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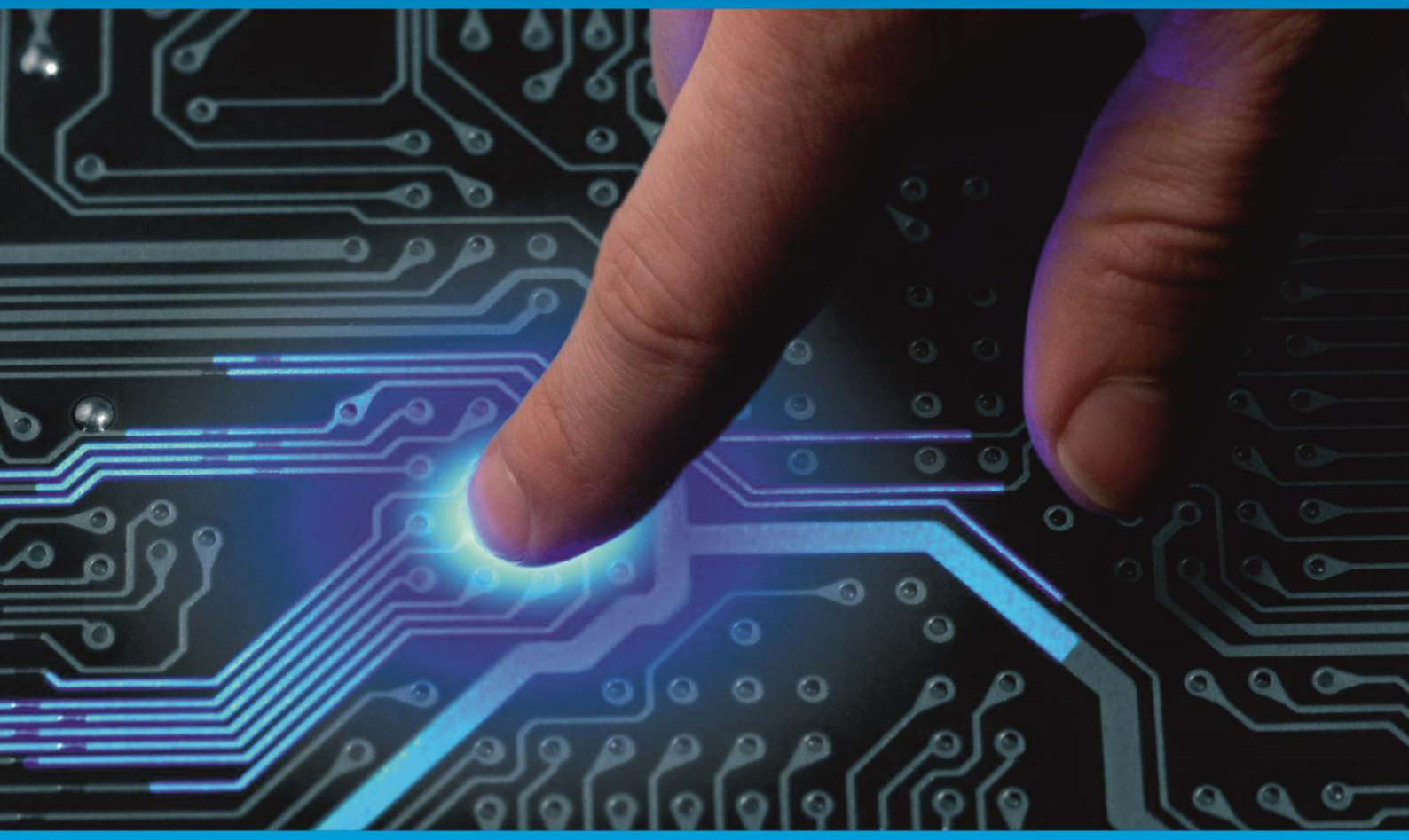

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Home Automation using Voice Assistant

Silambarasan S, Sneka S, Subhasini SV, Udhaya Rahul P, Yogeshwar K, B.Gokulavasan

UG Student, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

UG Student, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

UG Student, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

UG Student, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

UG Student, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

Assistant Professor, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

ABSTRACT: The idea behind Google assistant-controlled Home automation is to control home devices with voice. On the market there are many devices available to do that but making our own is awesome. In this project, the Google assistant requires voice commands. Adafruit account which is a cloud based free IoT web server used to create virtual switches, is linking to IFTTT website abbreviated as "If This Than That" which is used to create if else conditional statements. The voice commands for Google assistant have been added through IFTTT website.

KEYWORDS: Node MCU, IFTTT, Relay and Google Assistant

I. INTRODUCTION

"Home automation" refers to the automatic and electronic control of household features, activities, and appliances. The utilities and features of the home can be easily controlled via Internet. There are three main elements of a home automation system: sensors, controllers, and actuators.

The speech given by the user will be given as input to the Microphone. Microphone recognizes the speech given by the person and sends it to the recognizing module. It searches for the nearest word even if there are any disturbances in it. If the command (ON/OFF) is given, the action is done. Similarly, the line following robot functions with respect to the speech commands given to it. The line following robot moves forward and backward with the help of sensors and a motor driver board. Home is the place where one desires to be rest after a long tiring day. People come home exhausted after a long hard-working day. Some are way too tired that they find it hard to move once they land on their couch, sofa or bed. So, any small device/technology that would help them switch theirs lights on or off, or play their favorite music etc. on a go with their voice with the aid of their smart phones would make their home more comfortable.

II. LITERATURE SURVEY

Tan, Lee and Soh (2002) proposed the development of an Internet-based system to allow monitoring of important process variables from a distributed control system (DCS). It proposes hardware and software design considerations which enable the user to access the process variables on the DCS, remotely and effectively rent designations. Potamitis, Georgila, Fakotakis, and Kokkinoss, G. (2003) suggested the use of speech to interact remotely with the home appliances to perform a particular action on behalf of the user.

The approach is inclined for people with disability to perform real-life operations at home by directing appliances through speech. Voice separation strategy is selected to take appropriate decision by speech recognition. In the year 2006, S. M. Anamul Haque, S. M. Kamruzzaman and Md. Ashraful Islam proposed a system entitled "A System for Smart-Home Control of Appliances Based on Time and Speech Interaction" that controls the home appliances using the personal computer. This system is developed by using the Visual Basic 6.0 as programming language and Microsoft voice engine tools for speech recognition purpose. Appliances can be either controlled by timer or by the voice command. Jawarkar, Ahmed, Ladhake, and Thakare (2008) propose remote monitoring through mobile phone involving the use of spoken commands. The spoken commands are generated and sent in the form of text SMS to the control system and then the microcontroller on the basis of SMS takes a decision of a particular task. Prof. Era Johri in (2001) have successfully completed the project on "Remote Controlled Home Automation". Withings is a consumer electronics company is the leader in the connected health revolution.

The Home camera alerts the user to many motion or noise while out of the House. It also tracks the indoor air quality, notifying the user if dangerous levels of voltaic organic compounds are detected. It has taken security, privacy and

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home health to the next level through a partnership with IFTTT, a service that allows rule-based actions and triggers between a range of devices and services. Users can enhance their Withings Home, a HD security camera equipped with environmental sensors, by connecting with IFTTT app to make household automation a reality. Fig 2.1 shows the Reality Home automation explaining that if the user is leaving the home, then the camera inserted to monitor automatically starts to watch.

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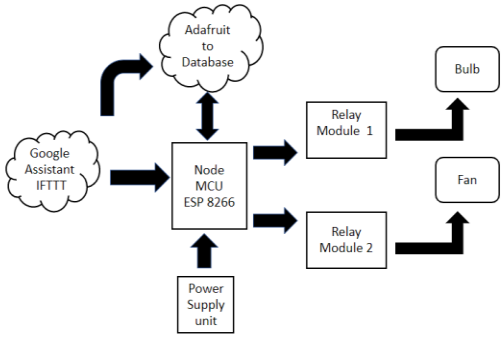
III. SYSTEM DESIGN AND BLOCK DIAGRAM



In Google assistant-controlled home automation, first the user should have an Android smartphone with Google assistant installed in it. When the user gives commands to the Google assistant, the commands will be checked with the commands in the IFTTT website which are already set.

Then the next step is setting up the virtual switches in Adafruit website. If the commands given by the user matches with the commands in the IFTTT website, then depending on that commands, the virtual switches in Adafruit will be turned ON or OFF. This will be sensed by the Node microcontroller and it will turn ON or OFF the relay depending on the commands. All this will be done over the Internet. In this, the relay will act as a switch and the Home appliances connected to the relay will be turned on or off. The number of Home appliances connected depends upon the number of relays.

IV. COMPONENTS REQUIRED

Hardware Components:
1. NodeMCU – 32-bit ESP8266 development board with Wi-Fi SoC.
2. Relay module
3. One 15W Bulb
4. One 12V DC Fan
5.Step- down Transformer
6. Voltage regulator
7. Rectifier
8.Capacitor
Software Components: Google Assistant, Adafruit IO, IFTTT, Arduino IDE

V. WORKING

Interfacing Node MCU with Relay

The interfacing diagram of Node MCU with Relay module is shown in Fig 3.18. The +5v Vin pin of the Node MCU is given to the Voltage pin of relay module. The ground pin of Node Microcontroller is connected to ground pin of the Relay module. The Node MCU consists of 8 data pins, clock, reset, enable, transmitter, receiver, flash etc., If the 4-Channel relay is used, then the data pins D0, D1, D2, D3 are connected to the 4 data pins of the Relay in which D0 is used to control 1st relay, D1 is used to control the 2nd relay, D3 is used to control the 3rd relay and D4 is used to control the 4th relay. The output of the relay consists of 3 pins in which two of them are given to the output like bulb, fan etc., and the one is of no connection.

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FEATURES OF NODE MCU (ESP8266): 1. Open-source
2. Interactive
3. Programmable
4. Low cost
5. Simple
6. Smart
7. WI-FI enabled
8. USB-TTL included
9. Plug & Play

ADAFRUIT IO

Adafruit IO is used to connect projects to Internet. It can handle and visualize multiple feed of data. Dashboards are a feature integrated into Adafruit IO which allow users to chart, graph, gauge, log, and display the data. Users can view their dashboards from anywhere in the world.

Adafruit IO is used to control and react to the user's data. It is a platform designed to display, respond, command, and interact with project's data. It also keeps the data private and secure for us. It's the internet of things - for everyone. Adafruit IO also allows to set up dashboards that let users directly manipulate or view the current value of each topic. Since it can be accessed from a web browser, it makes it the ideal hub for monitoring and controlling all of various IOT projects.

IFTTT

If This Then That, also known as IFTTT, is a free web-based service to create chains of simple conditional statements, called applets. An applet is triggered by changes that occur within other web services such as Gmail, Facebook, Telegram, Instagram, or Pinterest. For example, an applet may send an e-mail message if the user tweets using a hashtag, or copy a photo on Facebook to a user's archive if someone tags a user in a photo. IFTTT is an initialism for "If This Then That. In addition to the web-based application, the service runs on iOS and Android. IFTTT users created about 20 million recipes each day. All of the functionalities of the Do suite of apps have since been integrated into a redesigned IFTTT app.

VI. CONCLUSION AND FUTURE WORK

In this project, voice commands are given to the Google assistant. The voice commands for Google assistant have been added through IFTTT website and the Adafruit account is also linked to it. In this home automation, user have given commands to the Google assistant. Home appliances like Bulb, Fan 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. The microcontroller used is Node MCU (ESP8266) and the communication between the microcontroller and the application is established via Wi-Fi (Internet). This project is about wireless home automation using Android mobile helps us to implement such a fantastic system in 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 the energy costs, it improves home security.

There has been tremendous growth in the home automation sector, and many reputed companies utilizing their opportunity to work with IFTTT to deliver an elegant way to connect families to their homes. 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.

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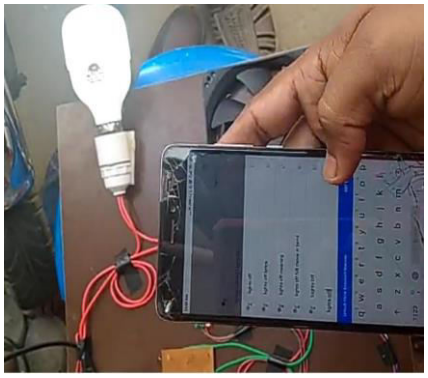

Fig 1. Turning ON and OFF the bulb

Fig 2. Turning ON and OFF the fan

REFERENCES

[1] **Control Home Devices with Voice Commands via a Smartphone** by M. FaishalRisha; Nur Sultan Salaahudin2019 Fourth International Conference on Informatics and Computing ICIC published by IEEE

[2] **Voice Recognition Application Based Home Automation System with People Counter**by GudipatiSravanthi, Gottipati Madhuri, Nipun Sharma, Ashu Tiwari, Abhishek Kashyap, B. Suresh 2018 International Conference on Advances in Computing, Communication Control and Networking (ICACCCN) published by IEEE

[3] "Aiding Navigation for Visually Impaired persons" by C.Priya, C.Ramy, S.Dhanasekar, Test Engineering and management,82,pp.10985-10988,February 2020, SCOPUS

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