

Home Automation Using Arduino And Smart Phone

Mr.T.M.Senthil Ganesan ¹, M.Rama Jothi ², R.S.Sangavi ³, L.Umayal ⁴

Department of Computer Science and Engineering
Velammal College of Engineering and Technology, Madurai.

Abstract

Automation is a trending topic in 21st century making an essential part in our daily lives. Automation decreases the human labor, time, work and some human errors. The key objective of this project is to design a system for physically challenged people to control and activate home appliances by their own voice. This quality is present in this project which has the aptitude to replace existing technologies. The theme of the low price voice recognition primarily based home automation system for the physically challenged persons plagued by palsy or paraplegia wont to management the many home appliances simply by his/her voice commands consistent with their want and luxury. The resulting system can afford a great assistance to the physically challenged people without any need of another person.

Key Words: Nodemcu microcontroller, Google Assistant APP, IFTTT, Adafruit IO.

I. INTRODUCTION

The home automation systems are getting more popularity day to day due to their ease of use and wide operational capabilities and more applications. This Integrating voice recognition technology for home automation systems for physically challenged people can make the system more user friendly and easy to operate and control. Some require home automation system to satisfy their needs and comfort for physically challenged people. It can provide great assistance for the patients. There are several researches and developments on the home automation systems. The voice recognition based home automation system for physically challenged people uses the speech recognition module to recognize the voice commands. Google assistant is used to send

these voice commands to the controller to control the various electrical devices. Using the computer, the system becomes more expensive and difficult to handle it. Intelligent home navigation system for disabled person uses voice recognition module for the speech recognition process. The Arduino receives the command from the voice recognition module and control electrical devices. This proposed a home automation system that uses the voice recognition module for the voice recognition function. A microcontroller and relay module are used for the controlling functions like switching lights ON and OFF. We can also control the home appliances by two methods, by giving voice commands or by using android mobile as a remote controller. The voice recognition is done by the google assistant and thus the signal is send to the controller to control the devices. When the voice command is gives as ON, the appliances will get ON. When OFF command is given, the appliances will get OFF.

II. LITERATURE SURVEY

A. “An elegant home automation system using GSM and ARM-based architecture”, V.L.K.Bharadwaj Manda, Voona Kushal and N.Ramasubramani.

It is a home automation system developed using GSM and ARM processor. The central processing unit of this system is the NXPLPC11U24 microcontroller.

Many peripherals devices cannot be attached using ARM Processor.

B. “Smart Home Automation System with Bluetooth Technology”, Muhammad Asadullah.

It is a home automation system developed using Arduino board, Bluetooth module HC-06, smartphones.

Bluetooth has lower bandwidth and shorter range.

C. “Smart Home Automation and Security System using Arduino” , Siddharth Wadhwanil, Uday Singh, Prakash Singh, Shraddha Dwivedi.

It is a home automation system using Arduino Uno board and Wireless Fidelity technology.

It accepts command only through clicks.

III.EXISTING SYSTEM

The existing home automation system was developed by using Global system for mobile communication and ARM based technology. The home appliances are controlled using simple GSM based phone by sending SMS. ARM based architecture has lack of wireless function. The research provided here aims at studying the feasibility of implementing an SMS based control of home appliances using the GSM technology without trying to access other local networks.

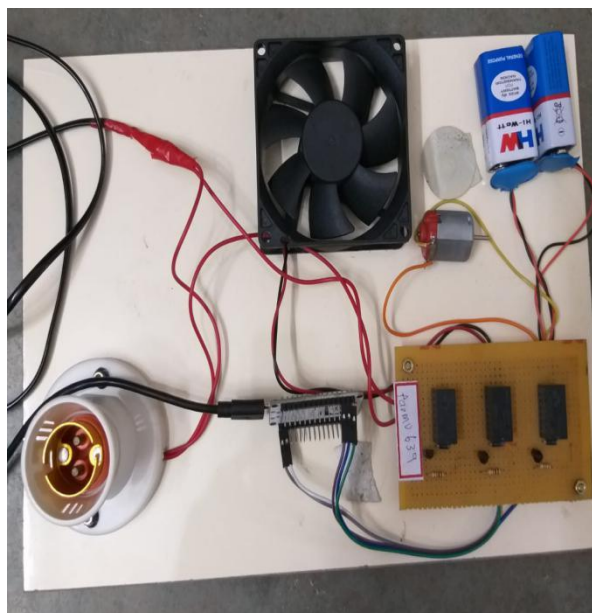
IV.PROPOSED SYSTEM

The home automation through android mobile is designed for PHYSICALLY CHALLENGED and DISABLED PEOPLE. In GSM based architecture only text messages can be send. Voice recognition cannot be done in GSM. In ARM based home automation system, we cannot connect large number of peripherals. But it can be overcome in this Wi-Fi based Home Automation system. The electrical appliances are controlled through one common device which replaces television, air conditioner etc.. It remotes for sleep mode through Wi-Fi Home automation using clicks and voice commands.

V.ADVANTAGES

1. Voice commands are given to control devices and it is more convenient.
2. Wi-Fi based devices have better bandwidth and also we can connect many peripherals.
3. It includes safety, convenience and control.

VI.ARCHITECTURE



VII.MODULES

A. DEVELOPING ARDUINO CODE:

Arduino IDE is used to write code and uploading it to arduino boards.

```
sketch_jun29a | Arduino 1.6.11
File Edit Sketch Tools Help
sketch_jun29a
void setup() {
  // put your setup code here, to run once:
}
void loop() {
  // put your main code here, to run repeatedly:
}
```

```

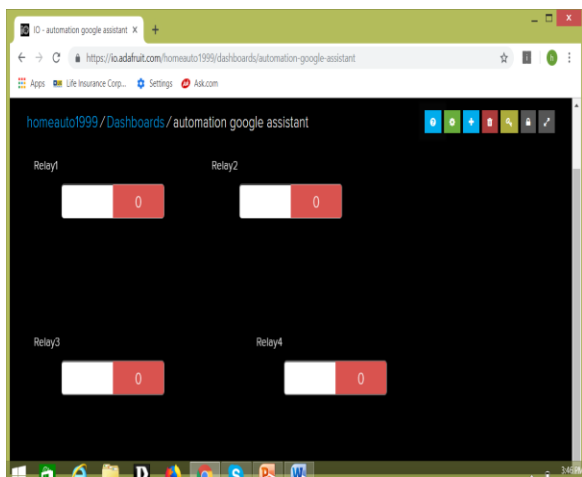
// This example code is in the public domain.

modified 8 May 2014
by Scott Fitzgerald
*/

// the setup function runs once when you press reset or power the board
void setup() {
  // initialize digital pin 13 as an output.
  pinMode(13, OUTPUT);
}

// the loop function runs over and over again forever
void loop() {
  digitalWrite(13, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(1000);           // wait for a second
  digitalWrite(13, LOW); // turn the LED off by making the voltage LOW
  delay(1000);           // wait for a second
}
    
```

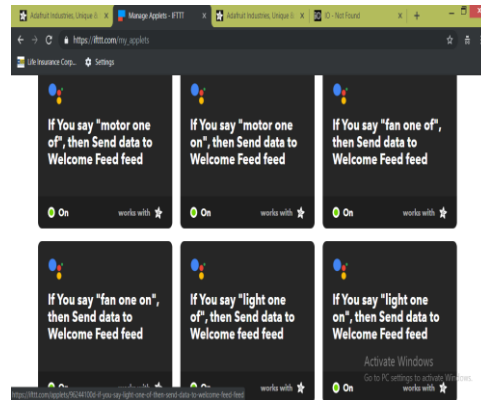
B. CREATING RELAYS USING ADAFRUIT IO:



- Adafuit IO is a system that includes client libraries that wraps our REST and MQTT APIs (Message Queuing Telemetry Transport).
- Using a MQTT library or client we can publish and subscribe to a feed to send and receive feed data.

C. CREATING APPLETS USING IFTTT

- IFTTT (If This Then That) services is used for automatic activities. It is a free web based facility to create chains of simple conditional statements, called APPLETS.
- IFTTT is the easy, free way to get your Apps and devices functioning together.



D. CONFIGURING MOBILE

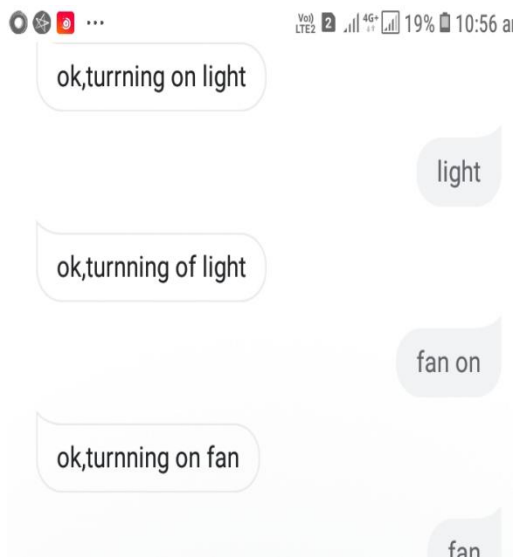
- To connect mobile with Microcontroller, Mobile’s hotspot name and password should be uploaded in the server using arduino code.
- When voice command is send, it sends signal to relay and it performs ON and OFF operations.

E. BUILDING THE HARDWARE:

Fan, bulb and motor are connected with relays. Relays are connected with microcontroller and the connect the hardware components.

VIII. RESULT

In this system, voice commands are given as input. The commands format which are feeded while creating IFTTT applets should be pronounced correctly to get the output. We will give the commands through google assistant and it sends the signal to controller. And this controller will control the devices to perform ON and OFF operation.



- [1] An elegant home automation system using GSM and ARM-based architecture, V.L.K. Bharadwaj Manda, Voona Kushal, and N. Ramasubramanian, 0278-6648/18c2018 IEEE
- [2] Smart Home Automation and Security System using Arduino and IOT, Siddharth Wadhvani¹, Uday Singh², Prakarsh Singh³, Shraddha Dwivedi, International Research Journal of Engineering and Technology (IRJET), Volume:05 Issue: 02|Feb-2018.
- [3] Smart Home Automation System Using Bluetooth Technology, Muhammad Asadullah, 978-1-5090-3310-2/17/\$3\,00c2017 IEEE.
- [4] Analysing the Elderly Users Adoption of Smart-home services, Debajyoti Pala, Suree Funilkulb, Vajirasak Vanijjaa and Borworn Papisratorna, 2169-3536c2018 IEEE



IX. CONCLUSION

The operating system of the smart mobile phone in android, we progress remote control program. The program connected with wi-fi to communicate with the robot. Wireless control is the most significant basic needs for all the people. Wireless network controlled robots use wi-fi modules. Our Home automation will be helpful for disabled and elderly people to perform ON and OFF operation automatically by giving voice commands. Our future work will be focused to reduce the time taken to recognize and response the voice commands. Trying to implement the same idea in other real world application also.

X. REFERENCES