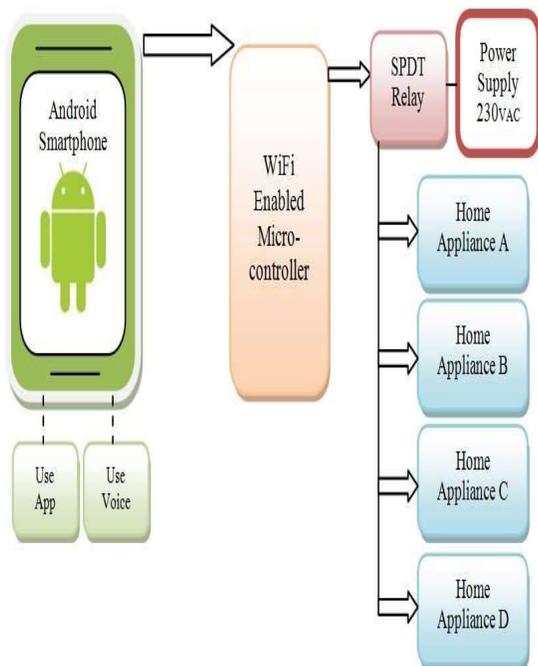


Figure 2. Smart Switch Board WorkFlow

## II. RESULTS ANDDISCUSSION

The home automation system is taken over the conventional wall switch methods, which reduced the loss of electricity and the human power. The loss of electricity is less as compared to conventional switches boards. Not only saves power but also it's more safer then conventional switch board, prevent from the short circuitities. Home automation saves a lot of time, without going physically it can operate the board from any place (with the help of Wifi module ).

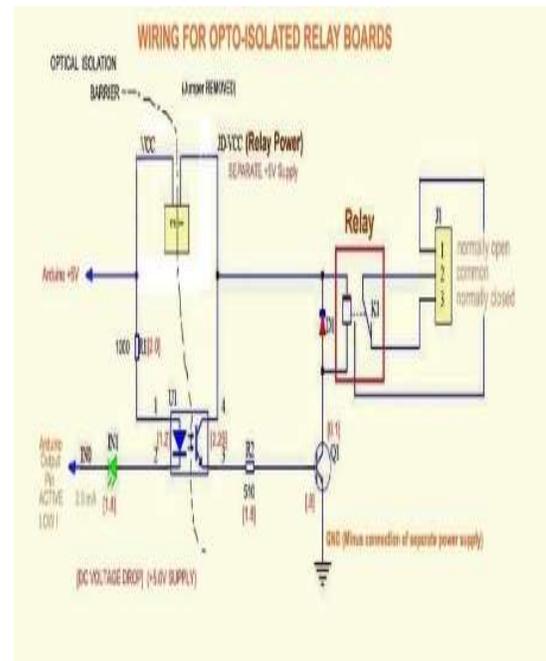


Figure 3. Wiring of Opto-Isolated

Here are the screenshots of the Components that shows how it works.

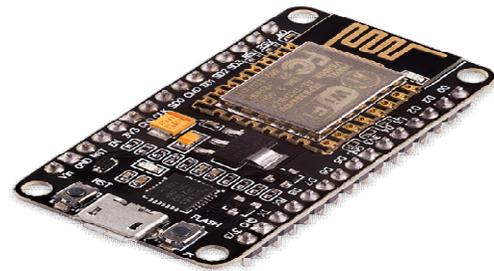


Figure 4. ESP8266

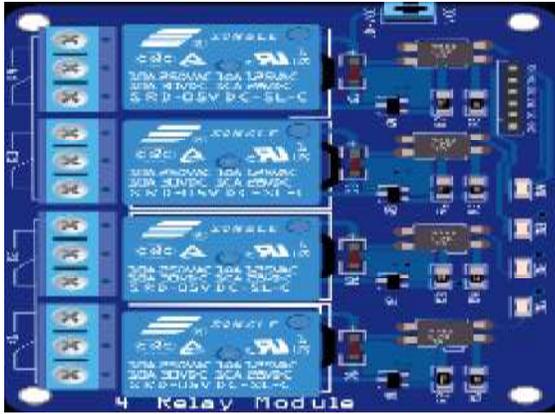


Figure 5. Opto-Isolated 5v Relay Module

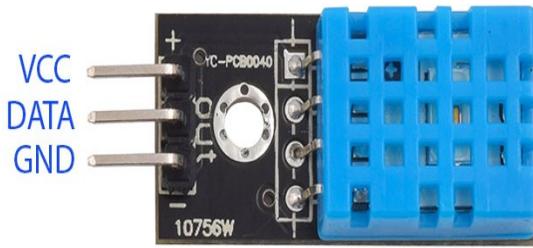


Figure 6. Opto-Isolated 5v Relay Module

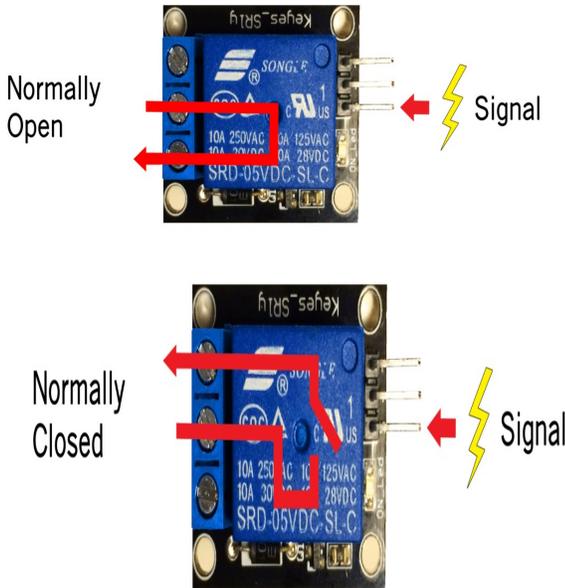


Figure 7. Normally open vs Normally closed

ESP-12E DEVELOPMENT BOARD

PINOUT

NOTES:

- ▲ Typ. pin current 6mA (Max. 12mA)
- ▲ For sleep mode, connect GPIO16 and EXT\_RSTB. On wakeup, GPIO16 will output LOW for system reset.
- ▲ On boot/reset/wakeup, keep GPIO15 LOW and GPIO2 HIGH.

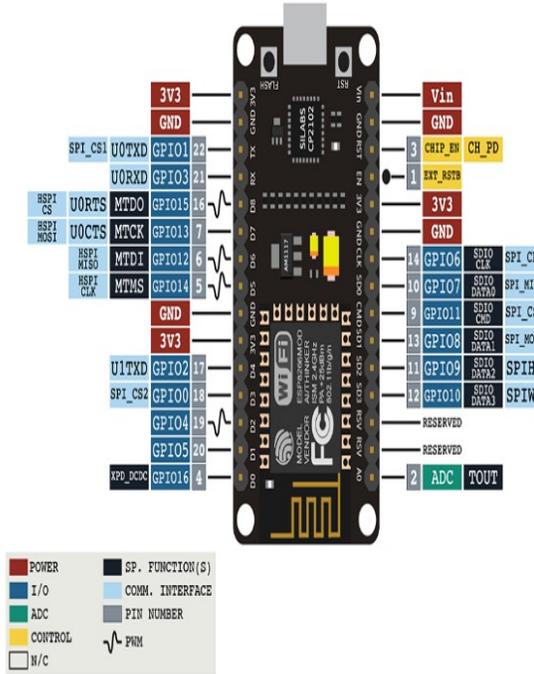


Figure 8.ESP-12E Development Board

III. CONCLUSION

We finally conclude that we have implemented all the ideas that we have claimed in our project. The embedded system is implemented in the Arduino Board and we have succeeded in automating the Home appliance. All the components worked well. By using home automation system, we can reduce power loss and it also reduces manpower. By this we can reduce the chances of any accidents which happens because of electric dis function. Thus, ultimately this could increase the automation and reduce the physical work of physical disable person.

IV. REFERENCES

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