



Home Automation Using Google Assistant

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ABSTRACT

This project presents a proposal for home automation using voice via Google Assistant. World's demand for electricity had grown 85% between 2010 and 2017 this increase is more than today's total use of electricity in India, USA, Japan, Australia combined. We can't decrease the electricity growth rate but we can lessen the amount of electricity wasted each year by turning off our home appliances when not in use. This project presents a design and prototype of Home Automation system that will use node MCU module as a network provider in connecting with other appliances. The electrical and home appliances can be controlled using the android mobile phones even if you are out of your house and you forgot to switch off the appliances. Many electrical and home appliances like light, fan, refrigerator etc.,

can be controlled using the android operating system. With the advancement of technology, the need for efficient controlling is more as it optimizes performance and saves unnecessary wastage of power. The basic home appliances are fan; light and water pump which consume maximum power. Unnecessary wastage of power and resources by turning on lights during day time or high speed fans in winter season or water pump during overflow of water from tank can be avoided in this way. A system has been proposed to control home appliances anytime from anywhere in the world and efficiently utilize power by controlling appliances properly. The project discuss in this project is target to solve problems of common people in day to day life. Automating home with using node MCU which is Wi-Fi model and using google assistant app. It provide open source to user make to design automation in less price.

This makes life of common man very easy. This project presents a low cost and flexible home control and environmental monitoring system. It employs an embedded micro – web server in NODE MCU microcontroller, with IP connectivity for accessing and controlling devices and appliances remotely. These devices can be controlled through a web application or via Bluetooth Android based Smart phone app. The proposed system does not require a dedicated server PC with respect to similar systems and offers a novel communication protocol to monitor and control the home environment with more than just the switching functionality.

The proposed system has main component is node MCU and the appliances controlled through google assistant. The node MCU is Wi-Fi module which can be connected to the IoT for controlling of devices over Internet. Also, an app would be developed which will allow the user to control their devices using the Google Assistant.

Keywords—ESP8266, RELAY, RELAY DRIVER IC,

INTRODUCTION

Artificial Intelligence to control home appliances using googly voice assistance. Home automation or domestics a term for home automation coined by Jim Hill has been evolving drastically. We saw many home automation technologies introduced over these years from Zig bee automation to Amazon Echo, Google Home and Home from Apple. It has become a craze these days. Our main aim is to automate our house within less cost unlike other modules like Alex echo dot and can control up to 8 appliances using Google Assistant. In this system we have 2 AC loads (Bulb or Fan) connected to the microcontroller by 2 relays. When we send a voice command or a text command through the Google Assistant.

EASE OF USE

With a constant development in technology, voice command systems such as Amazon Alexa and Apple's Sire is becoming a more natural part of standard living. We saw many home automation technologies

introduced over these years from Zigbee automation to Amazon Echo, Google Home and Home from Apple. It has become a craze these days. The expense of these gadgets is more with an extra expense of the devices to be associated with. So, overall we can see here that to make our home smart we have to contribute a considerable amount, for a basic setup. Imagine a scenario where we can automate our home with low cost and can control up to 4 appliances utilizing Google Assistant. Indeed, this project portrays the usage of such a framework. This project aims to implement a voice controlled home automation system using a WI-FI and IOT, which is being remotely controlled and monitored by any Android OS smart phone. The system is implemented using ordinary household appliances. Typical language voice headings are given to the Google Assistant and with the assistance of IF-TTT application and the Adafruit application the direction are decoded and after that sent to the node mcu, the microcontroller thusly controls the trades related with it as required, turning the device related with the particular relay On or OFF as shown by the clients mentioning to the GoogleAssistant

METHODS

The system design is broken down into two main categories,

- The hardware- It has the capability to connect to the router. It would also be able to turn on/off specified devices, such as lights and fans.

It is called the 'Control Unit'. And,

- The Software- The Blink app, the IFTTT app and the Google Assistant constitute the software of the design and these applications would be integrated in the Android device.

The Control Unit comprises of the NodeMCU and the 4/8 Channel Relay board. Relay board uses Node MCU(ESP 8266) to control the relays.

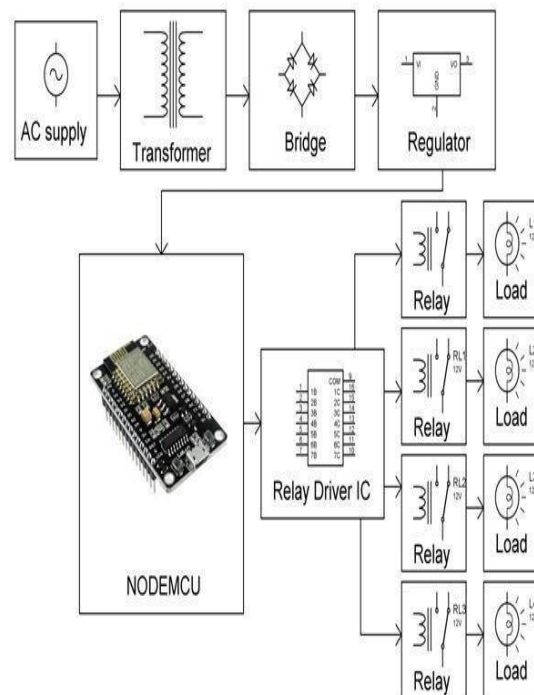
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TYPES

- Step 1: nodemcu
- Step 2: relayconnection.
- Step 3: creating applet for relayon.

After that you login in goggle assistant using same Gmail account.

BLOCKDIAGRAM



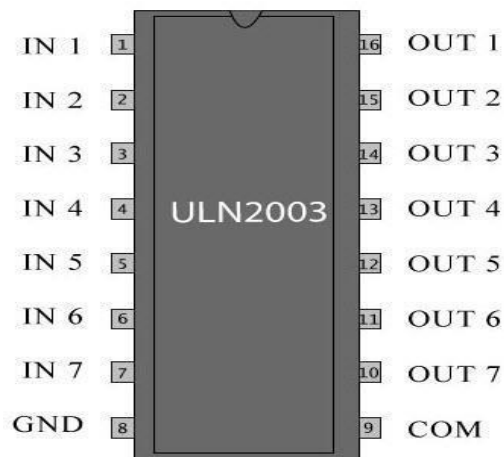
HARDWARE REQUIREMENT

- NodeMCU
- Relay driver IC
- Relays
- Transformer

ESP8266



What is ESP8266?



Node MCU is an open source IoT platform, includes firmware which runs on the ESP8266 Wi-Fi Module from Expressive Systems, and hardware which is based on the ESP-12 module. The term "Node MCU" by default refers to the firmware rather than the development kits. Node MCU firmware was developed so that AT commands can be replaced with Lua scripting making the life of developers easier. The ESP8266 is a low-cost Wi-Fi chip with full TCP/IP stack and microcontroller capability produced by Shanghai-based Chinese manufacturer, Expressive. Fig 4.1 shows the Node MCU (ESP8266) Development Board

RELAY DRIVER IC ULN 2003

A Relay driver IC is an electro-magnetic switch that will be used whenever we want to use a low voltage circuit to switch a light bulb ON and OFF which is connected to 220V mains supply. The required current to run the relay coil is more than can be supplied by various integrated circuits like Op-Amp, etc. Relays have unique properties and are replaced with solid state switches that are stronger than solid-state devices. High current capacities, capability to stand ESD and drive circuit isolation are the unique properties of Relays. There are various ways to drive relays. Some of the Relay Driver ICs are as below.

- High side toggle switch driver
- Low side toggle switch driver
- Bipolar NPN transistor driver
- N-Channel MOSFET driver and
- Darlington transistor driver
- ULN2003 driver

RELAY

A simple electromagnetic relay consists of a coil of wire wrapped around a soft iron core, an iron yoke which provides a low reluctance path for magnetic flux, a movable iron armature, and one or more sets of contacts (there are two in the relay pictured). The armature is hinged to the yoke and mechanically linked to one or more sets of moving contacts. It is held in place by a spring so that when the relay is de-energized there is an air gap in the magnetic circuit. In this condition, one of the two sets of contacts in the relay pictured is closed, and the other set is open. Other relays may have more or fewer sets of contacts depending on their function. The relay in the picture also has a wire connecting the armature to the yoke. This ensures continuity of the circuit between the moving contacts on the armature, and the circuit track on the printed circuit board (PCB) via the yoke, which is soldered to the PCB.



PROPOSED SYSTEM

The proposed system eliminates the complication of wiring in case of wired automation. Considerable amount of power supply is also possible.

Operating range is more than the Bluetooth.

The existing system does not allow remote monitoring and controlling of appliances. But where as in the proposed system the system using the Wi-Fi based home automation system it allows to monitor and control the appliances.

The home automation of the existing system in 1990's, the people in every home has electronic devices which are controlled manually but in our proposed system we are controlling all electronic appliances through remotely.

The IOT application have become this popular in this 21st century is due to dominant use of the internet, evolution of smart phone technology and raised standard of mobile communication

ADVANTAGES

Reduced installation costs.

- Easy deployment, installation, and coverage. System scalability and easy extension.
- Aesthetical benefits. Integration of mobile devices.
- Relays can switch many contacts at once.
- Google assistance give modern touch and flexibility to this project.

APPLICATIONS

- Lighting control system
- Appliance control with a smart grid
- Indoor positioning systems
- Home automation for elderly and disabled people

CONCLUSION

- In this project, voice commands are given to the Google assistant. The voice commands for Google assistant have been added also linked to it. In this home automation, user have given commands to the Google assistant. Home appliances like Bulb, Fan and Motor etc., are controlled according to the given commands.
- The commands given through the Google assistant are decoded and then sent to the microcontroller and it control the relays. The device connected to the respective relay turned On or OFF as per the users request to the Google Assistant.
- Consumers are looking to secure their home environment in today's unpredictable world, and the new Home automation service gives them the peace of mind that they need to protect their family's well-being. This project is about wireless home automation using Android mobile helps us to implement such a fantastic system in our home at a very reasonable price using cost-effective devices.
- Thus, it overcomes many problems like costs, inflexibility, security etc. In addition, will provide greater advantages like it decrease our energy costs, it improves home security. In addition, it is very convenient to use and will improve the comfort of our home.

FUTURE SCOPE

There are a variety of enhancements that could be made to this system to achieve greater accuracy in sensing and detection.

- a) There are a lot of other sensors that can be used to increase the security and control of the home like pressure sensor that can be put outside the home to detect that someone will enter the home.
- b) Changing the way of the automated notifications by using the GSM module to make this system more professional.

C) A smart garage that can measure the length of the car and choose which block to put the car into it and it will navigate the car through the garage to make the parking easy for the homeowner in his garage.

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REFERENCES

- [1]. Tan, Lee and Soh – “Internet based Monitoring of Distributed Control Systems”, - Energy and power Engineering. Publisher: IEEE Transactions on Education, Place: New Jersey, Country: USA, Year: 2002, Vol: 45, Iss. No. 2., pp. 128-134.
- [2]. Potamitis, I., Georgila, K. Fakotakis, N., & Kokkinakis, G – ‘An Integrated system for smart home control of appliances based on remote speech interaction’, - 8 th European conference on speech and communication technology, Publisher: World Journal control science and Engineering, Place: Geneva, Country: Switzerland, Year: 2003, Vol. No: 2, Iss. No. 1, pp. 2197-2200.
- [3]. S.M. Anamul Haque, S.M. Kamruzzaman and Md. Ashraf Islam – ‘A System for Smart Home Control of Appliances Based on Time and Speech Interaction’, - Proceedings of 4th International Conference on Electrical Engineering, Place: Bhubaneswar, Country: India, Year: 2006., pp. 128 to 131.
- [4]. N. P. Jawarkar, V. Ahmed, S.A. Ladhake, and R.D. Thakare – ‘Microcontroller based Remote monitoring using mobile phone through spoken commands’, - Journal of networks, Publisher: World Journal control science and engineering, Place: Lagos, Country: Nigeria, Year: 2008, Vol. No.: 3, Iss. No. 2, pp. 58 to 83.
- [5]. Prof. Era Johri – ‘Remote Controlled Home Automation using Android application via Wi-Fi connectivity’, - International Journal on Recent and Innovation and recent trends in computing and communication, Publisher: World Journal control science and engineering, Place: North Dakota, Country: USA, Year: 2012, Vol. No.: 3, Iss. No. 3, pp. 2321 to 8169.