

Voice and Gesture Controlled Robot Using Android Applications

J. V. KARTHIK¹, G. VENKAT RAO²

¹ M.Tech student, Dept. of ECE, Lakireddy Bali Reddy College of Engineering, karthik.settyjammisetty@gmail.com

² Assistant Professor, Dept. of ECE, Lakireddy Bali Reddy College of Engineering, gr1729@gmail.com

Abstract— In this paper with the development of technology, efforts were made over the years to reduce the human involvement in many applications like chemical, explosive industries, defence and even day to life. Robotics assistants were implemented that help physical disabled people. Automated systems developed in this regard must be compact and less complex. Till now, most of the robots are controlled by WI-FI remote sensors or Infrared sensors. This paper proposes to design a robot that can be controlled with voice and gestures and make use of android mobile using Android Applications with Bluetooth feature present in it. Voice commands are supported natural oral communication and gestures are used to direct the vehicle within the specific direction. The main motto will be to overcome the transmission loss and time delay in manual device.

Keywords— Robot, voice, gesture, android application, blue tooth, arm7.

I. INTRODUCTION

This project aims in controlling a Robot that can be operated with android mobile using Android Applications with Bluetooth feature present in it. Android may be a package stack for mobile devices that includes a software system, middleware and key applications. Android boasts a healthy array of property choices, as well as Wi-Fi, Bluetooth, and wireless information over a cellular affiliation. Bluetooth is an open standard specification for a frequency (RF)-based, short range property technology that guarantees to alter the face of computing and wireless communication. it's designed to be an affordable, wireless networking system for all categories of moveable devices, like laptops, PDAs and mobile phones. It conjointly can modify wireless connections for desktop computers, creating connections between monitors, printers, keyboards, and also the CPU cable-free. The dominant device of the total system could be a Microcontroller. Bluetooth module, DC motors are a unit interfaced to the Microcontroller. the info received by the Bluetooth module from Android phone is fed as input to the controller. The controller acts consequently on the DC motors of the robot. In achieving the task the controller is loaded with a program written in Embedded 'C' language.

II. METHODOLOGY

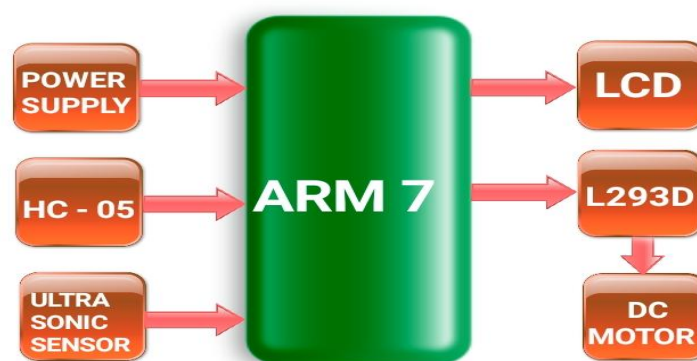


Fig.1. Main Block Diagram



Fig. 2 shows the general design of the system

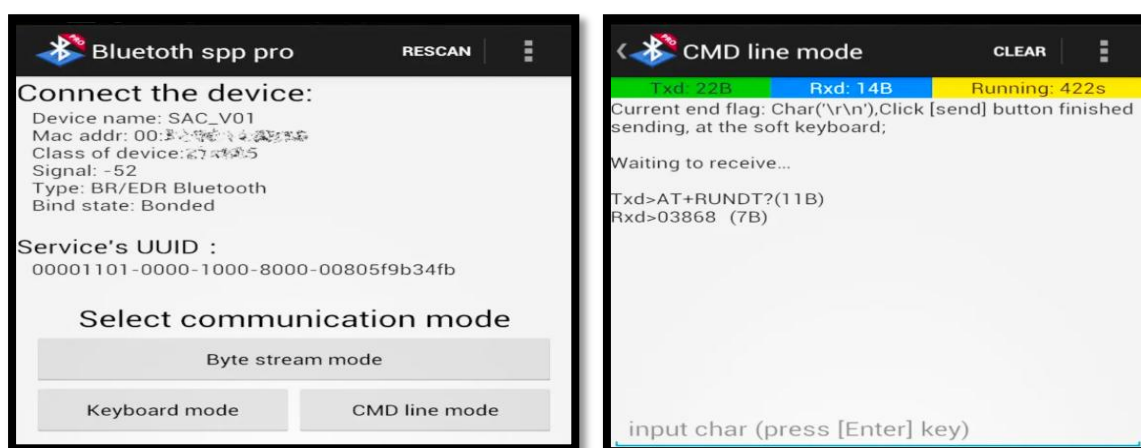
III. ANDROID PLATFORM

Android devices are powerful mobile computers and that they become a lot of standard sensible phones used worldwide. They become a lot of standard for code developers owing to its powerful capabilities and open design, conjointly it's supported the Java artificial language. Android devices give various communication interfaces like USB, Wi-Fi and Bluetooth. we expect it's a good platform for a robotic system management, as a result of it's less expensive than the other ARM-based process unit. we tend to use android platform as a result of it's the widest utilized in the world and runs the most important variety of sensible phones worldwide.

IV. CONNECTIVITY AND COMMUNICATION

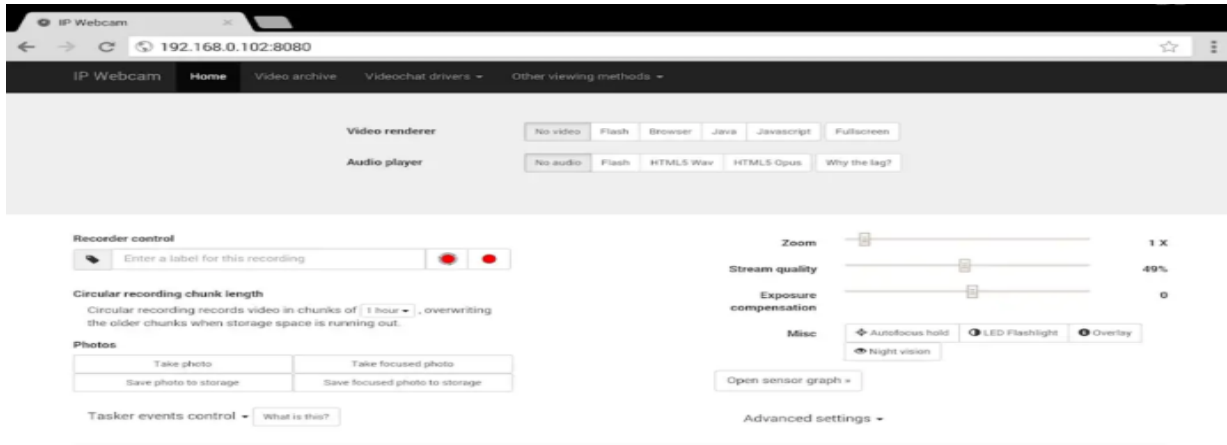
For the communication of the robot with the cellular mobile we've got a bent to unit of measurement exploitation the Bluetooth device. The Bluetooth device (HC-05) receives the data from the mobile and might also transmit the data. Four Android Applications are used to control the robot:

1. *Bluetooth Spp Pro*: This Android application is used to design a robot that can be controlled with some commands. follow the steps, open the application first - scan for devices - after device found pair Bluetooth, and click Command line mode for giving commands.



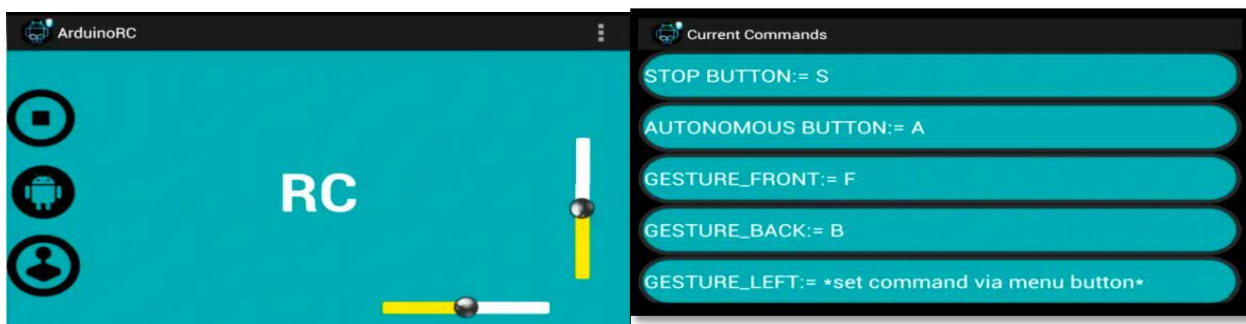
for FRONT – f, for BACK – b, for LEFT – l, for RIGHT – r, for STOP - s. The robot is Controlled by using these commands.

2. *Ip Web Cam* : IP digital camera turns your phone into a network camera with multiple viewing choices. We can use a android mobile and laptop for this application. This app is used for Surveillance purpose.



3. *Arduino RC*: This humanoid application will establish a connection with any Arduino /Arm, that has a bluetooth module. This applications consists if several modes.

Vehicular Mode : By clicking the "joystick" button the user will control the robot with specific gestures. For the interpretation of gestures to commands, the applying uses the inherent measuring instrument detector of the sensible device.



There are eight totally different gestures out there “ FRONT,BACK,LEFT,RIGHT, FRONT_LEFT,FRONT_RIGHT, BACK_LEFT, BACK_RIGHT ”. We can set commands as our wish.

4.*AMR Voice Controller*: This application Uses humanoid mobiles internal voice recognition to pass voice commands to your robot Pairs with Bluetooth Serial Modules and sends within the recognized voice as a string.



HARDWARE TOOLS:

1. arm7 micro controller
2. liquid crystal display
3. power supply
4. batteries
5. dc gear motors
6. l293d ic
7. hc-05 blue tooth
8. ultrasonic sensor

SOFTWARE TOOLS:

1. keil - ide
2. embedded c language
3. lpc 2000 flash utility tool

By using all the components and software the robot can be controlled with voice and gestures and make use of android mobile with bluetooth application.

V. RESULT



VI. CONCLUSIONS

The main aim is to design a robot that can be controlled with voice and gestures and make use of android Application with Bluetooth. The main motto will be to overcome the transmission loss and time delay in manual device. The project may be extended by embedding GPS Module at intervals the circuit through that the mechanism may be controlled from terribly long distance.

VII. REFERENCES

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