



# Voice Controlled Vehicle

Mrs.G.Rajitha<sup>1</sup>,A.Shravan kumar<sup>2</sup>, M.Rohith<sup>3</sup>,A.Venkatesh

<sup>1</sup>Assistant Professor at ACE Engineering College, Dept of Electrical and Electronics Engineering, Telangana, India

<sup>2,3,4</sup>Student's of ACE Engineering College, Dept of Electrical and Electronics Engineering, Telangana, India

**Abstract** - The aim of our project is to make a Voice Control vehicle. The working is based on Arduino micro-controller, motor drivers, a Bluetooth module. Arduino is an open-source hardware used for building digital devices. The idea is to first design the Hardware of the vehicle and then code the entire working using our previous knowledge of programming. The code will then be simulated on software (IDE) and later be interfaced with the hardware. The coordination of control unit with Bluetooth gadget is accomplished utilizing a Bluetooth module to catch and read the voice orders. The controlling remote is a smart android device with Bluetooth Application. We picked this as our project as IOT has become a major part of our everyday lifestyle and also have a wide scope in the engineering field. It plays a vital role in the development of new technology.

## 1.INTRODUCTION

The main aim of the project is to control a vehicle using voice command with wireless Bluetooth technology. The user can control the car using android based voice commands through Bluetooth. Vehicle can be controlled in Forward, Reverse, Left and Right directions.

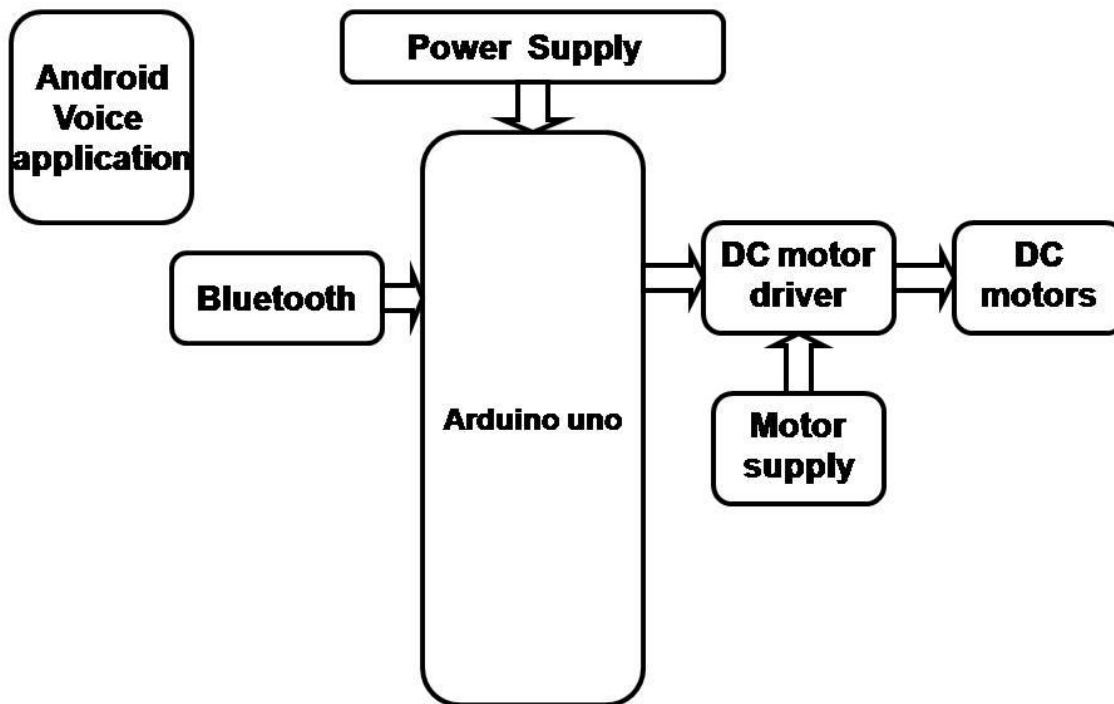
Automation is the widely used term in field of electronics. These model had greater importance than any other technologies due to its user-friendly nature. Joystick is a simple device by which we can control four direction movement. It can be made to produce an analog voltage which is processed by the microcontroller to produce the corresponding digital output with the help of inbuilt ADC. Joystick when voice app in the forward direction makes the wheel chair moves forward. When the voice is given in reverse direction makes the car move back ward and the same will apply for the forward, left and right directions. In this project we makes use of Arduino UNO, which is programmed already with help of embedded C instructions. In this the user can control vehicle with the Bluetooth application through voice. These voice can be received by the HC-05 Bluetooth module which is connected to the motor driver. Based on the given input given by HC-05 Bluetooth module motor driver will control the car through DC motor. The Arduino is programmed in a embedded 'C' language to perform the task.

## 2.Working

In this project we control the vehicle using normal voice commands. The given voice commands are processed by phone and then speech-to-text conversion is done with the HVS app using Google's speech-recognition technology. Text is first received by HC-05 Bluetooth module. Then this received text is forwarded to Arduino Uno board using UART serial communication protocol. Arduino code will checks the text received. When the text is match with string, Then Arduino UNO will give the pulsating

signal to L293D motor driver. This L293D motor driver will perform controlling of two motor simultaneously due to , this motor diver controls movement of the vehicle accordingly in forward, backward, Turning Right, Turning Left & Stop. But the turning angle of left and right will be 30degrees only.

### 3.Block diagram



#### 3.1. Arduino uno

The Arduino Uno we used is a microcontroller board which has ATmega328 from the AVR family. These UNO board has 14 digital input/output pins, 6 Analog pins and 16MHz ceramic resonator. USB connection, power jack and also a reset button are placed on UNO board. The software is we used is supported by a wide number libraries that makes the programming easier. These has Two 8-bit Timer and counters 6pwm channels. The programmable pins used are 23 programmable I/O lines, the operating voltage 1.8 will be in between 5.5v. High Performance, Low Power AVR® 8-Bit Microcontroller. Advanced RISC Architecture -131 Powerful Instructions, Most Single Clock Cycle Execution– 32 x 8 General Purpose Working Registers. It has Fully Static Operation– Up to 20 MIPS Throughput at 20 MHz– On-chip 2-cycle Multiplier.



Fig-1: Arduino uno

### 3.2. HC-05 Bluetooth

HC-05 module is a Bluetooth SPP (Serial Port Protocol) module, This is designed based on transparent wireless serial connection setup. The HC-05 Bluetooth Module can be capable to perform Master or Slave configuration, By using Master or Slave configuration makes a great solution for wireless communication. This serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR (Enhanced Data Rate) 3Mbps Modulation with range of 2.4GHz radio transceiver and baseband. It uses CSR Bluetooth core 04-External single chip Bluetooth system with CMOS technology and with AFH (Adaptive Frequency Hopping Feature). The user can make use it simply for a serial port replacement and to establish connections between MCU and GPS, PC to our embedded project, etc.

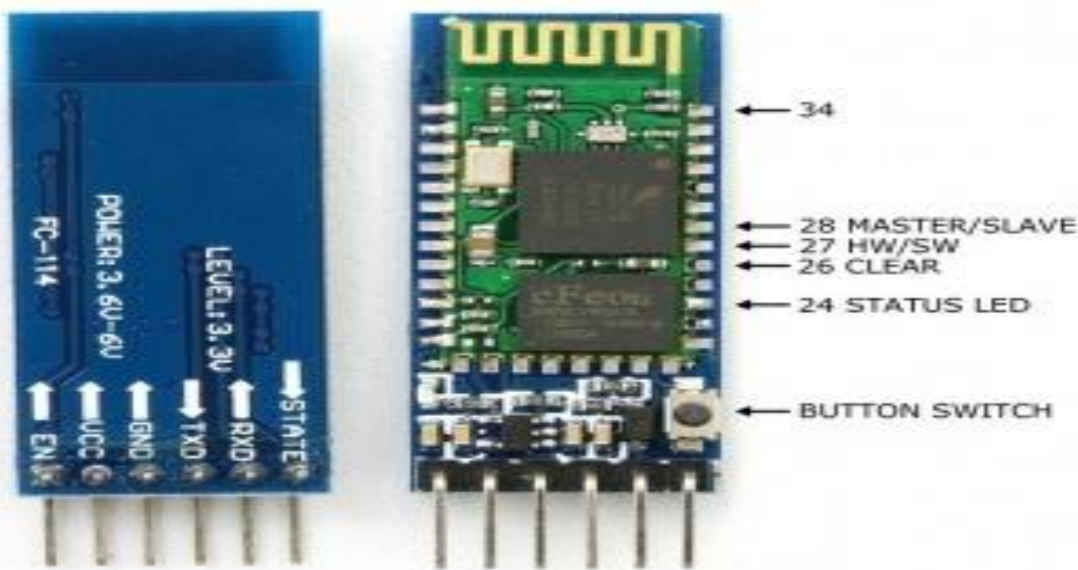


Fig-2:HC-05 Bluetooth

### 3.3.DC Motor

The dc motor principle is to take electrical energy to produce mechanical energy. The mechanical energy produced through the process of interaction of magnetic fields and current-carrying conductors. The reverse process is used to producing electrical energy from mechanical energy by an alternator, generator or dynamo. Many types of electric motors we used can be run as both the generators and motor. The input given to the DC motor is current/voltage and its output is torque (speed). We used the two identical motors in our project to move our vehicle.



Fig-3:DC Motor

### 3.4.L293D Motor Driver

We used the L293D motor driver which is designed to provide the bidirectional drive currents of up to 600-mA range at the voltages ranges from 4.5 V to 36 V. This devices are designed to drive inductive loads like relays, solenoids, dc and bipolar stepping motors and as well as other high-current/high-voltage loads in the positive-supply applications. The L293D motor driver is characterized for the operation from 0°C to 70°C temperatures. It has a capacity of 600mA Output current capability per channel. L293D Motor driver has the 1.2A Peak output current (non repetitive) per channel produced. Motor driver has the Over temperature protection. At the Logical "0"input voltage go up to 1.5 v . It has High noise immunity and Internal clamp diodes.

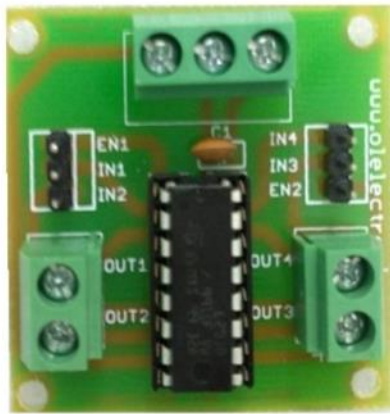


Fig-4:L293D Motor Driver

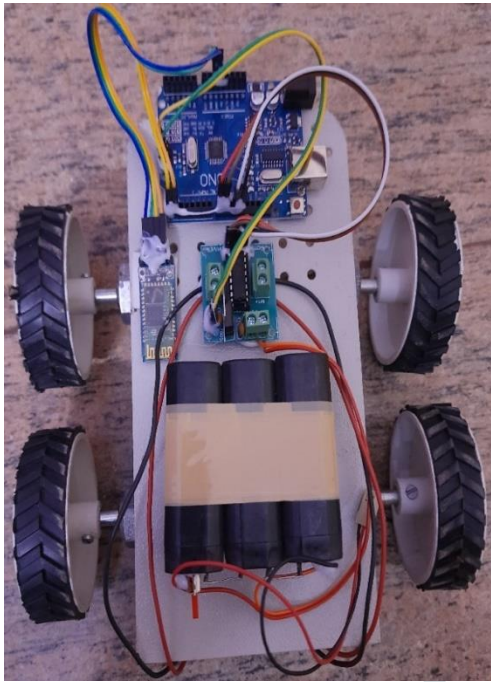
### 3.5.Rechargeable battery

Generally the Rechargeable battery we use have the one or more electrochemical cells and a type of energy accumulator. The rechargeable battery is known as a secondary cell because of its electrochemical reactions held in the cell are electrically reversible in nature. Rechargeable batteries have many different shapes and sizes, ranging from button cells to megawatt systems which are connected to stabilize an electrical distribution network system. In rechargeable batteries we used in now adays has several different combinations of chemicals are widely used including: lead–acid, nickel cadmium (NiCd), nickel metal hydride (NiMH), lithium ion (Li-ion), and lithium ion polymer (Li-ion polymer). Rechargeable batteries have lower total cost of use and environmental impact than disposable batteries. Some of the rechargeable battery types used now adays are available in the same sizes as disposable types. But generally rechargeable batteries have the higher initial cost but can be recharged very cheaply and used frequently.



Fig-5:Rechargeable Battery

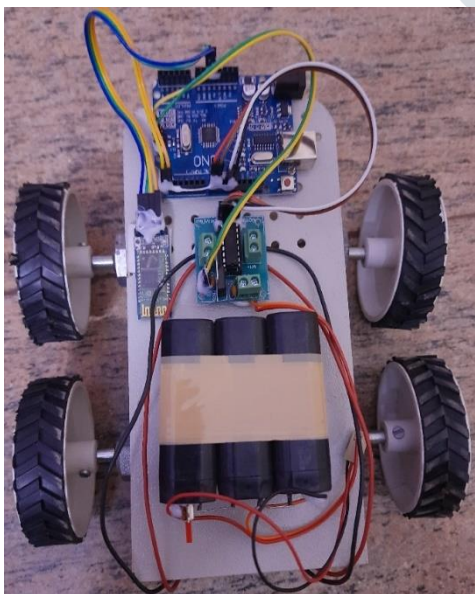
#### 4. Prototype



#### 5. Results

The project “Voice Controlled Vehicle using Arduino” was designed to control the vehicle by using simple voice commands, which can be operated using Bluetooth application and Android smart phone.

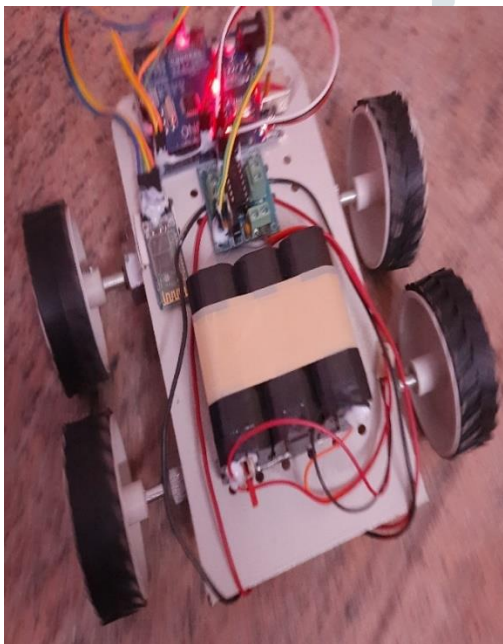
1. At initial position or normal condition the vehicle will be in rest position.



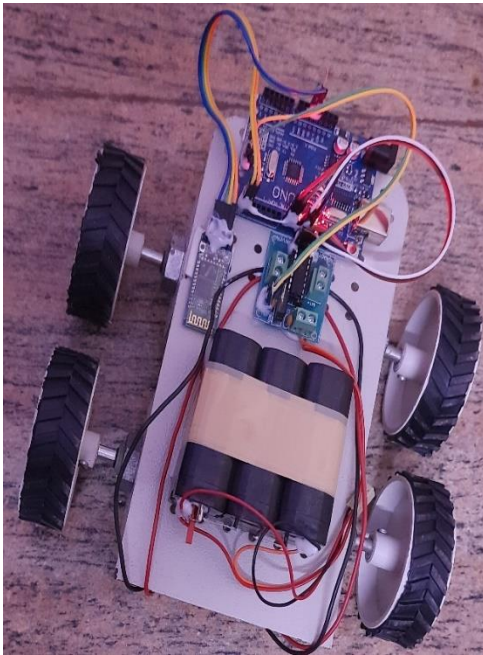
2. In Forward position the vehicle will move in forward direction until we give any other command to it.



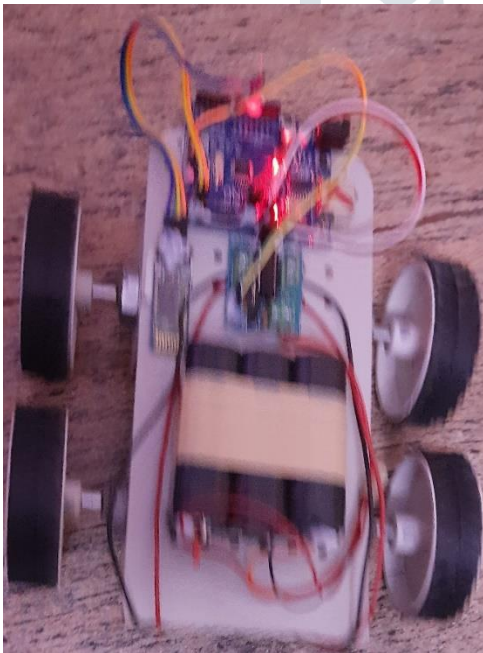
3. When we use the left command it moves in left direction up to 30 degrees only.



4. When we use the right command it moves in right direction up to 30 degrees only.



5. When we use the backward command it moves in backward direction.





## 6. Conclusion

The project that we have performed above will give an idea about the concept of controlling vehicle by using voice. This helps us to control any vehicle by using simple voice commands with the IOT (Internet of things ) technology. The project will help anyone to control the vehicle without sitting in vehicle also with standing in the range of Bluetooth or Zig bee technology. “The important of these voice controlled vehicle helps the people who don’t know driving we get a great opportunity to figure out a new way to drive the vehicle”.

## 7. Future Scope

This project can be extended by the using Zigbee technology. This Zig bee technology will increases operating wireless distance.

## 8. REFERENCES

The sites which were used while doing this project:

1. www.wikipedia.com
2. www.allaboutcircuits.com
3. www.microchip.com
4. www.howstuffworks.com

## BIOGRAPHIES



Mrs. G.Rajitha, Assistant Professor, EEE department, ACE Engineering College, Hyderabad. She did B.Tech from MCET affiliated to JNTU Hyderabad, Masters in Power Electronics from ST Martin’s Engineering College (JNTU).



Mr. A. Shravan Kumar Student of EEE department . He did his diploma in Govt Polytechnic College, Nizamabad. Pursuing B.Tech from ACE Engineering College(JNTU), Hyderabad.



Mr.M.Rohith Student of EEE department. He did his diploma in VMR Polytechnic College, Warangal. Pursuing his B.Tech from ACE Engineering College(JNTU), Hyderabad.



Mr. A. Venkatesh Student of EEE department . He did his diploma in Arjun College of technology and Science. Pursuing his B.Tech from ACE Engineering College(JNTU),Hyderabad.

