

## VOICE CONTROL ROBOT USING ARDUINO

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### ABSTRACT

This robotic is designed to control vehicle by using human voice command through Bluetooth module. Voice Control Robot is used to complete specific commands like Forward, Backward, Stop, Left, Right and dancing (or rotation of robot) etc. Voice Control Robot is based on Speech Recognition. The commands are given to robot using Android application. The Android application (AMR – Voice) is connected to Bluetooth Module (HC – 05), which is directly connected to Arduino Uno R3. We give command to the robot and it performs work according to the given command. Voice Control Robot is much useful for those areas where humans can't reached. Robot can work in all type of situations like toxic area, in fire situations, polluted area and also on hills. This robot is very useful for those who is physically handicapped. This robot is very small in size so we can use this project for spying or espial. If we implement in this project so we can use this robot in military application, agriculture purpose, industrial purpose and also for surveillance device.

**Keywords:** Android, Arduino, Bluetooth Module, Robotic.

### I. INTRODUCTION

In this project, the robot basically works on human speech command. The Voice Control Robot is controlled by using voice command which is directly given by user to the robot. We can say, this is a wireless robot. The android application is installed in smartphone which works as a transmitter. The commands are given by this android application. The android application AMR Voice is use to recognize the Arduino using a Bluetooth link. The Bluetooth module (HC-05) which is connected to the Arduino.

As we know that Arduino is programmable, so we have to do the programming using C or Java Language. When the programming of Arduino is done, we connect all the connection as required for the robot. Hence we connect Android application (AMR Voice) and Bluetooth module (HC-05) using Bluetooth link. The commands are given by the AMR Voice by the user. These commands are received by Bluetooth module and Arduino perform the operation according to the given commands. The given command by the user is converted into digital form. These commands can be Left, Right, Backward, Forward or Rotation of Robot etc. The range of this robot is up to 100 meters. If we want to make this for a certain purpose the range can be increase.

### II. METHODOLOGY

#### 2.1. Hardware and Software Requirements

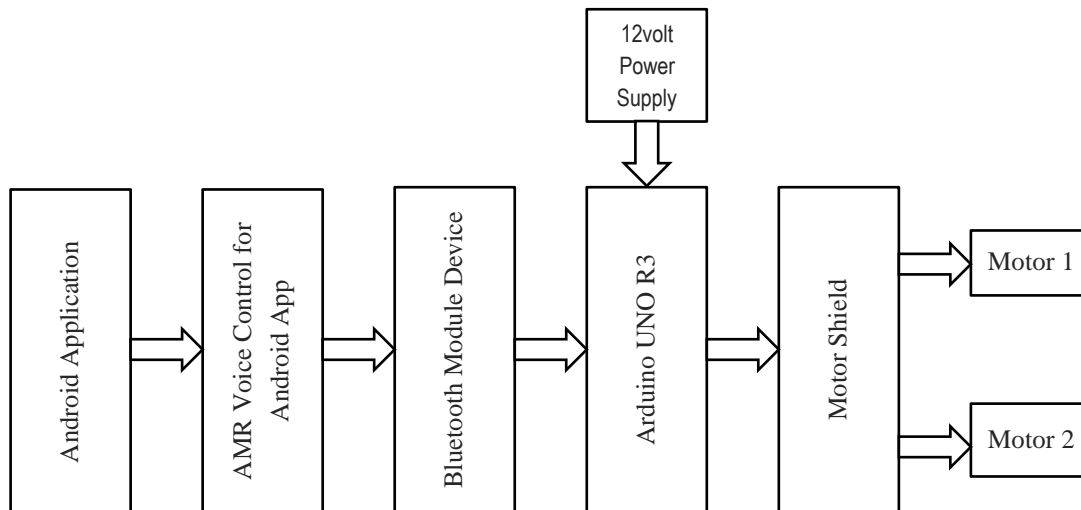
The required hardware for this project is Arduino UNO R3, Bluetooth Module (HC-05), Motor Shield (L293D), 12volt Battery, Jumper wire, Chasis 4WD.

The required software for this project is AMR Voice Control for Android App, C or Java Programming Language.

#### 2.2. Block Diagram of Project

The block diagram of this project is given in Fig.1. The basic block diagram of Voice control robot using Arduino is given below which consists of an android phone that recognize the command and transmit to the Bluetooth module via Bluetooth link. The user gives the command via AMR voice and this command is transferred to the Bluetooth Device. According to the given command Arduino UNO R3 receive the command and operates on it. To perform all operation it required 12volt power supply.

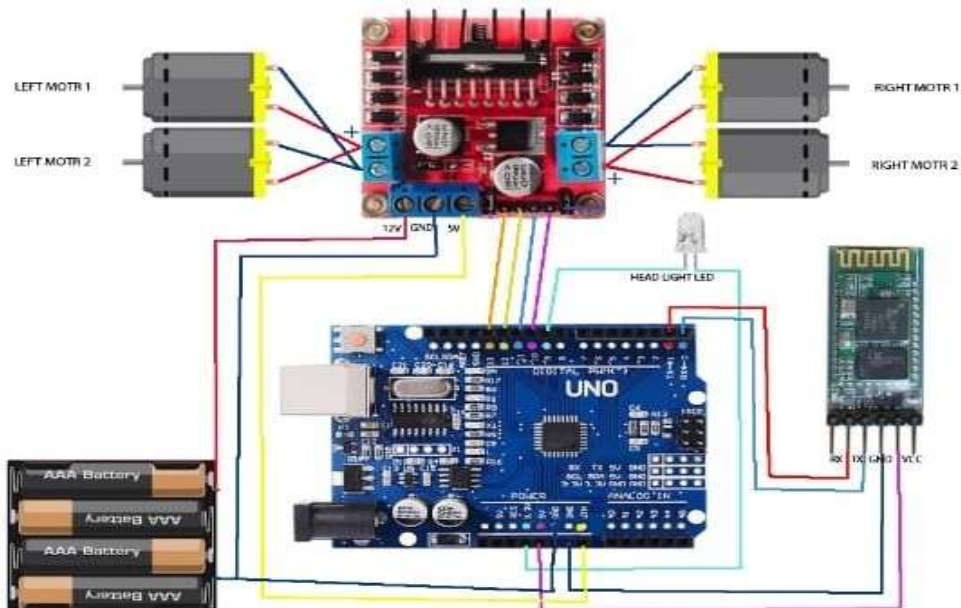
First the given command or data is converted into text form in AMR voice control. When it received at the Bluetooth module, the data or command is converted into digital form. Hence the Arduino perform the operation according to the received command or data.



**Fig.1 Block Diagram of Voice Control Robot**

### 2.3. Circuit Diagram

The circuit diagram of this project is given in Fig.2. To run the system, we need DC power supply. The DC power supply is given to Arduino UNO R3, Bluetooth Module and Motor Shield. Hardware of the project is Arduino UNO R3, Bluetooth Module and Motor Shield is used. The commands are given to through the Android application which works as transmitter and received via Bluetooth Module which works as a receiver. This Bluetooth module is connected by Arduino Uno, which perform the operation as the command is given. The Arduino is programmable. We can use C or Java Language for programming of the Arduino. The DC motor is connected to the motor shield and Arduino. The Bluetooth module is connected to Arduino UNO.



### Fig.2 Circuit Diagram

## 2.4. Controlling of Robot

**How to use Android application to control the Robot for that the steps are given below**

- 1) Download the application “AMR Voice Control” from Google play store and install it.
- 2) After installation, turn on the Bluetooth of smartphone and Bluetooth module.
- 3) Now pair your smartphone Bluetooth with Bluetooth module HC-05 and the default password for pairing is “0000” or “1234”.
- 4) Now the application and robot is ready to perform the operation.
- 5) Now click on the “MIC” of the application and give specific command to the robot.
- 6) Robot will perform the given specific command.
- 7) For Example when we say forward through the mobile application to the robot, this command is given to Bluetooth module of robot which is connected to the Arduino. According to the programming of the Arduino the robot will perform the task or command. Hence the robot will move to forward.
- 8) According to the given command the robot can perform other operation or command like Backward, Left, Right, Stop and Rotation of robot.

## III. APPLICATION

- By commanding the robot, we can use this robot for that places where human can't reach like fire situation, highly toxic area, hills etc.
- We can use this robot as speech recognition security system.
- We can use this robot for military purpose.
- We can use this robot for those people who is physically handicapped
- We can use this robot for agriculture purpose.
- We can use this robot to bring and place small object.

## IV. ADVANTAGE

- It is easy to use.
- It work on simple voice command.
- The size of this robot is small.
- It is user friendly.
- It reduce man power.
- Low power consumption.
- Reliable, low cost.
- Accident can be also avoided by using this robot.

## V. FUTURE SCOPE

- Useful for speech recognition security system.
- Useful for military purpose.
- Automatic target system can be implemented.
- This robot is useful for those areas where humans can't reach like fire situation, highly toxic areas etc.
- If we use other technologies like Zigbee or GPS, we can improve the range of the robot.
- The robot is useful for surveillance.

## VI. CONCLUSION

The voice controlled robot is an easy programmable (software) project. This project operated on human voice command with android application. The implementation of this project is easy, so this robot is beneficial for human life. The Voice Control Robot is useful for disable people and monitoring purpose. It works on simple voice command, so it is easy to use. It is useful for those areas where humans can't reach. We can implement Image processing in this robot, so that we can detect the color of the object or targeted system. The size of this robot is small, so we can use this robot for spying purpose. It can be used for surveillance. We can implement web cam in this robot for security purpose. The voice recognition software has an accuracy of 76% for identify a voice command and it is also highly sensitive to the surrounding noise.

## VII. REFERENCES

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