ANDROID CONTROLLED ARDUINO BASED VOICE CONTROL ROBOT

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ABSTRACT

Smartphones are one of the most essential things for human life in the 21st century. The Arduino voice-controlled robot interface with the Bluetooth module HC-05. We can give specific voice commands to the robot through the Android app installed on the phone. The Bluetooth transceiving module on the receiving side receives commands and sends them to Arduino, thus controlling the robot. The aim of this project is to control the speed of a simple robot by giving voice commands that are used every day. For forward motion, the robot moves in the same direction and for backward motion, the robot moves in the reverse direction. And also moves to the right and to the left.

Keyword : - *Arduino, Bluetooth,Robot etc….*

1. INTRODUCTION

Nowadays robots are evolving rapidly and these robots use social public services and private services. This robot is also used to make humans work easily. The voice control robot is a practical example of controlling the speed of a simple robot by giving voice commands that are used every day. An Android application in this system is used as a medium to transmit human commands to the microcontroller. The controller interface can be accessed via the Bluetooth module via the UART protocol.

The robot car can be controlled wirelessly via voice commands directly from the user. The robot can stop more, backward, left, right and forward. Arduino interface with voice controlled robot Bluetooth module HC-05. Interface with robot car Arduino UNO, Bluetooth module HC-05, L298D motor driver and DC motor.

Arduino is programmable so we have to do the programming using the embedded 'C' language. The range of the robot car is 10 meters.

2. LITERATURE SURVEY

M Saravanan, B Selvababu, Anandhu Jayan, Angith Anand, and Aswin Raj, "Arduino Based Voice Controlled Robot Vehicle" [1], The project was developed in such a way that the robot would be controlled by voice commands. The Android application with microcontroller is used for essential functions. The connection between the Android app and the vehicle is facilitated with Bluetooth technology. The robot is controlled by a button on the application or by the user's spoken command. The movement of the robot is facilitated by two DC servo motors

connected by a microcontroller to the side of the receiver. The command in the application is converted into a digital signal for the right range (about 100 meters) in a robot via a Bluetooth RF transmitter. At the end of the receiver the data is decoded by the receiver and delivered to the microcontroller which drives the DC motors for the required work. The purpose of a voice controlled robotic vehicle is to perform the required functions by listening to the user's commands. A pre-preparation session is required for easy operation of the robot by the user. The same code is used to notify the controller.

Subankar Roy, Tashi Rapden Wangchuk, Rajesh Bhatt, "Arduino Based Bluetooth Controlled Robot" [2], A robot is usually an electro-mechanical machine guided by a computer and electronic programming. Many robots are manufactured for manufacturing purposes and are found in factories around the world. The design of the latest inverted ROBOT that can be controlled using the APP for Android mobile. And in which we use Bluetooth communication for Arduino UNO and Android interfaces. Arduino can be interfaced on a Bluetooth module despite the UROT protocol. The robot motion can be controlled according to the command received from Android. The consistent output of a robotic system does not match with quality and repetition. These robots can be recyclable and can be interchanged to provide multiple applications.

3. ARCHITECTURE
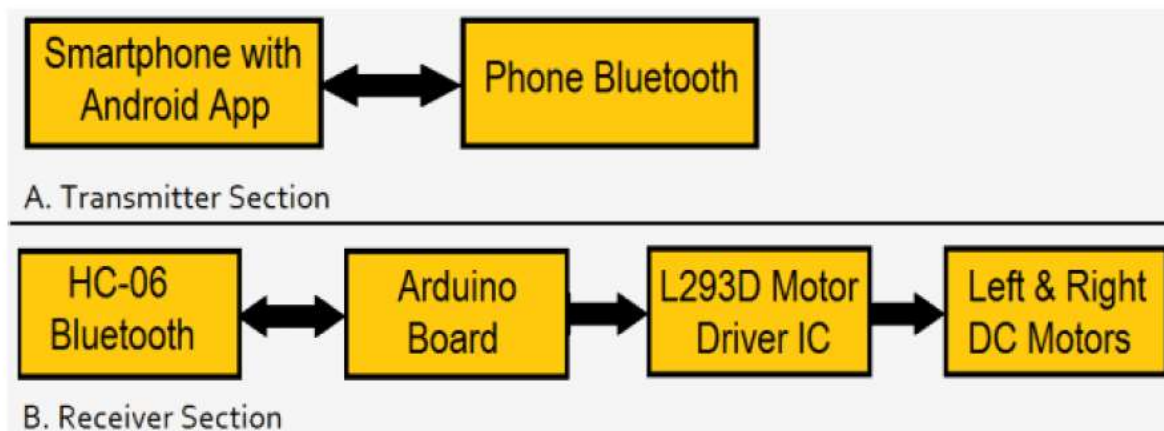
Fig -1: Architecture of Android Controlled Arduino Based Voice Control Robot

In this architecture, there are two sections i.e. Transmitter section and Receiver Section. In transmitter section, Android app on the smartphone connected to the phone Bluetooth. Next in receiver section, HC-06 Bluetooth is link to the Arduino board. The Arduino board receives voice command from Bluetooth HC-06. The Arduino Board is linked to the L293D Motor Driver IC. And L293D Motor Driver IC link to the left and right DC motors.

4. COMPONENT DESCRIPTION

1. **Arduino UNO R3:**
   The voice control robot is based on speech recognition. The commands are given to robot using android applications is to the Bluetooth module HC-06 which is directly connected to the Arduino.
2. **Bluetooth module HC-06:**
   Bluetooth module HC-05 is that called voice control robot that's controlled Bluetooth module HC-05 a smartphone application. The application developed in such a way that it converted the voice command to text and transfer the text to the connected in the bluetooth device.
3. **Motor Driver L293D:**
   Motor driver L293D is called motor driver IC. A single L293D is capable in running DC motors at the same time. Also the direction of these two motors can be controlled independently.

4. **DC motor:**

DC motor is any of the class of rotaty electric motors that converts direct current electric into mechanical energy. DC motors speed can be controlled over a variable Supply voltage.

5. FUTURE SCOPE

A. Ultrasonic sensors interfaced with the Arduino can help in obstacle detection.
B. Considering this feature for the future scope might prove a milestone in vehicle automation.
C. Further the project can be developed using IOT technology where a user can control the robot from any corner of the world.

6. REFERENCES

[1]. M Saravanan, B Selvababu, Anandhu Jayan, Angith Anand, and Aswin Raj, "Arduino Based Voice Controlled Robot Vehicle", IOP Conference Series: Materials Science and Engineering et al 2020 IOP Conf. Ser.: Mater. Sci. Eng. 993 012125

[2]. Subankar Roy, Tashi Rapden Wangchuk, Rajesh Bhatt, "Arduino Based Bluetooth Controlled Robot", International Journal of Engineering Trends and Technology (IJETT), V32(5),216-219 February 2016.