

VOICE CONTROLLED ROBOT USING WI-FI MODULE

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Abstract. Because of innovative advances, unmanned vehicle contemplates are proceeded with consistently. This venture shows the plan and usage of a vehicle which can be controlled and explored by our voice. The building included is voice controlled structure. The Voice Controlled vehicles are regularly utilized in land, ocean, air, and so forth where individuals can't enter or entering might be risky for human life they can likewise be utilized in specific circumstances where the individual isn't in a situation to drive. They can likewise be utilized in numerous undertakings, for example, military, modern, and so forth. The benefits of voice initiated vehicles are sans hands and quick information input tasks. The voice directions explore the vehicle in the necessary course. The mode of cooperation among people and Vehicle is through Internet of Things based stages. Since we needed the robot to be remote, we utilize the ESP32 Wi-Fi module. The voice directions can be sent through google right hand utilizing advanced

Key Words: Adafruit IO, ESP32 module, Internet of Things, Integrated Development Environment, IFTTT

1. INTRODUCTION

Speech signals are the most important means of communication in human beings. Almost every conversation to interact is done by means of voice signals. Sounds and various signals can be converted into electrical form using a microphone. Voice conversion is a technology which is used to convert the speech signals into computer text format[8].

In this paper, it is aimed to control a vehicle with voice commands using the Internet of Things technology. The Internet of Things is the concept of connecting any device (so long as it has an on/off switch) to the Internet and to other connected devices. The IoT is a giant network of connected things and people all of which collect and share data about the way they are used and about the environment around them. That includes an extraordinary number of objects of all shapes and sizes – smart microwave ovens which automatically cook your food for the right length of time, to self-driving cars, whose complex sensors detect objects in their path, to wearable fitness devices that measure your heart rate and the number of steps you've taken that day, then use that information to suggest exercise plans tailored to you [9].

Devices and objects with built in sensors are connected to an Internet of Things platform, which integrates data from the different devices and applies analytics to share the most valuable information with applications built to address

specific needs[8]. These powerful IoT platforms can pinpoint exactly what information is useful and what can safely be ignored. This information can be used to detect patterns, make recommendations, and detect possible problems before they occur. The main objective of this project is to design a voice-controlled vehicle which can be controlled and navigated through our human voice [1].

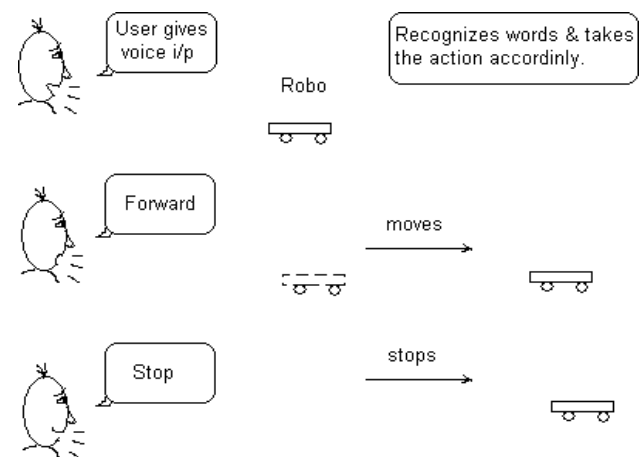


Fig.1: Basic Working

It also helps in hands free navigation and which makes it easier to enter into places which are dangerous to human life like coal mines.

This Paper is mainly aimed to control a vehicle using voice commands. The vehicle is able to recognize spoken commands to move correctly. To give a direction to vehicle, first the voice commands are sent to the google assistant by using a smart phone. The ESP32 module recognizes the command and then converts the voice command to direction command that predefined and recognized by the vehicle. When the vehicle gets the voice command, it moves according to the spoken command.

2. PROPOSED METHOD

The Voice controlled vehicle was designed to continuously receive the voice commands and act according to the commands. The vehicle then responds appropriately and moves in the respective direction and then waits for the next commands

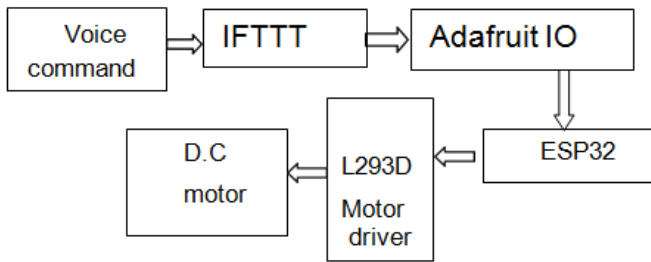


Fig.2: Block Diagram

The first step in the execution of this project is to receive the voice commands from the user. In this project, voice commands are given by the user using the google assistant which is present in the android smart phone. The voice commands are then transferred to the ESP32 module using the software services like IFTTT and Adafruit IO which will be discussed elaborately further. In the ESP32 module, the string comparison will be done for received voice commands and then the respective loop will be executed. Then the ESP32 module sends the commands to the L293d motor driver which drives the dc motors according to the commands received. It is also show that the appliances can be controlled even in the absence of an android phone by sending a normal SMS[3].

This Paper can be modified quite easily to include a spy camera as well that can stream the videos to the user over Wi-Fi. Solar cells are instead of the regular lithium ion battery for the project. 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[7].

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. The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus[4]. It connects to the Arduino and Genuino hardware to upload programs and communicate with them. Programs written using Arduino Software (IDE) are called sketches Services (formerly known as channels) are the basic building blocks of IFTTT[6]. They mainly describe a series of data from a certain web service such as YouTube or eBay. Services can also describe actions controlled with certain APIs, like SMS. Sometimes, they can represent information in terms of weather or stocks. Each service has a particular set of triggers and actions [5].

3. RESULT ANALYSIS

1) FLOWCHART

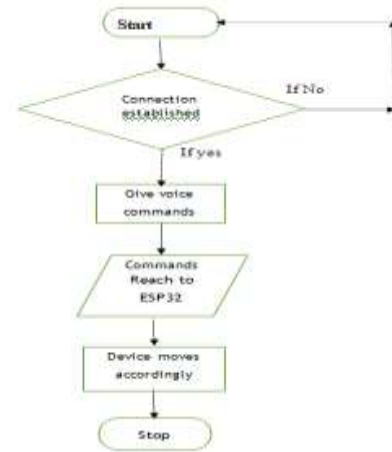


Fig: 3.1: Flow Chart

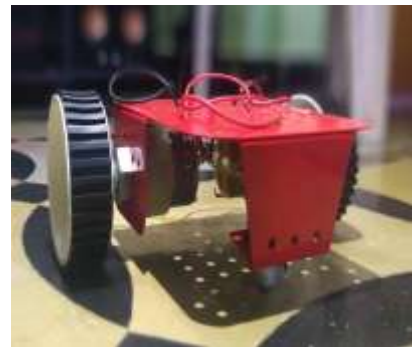


Fig:3.2 Moving Forward





Fig:3.3 Moving Backward

The output of the voice-controlled vehicle using google assistant is shown below. The result was positive and the device responded well. The diagram below shows the prototype implementation of the proposed work

4. CONCLUSION

In this paper, a device is controlled with the speech commands. Speech commands are taken by a microphone to the google assistant. The recognized command converted to the form in which the device can recognize. The final form of the commands is sent to the device and the device moves accordingly

REFERENCES

- [1] Aniket R. Yeole, Sapana M. Bramhankar, Monali D. Wani, "Smart Phone Controlled Robot Using ATMEGA328 Microcontroller" ,ISO 3297: 2007 Pg:352-356
- [2] S R Madkar (Assistant Professor), Vipul Mehta, Nitin Bhuwania, Maitri Parida,"Robot Controlled Car Using Wi-Fi Module". ISSN: 2277 128X Pg:31-33
- [3] R. M. Narayana, Harsha Chapala , "Voice Control Robot using Android Application ",Volume :4 ,ISSN: 2277 5668 Pg:332-337
- [4] Ritika Pahuja, Narender Kumar, "Android Mobile Phone Controlled Bluetooth Robot Using 8051 Microcontroller",ISSN (Online): Pg:2347 - 3878
- [5] K. Kannan , Dr. J. Selvakumar ,"Arduino Based Voice Controlled Robot ",Volume :02 issue :01 ,Mar-2015 ISSN: 2395-0072
- [6] Mrumal.K. Pathak, Javed Khan ,"ROBOT CONTROL DESIGN USING ANDROID SMARTPHONE ", 2 Feb 2015 , ISSN :2347-5471
- [7] Pratik Chopra, Harshad Dange, "VOICE CONTROLLED ROBOT" Pg:31- 33
- [8] Kishan Raj KC, "CONTROLLING A ROBOT USING ANDROID INTERFACE AND VOICE" Pg:1-36
- [9] R. M. Narayana, Harsha Chapala , "VOICE CONTROL ROBOT BY ANDROID" APP Pg:49-54
- [10] Harshad Dange ,"Smart Phones Android Operated Robot" Pg:551-567