

BLUETOOTH CONTROLLED RC CAR

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This is an Arduino based, Bluetooth controlled RC car. It is controlled by a smart phone application.

Bluetooth controlled car is controlled by using Android mobile phone instead of any other method like

buttons, gesture etc. Here only needs to touch buttons or tilt motion or voice control in android phone to control the car in forward,

backward, left and right directions. So here android phone is used as transmitting device and Bluetooth

module placed in car is used as receiver. Android phone will transmit command using its in-built Bluetooth

to car so that it can move in the required direction like moving forward, reverse, turning left, turning right

and stop.

INTRODUCTION

- ▶ Arduino Uno
- ▶ HC-05 Bluetooth Module
- ▶ Motor Driver Module L298N
- ▶ Micromors and Grippy Wheels
- ▶ Jumper Wires

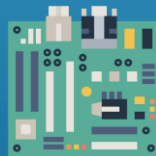
- HARDWARE COMPONENTS

The Arduino Uno is an open-source .The board is equipped with sets of digital and

Analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other

Circuits. The board has 14 digital I/O pins programmable with the Arduino IDE. In my project I used pins 10,11,12,13

ARDUINO UNO



HC-05 is a Bluetooth module which is designed for wireless communication. It has range up to <100m which

It uses frequency-hopping spread spectrum (FHSS) radio technology to send data over air. It uses serial communication to communicate with devices. It communicates with microcontroller using serial port

HC-05 BLUETOOTH MODULE



This L298N Based Motor Driver Module is a high power motor driver perfect for driving DC Motors. It uses the popular L298 motor driver IC and has the onboard 5V regulator which it can supply to an external circuit. It can control up to 4 DC motors, or 2 DC motors with directional and speed control This motor driver is perfect for robotics and mechatronics projects and perfect for controlling motors from microcontrollers, switches, relays, etc.

MOTOR DRIVER MODULE L298N



Four wheeled
have four drive motors and use skid steering.

MICROMORS AND GRIPPY WHEELS

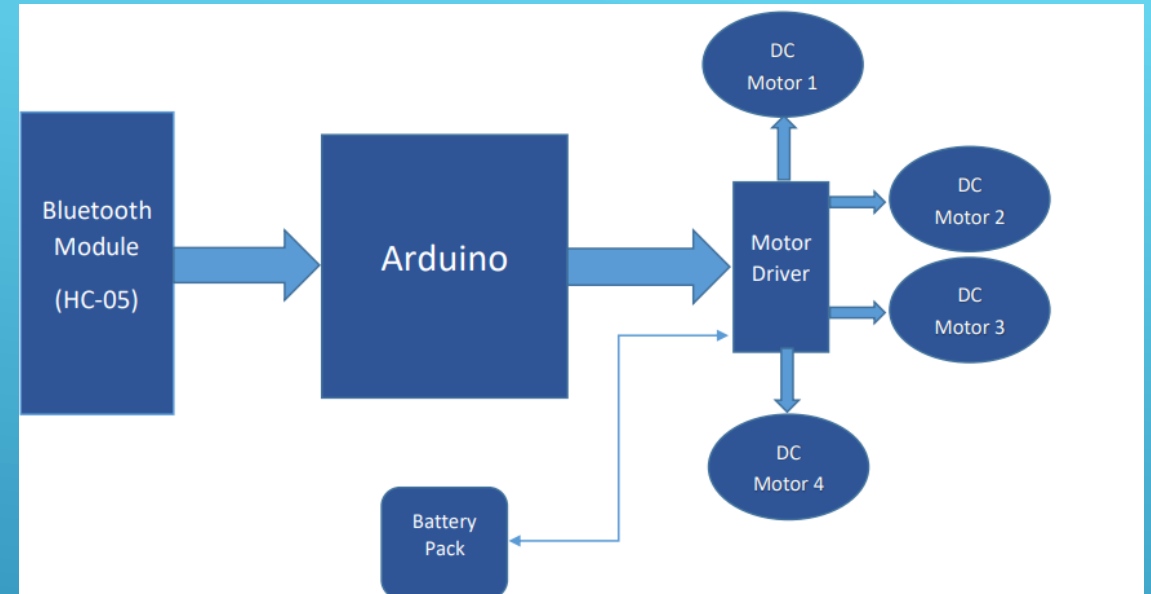


A jump wire is an electrical wire or group of them in a cable with a connector or pin at each end. Wires are used to connect components to each other on the breadboard or other prototype, internally or with other equipment or components, without soldering. Wire connectors could be male or female.

JUMPER WIRES



- ▶ Here the whole system is divided into four principle blocks Bluetooth block, microcontroller block, and motor driver block and the battery pack block
- ▶ The Bluetooth block comprises of the Bluetooth module present in the mobile phone used along with the Bluetooth module used in the car. The mobile phone consists of an application that provides an interface to send ASCII characters via Bluetooth which is then received by the Bluetooth module on the car
- ▶ The microcontroller then receives the data from the Bluetooth module and then manipulates the data received into series of digital outputs which run the motor driver section



BLOCK DIAGRAM

Arduino software is used to put the instruction of whole functions of this system to the microcontroller. Here we use programming language 'C' for coding.

Android Studio is used to develop the mobile application that controls the car using programming language 'JAVA'

By using these two softwares we put the data and instruction for forward,backward, left, right operation of this system.

SOFTWARE DESCRIPTION

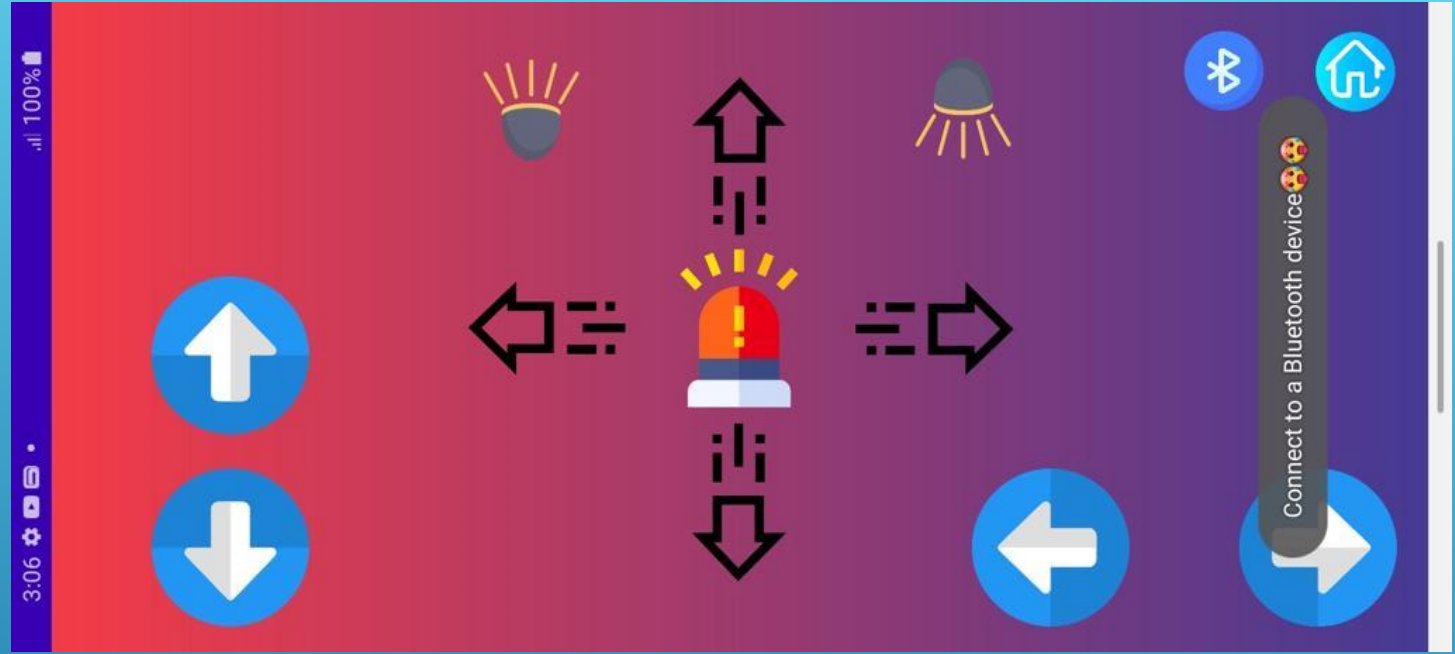
The Arduino program is stored in the EEPROM of the microcontroller, which is present in the NodeMCU ESP8266.

In android application when we press a button, a corresponding signal is sent through the Bluetooth to Bluetooth module (HC-05) which is connected with the NodeMCUESP8266

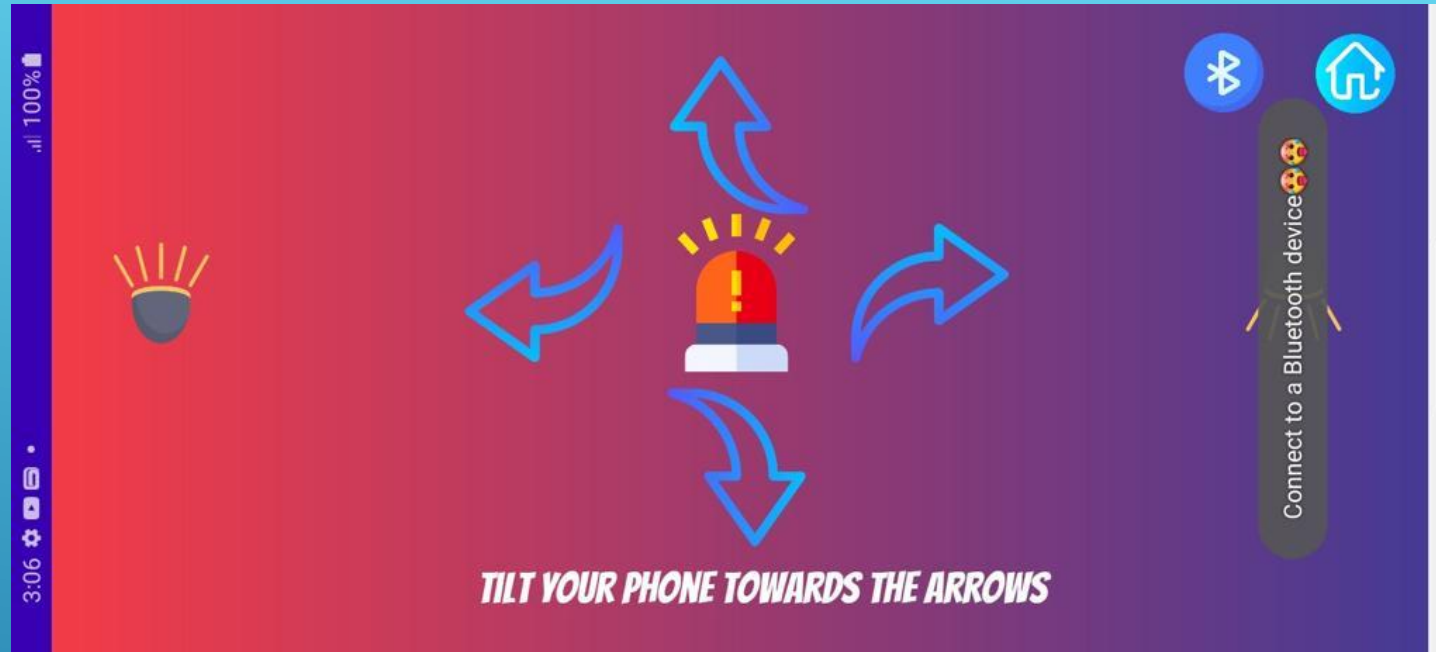
When signal data arrives the NodeMCU ESP8266 the pin which corresponds to the particular input is set to high.

Now that pin gives the output to the motor driver section. Motor driver switches accordingly the data bit, if the data bit is low then the corresponding pin of the motor driver doesn't work else high bit then the corresponding pin of the motor driver is on.

HOW THE OPERATION WORKS ?



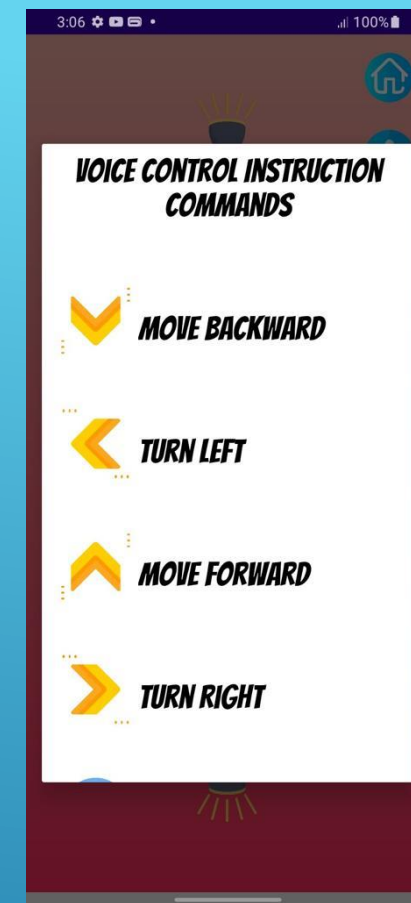
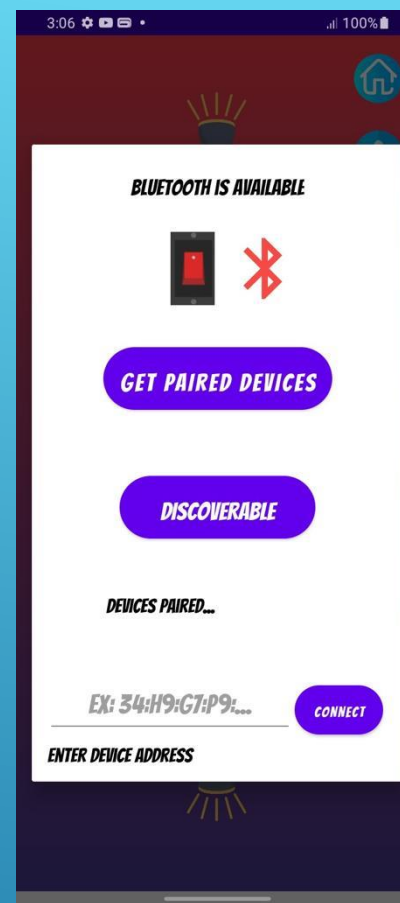
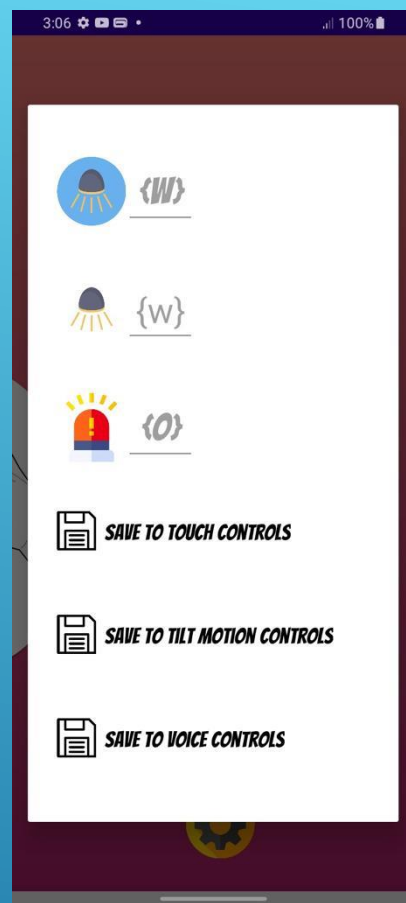
SCREENSHOTS FROM THE ANDROID
APPLICATION



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APPLICATION



SCREENSHOTS FROM THE ANDROID
APPLICATION



SCREENSHOTS FROM THE ANDROID APPLICATION

The above model describes how the arduino programs the car motor module and by wireless connection we actually rotate the wheels and give direction to the car.

CONCLUSION

- ▶ Github Source code for the android application:

<https://github.com/Medhat-Ahmed-15/Bluetooth-Car-Controller-Android-App>

- ▶ Github Source code for the arduino program:

<https://github.com/Medhat-Ahmed-15/Bluetooth-car-controller-arduino-program>

SOURCE CODES

1) Wang, F.Q. (2012) Research New Type of Supply Chain Management Model Based on the Technology of Internet of Things—With Radio Frequency Identification (RFID) Technology as an Example.

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REFERENCES



**THANK
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