Voice Control Robotic Vehicle

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Abstract - *In this project we will deliberate how to control robot controlled car using Bluetooth module through android application of an android mobile phone. The purpose of robotics in commercial & residential intention has come to be quite essential for executing challenging work into more conveniently simple way. There are a lot of researches working on to enhance the connection between humans and robot. The paper presents the research of the designing & development of a voice controlled robot using mobile phone based on Arduino Uno(ATMEGA328 Microcontroller). The control system of the robot movement will be employed by the voice and the robot will response the commanding persons by generating sounds of human voice with each verbal instruction. The proposed system will be designed based on microcontroller which is connected to smart android phone through Bluetooth module for receiving voice command. The voice command is converted to text by an app of the android phone and sends necessary data to the microcontroller for controlling robot movement. After receiving the data the robot responses according to the command by performing proper movement to the proper direction according to the voice command.*

Key Words: **Voice Command, Android App, Bluetooth module(HC-05), ATMEGA 328P,Motor Driver(L293D)**

1.INTRODUCTION

In proposed design, we wish to control the movements of the vehicle using voice commands from the user. These commands will be issued at the Android Application on the user's phone which is connected to the robot using a Bluetooth Module. Speech signal are the most important means of communication in human beings. Almost every conversation is to interact is done by means of voice signals. Voice recognition is a technology which is used to convert the speech signal into a computer text format. This voice recognition technology can be used to control and generate speech acknowledgement. It also aims to fulfill the task assigned to the user through various commands.

1.1 Literature Survey

1.IEEE paper of "Robot Control Based on Voice Command" by Xiaoling Lv, Hui Li, Minglu Zhang(2008) - In this paper, voice control robot system has been presented. This simple system shows the ability to apply Voice recognition techniques to the control application.Robot can understand control command spoken in natural way, and execute the corresponding action.

2. International Research Journal of Engineering and Technology (IRJET) paper of "Arduino Based Voice Control Robot" (March 2015) by K.Kannan, Dr.J.Selvakumar - The purpose of this paper is to build a robotic car which could be controlled using voice commands. Generally these kinds of systems are known as Speech Controlled Automation Systems (SCAS). Our system will be a prototype of the same.

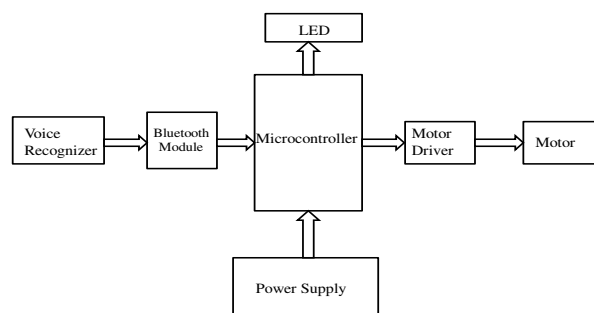**Fig -1**:Block Diagram of Voice Control Robotic Vehicle

1.2 Problem Statement

The main objective of the project is to control the robotic vehicle in a desired position by using voice recognizer. Human Robotic Interaction is achieve. The goal of voice controlled Robot is to listen and act on the commands received from the user. The project is designed to control a robotic vehicle by voice commands and manual control for remote operation.

1.3. Proposed System

To control the robotic vehicle ,voice recognition system is used. Hence a dedicated application is created to control an embedded robotic hardware. The application controls the movement of the robot. The embedded hardware is developed on ATMEGA328 microcontroller and to be controlled by a Smartphone on the basis of Android platform. ATMEGA328 controller is to receive the AT commands from the Smartphone and takes the data and controls the motors of the robot by the motor driver L293D. The robot can able to move forward, reverse, left and right movements and LED and BUZZER gives the indication of commands. The Smartphone is been interfaced to the device by using Bluetooth. A Bluetooth device HC-05 module is going to be added to ATMEGA328 microcontroller to receive commands from smart phone.

2.BLOCK DIAGRAM

A smart phone Android operated robot. Now here is a simple to control your robot using Bluetooth module HC-06 and ATMEGA328 microcontroller with your android Smartphone device. The controlling devices of the whole system are a microcontroller. Bluetooth module, DC motors are interfaced to the microcontroller. The data receive by the Bluetooth module from android smart phone is fed as input to the controller. The controller acts accordingly on the DC motor of the robot. The robot in the project can be made to move in all the four directions using the android phone.. Android smart phone controller Bluetooth robot using microcontroller is shown in figure.

3 ADVANTAGES

i. The robot is small in size ,so space required for it is small.

ii. We can access the robot from the distance of meters as we are going to use Bluetooth for the connection between robot and the smartphone.

iii.Cost of the system is low as we are using smartphone which is nearby available to everyone.

4. APPLICATION

i.In home and daily need.

ii.In chemical industries and hospitals.

iii.Speech and voice recognition security systems.

iv.The robot can be used for surveillance or reconnaissance.

5. CONCLUSIONS

The proposed system shows how the android smartphone can be used as remote controller for robot and various embedded technologies with the help of the Bluetooth technology. At the same time, this program uses blue-tooth connection to communicate with robot. The proposed system also shows that how a robot can be used for travelling purpose.The operating system of smartphone is Android, and it can develop effective remote control program and by using WiFi wireless network, the communication between smartphone and robot can be realized, which makes it simple and convenient to control robot.

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