BLUETOOTH CONTROLLED CAR WITH MANUAL,VOICE AND GESTURE CONTROL

INTRODUCTION

The aim of this project is to develop a four wheeled Bluetooth controlled car which can be operated manually ,using voice commands and gestures like moving the phone in different directions(ie north ,east,south,west)
The Bluetooth controlled car is based on Arduino Uno and powered by four gear motors .The motors are controlled by L293d motor driver shield .The HC-05 Bluetooth module is used for Bluetooth communication.

COMPONENTS USED

- Arduino Uno
- Motor driver shield
- Bluetooth Module
- Gear Motor x4
- Wheels x4
- Li-ion battery x2
- Battery Holder
- Jumper wires
- Acrylic sheet or cardboard

SOFTWARE USED

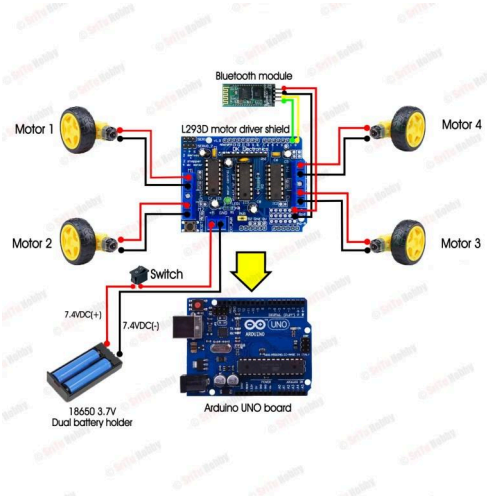
- Arduino IDE
- Arduino Bluetooth Control by broxcode

STEP 1
First let's build the chasis .Connect the four gear motors on four corners of the acrylic sheet.

STEP 2
Fix the Arduino Uno at the centre of the sheet and the motor driver shield on it.Then fix the HC-05 Bluetooth module at the front part of the sheet.Fix the battery Holder at the backside part of the chasis.Fix a small switch beside the Battery Holder.

STEP 3

All the hardware components are fixed on the chasis now we are left with the connections part.Lets dive into the connections quickly.
Connect the hardware parts accordingly with the help of this circuit diagram.



STEP 4
Once the connections are done properly we are almost done .Now we just need to upload the code to the Arduino Uno .Connect the Arduino Uno with your laptop select the board and port and upload the following code

CODE

```
#include <AFMotor.h>
#define Speed 170

AF_DCMotor M1(1);
AF_DCMotor M2(2);
AF_DCMotor M3(3);
AF_DCMotor M4(4);

void setup() {
   Serial.begin(9600);
   M1.setSpeed(Speed);
  M2.setSpeed(Speed);
  M3.setSpeed(Speed);
  M4.setSpeed(Speed);
}
void loop() {
  bluetoothControl();
}

void bluetoothControl() {
```

```
  if (Serial.available() > 0) {
    char value = Serial.read();
    Serial.println(value);

    if (value == 'U') {
      forward();
    } else if (value == 'D') {
      backward();
    } else if (value == 'L') {
      left();
    } else if (value == 'R') {
      right();
    } else if (value == 'S') {
      Stop();
    }
  }
}

void forward() {
  M1.run(FORWARD);
  M2.run(FORWARD);
  M3.run(FORWARD);
  M4.run(FORWARD);
}
void backward() {
  M1.run(BACKWARD);
  M2.run(BACKWARD);
  M3.run(BACKWARD);
  M4.run(BACKWARD);
}
void right() {
  M1.run(FORWARD);
  M2.run(BACKWARD);
  M3.run(BACKWARD);
  M4.run(FORWARD);
}
void left() {
  M1.run(BACKWARD);
  M2.run(FORWARD);
  M3.run(FORWARD);
  M4.run(BACKWARD);
}
void Stop() {
```

```
  M1.run(RELEASE);
  M2.run(RELEASE);
  M3.run(RELEASE);
  M4.run(RELEASE);
}
```

STEP 5

Once the uploading part is over its time for testing .Connect the batteries on the car.Download the Arduino Bluetooth Control App by broxcode from playstore.Now turn on your phone's Bluetooth and open the app.Once it is connected to your Bluetooth module you can try the voice gesture and manual control feature from the app.

WORKING

When we connect the Bluetooth module from the app the Bluetooth module received data from the phone as we give commands accordingly.These signals are then communicated to Arduino Uno via TX and RX pins .Arduino Uno then controls the gear motors accordingly with the help of motor driver.This is the general working principle .