

# VOCROID - Voice Controlled Robot Using Android

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**Abstract-** Vocroid is a voice-controlled robot using an android smart phone. Voice controlled robotic system is very beneficial in the areas where there is high risk for humans to enter. Vocroid is a robot controlled through voice commands received via android device. The integration of control unit with Bluetooth device is achieved using a Bluetooth module to capture and read the voice commands. The robotic vehicle operates as per the commands received via android device, for this Arduino is integrated in the system. The controlling device may be any smart phone having an Android OS. The transmitter uses an android application required for transmitting the data. The receiver end reads these commands and interprets them into controlling the robotic vehicle. The android device sends commands to move the vehicle in desired directions. After receiving the commands, Arduino operates the motors in order to move the vehicle in the desired directions. The communication between android device and receiver is sent as serial communication data. Arduino program is designed to move the motor through a motor driver circuit as per the commands sent by android device.

required supply to the Arduino board, Bluetooth module and the motors for their respective functioning. A 9V battery is used as the major power supply for the robot.

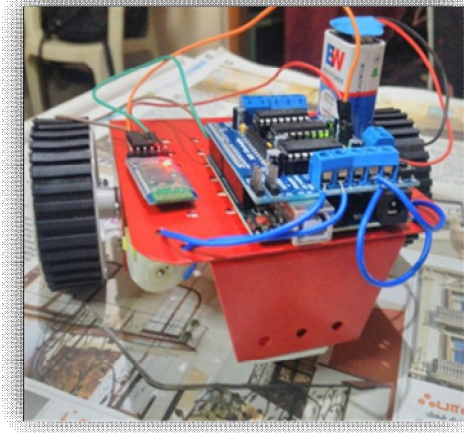


Figure 1.

**Keywords-** Arduino, Bluetooth, Android Os

## I. INTRODUCTION

Android smart phones are undoubtedly the most popular gadgets these days. You will find various apps on the Internet that exploit inbuilt hardware in these mobile phones, such as Bluetooth and Wi-Fi, to control other devices. Presented here is a phone-controlled robot that can be controlled via an app on your mobile. The control commands are sent via Bluetooth. These robots are very helpful in the areas where human intervention is at high risk. Surveillance is made easier with the help of these types of robotic systems. The Arduino uno board is interfaced with the Bluetooth module by means of jumper wires i.e. The Tx of the Bluetooth is connected with the Rx of the Arduino board, Rx of the Bluetooth is connected with the Tx of the Arduino. Vcc and Gnd of the Bluetooth module are connected to the 5V and Gnd of the Arduino respectively. The L293d motor driver shield is placed exactly on the Arduino board. The driver shield is designed in such a way that it fits exactly into the Arduino board. Two DC motors are used for the movement of the robot. These motors are connected to the motor shield at M1 and M2 ports on the driver shield. The shield provides the

## II. BLOCK DIAGRAM

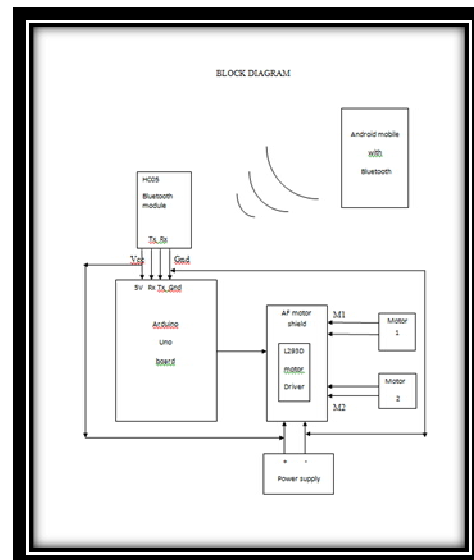


Figure 2.

## III. COMPONENTS USED

- ARDUINO UNO
- L293d MOTOR DRIVER SHIELD
- CHASSIS AND WHEEL

- BOVINE WHEEL
- DC MOTORS X2
- HC-05 BLUETOOTH MODULE
- ANDROID MOBILE WITH AMR VOICE CONTROL
- 9V BATTERY AND BATTERY CAP
- JUMPER WIRES

#### ARDUINO UNO:

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started



Figure 3.

#### MOTOR DRIVER SHIELD

Adafruit designed a very useful shield called "Adafruit Motor Shield". It was (is) a useful shield with older components. The shield contains two L293D motor drivers and one 74HC595 shift register. The shift register expands 3 pins of the Arduino to 8 pins to control the direction for the motor drivers. The output enable of the L293D is directly connected to PWM outputs of the Arduino. To increase the maximum current, the L293D allows extra chips with "piggyback". Piggyback is soldering one or two or three extra L293D drivers on top of the L293D drivers on the board to increase the maximum current. The L293D allows parallel operation. The Motor Shield is able to drive 2 servo motors, and has 8 half-bridge outputs for 2 stepper motors or 4 full H-bridge motor outputs or 8 half-bridge drivers, or a combination.

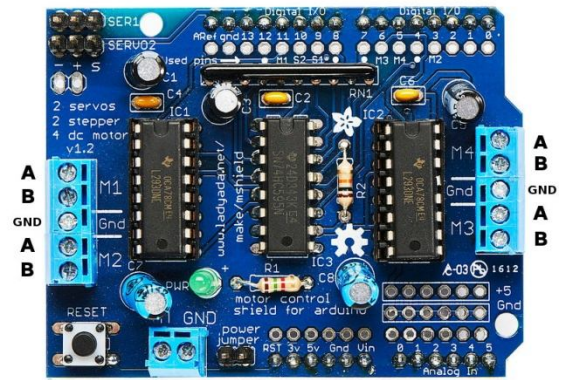


Figure 4.

#### IV. BLUETOOTH MODULE

HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. The HC-05 Bluetooth Module can be used in a Master or Slave configuration, making it a great solution for wireless communication. This serial port bluetooth module is fully qualified Bluetooth V2.0+EDR (Enhanced Data Rate) 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband. It uses CSR Blue core 04-External single chip Bluetooth system with CMOS technology and with AFH (Adaptive Frequency Hopping Feature)



Figure 5.

#### V. AMR VOICE APPLICATION

The AMR application uses android mobiles internal voice recognition to pass voice commands to the robot the Android platform includes support for the Bluetooth network stack, which allows a device to wirelessly exchange data with other Bluetooth devices. The application framework provides access to the Bluetooth functionality through the Android Bluetooth APIs it Pairs with Bluetooth Serial Modules and sends in the recognized voice as a string



Figure 6.

## VI. COMMANDS

Go: moves in the forward direction Back moves in the backward direction

Right: moves towards right

Left: moves towards left

Lights on: turns on the led

Lights off: turns off the led

Run: moves in the forward direction without a halt

Stop: stops the motion

## VII. ADVANTAGES

- Voice commands are transmitted and received via wireless communication using Bluetooth and android phone
- Power consumption is very less
- Compact in size
- Cost effective
- Simple and easy to design

## VIII. APPLICATIONS

The robot is small in size so it can be used for spying. With a few additions it can be used in the borders for detecting and disposing hidden land mines. The robot can be used for reconnaissance and surveillance

## IX. FUTURE DEVELOPMENT

It can be converted to IOT and can be controlled from anywhere. By interfacing some sensors some of the parameters can be monitored. A wireless camera can be interfaced for surveillance

## X. INFERENCE

The voice commands are efficiently transmitted and received via Bluetooth and the desired functions are performed by the robot with the help of arduino and android smart phone.

## REFERENCES

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