4 Way Controlled Robot

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Abstract: - We are introducing a robot which can be controlled in four ways which are command, voice, joystick and gesture. This is done using Atmega 16 microcontroller. The input can be provided using any of the present day android applications accepting either command, voice, joystick or gesture as inputs OR by specifically creating an android application solely for the purpose of this project as has been done here. By creating our own android application we can control and decide on every aspect with respect to this project, we can control what the application can send as the input to the Microcontroller and what actions the microcontroller can perform. This is a restriction that an already present application creates because we might not know what it may send as a response to gesture or joystick. This project has been made to ensure robot control in any of the ways a person desires.

**Keywords:** Voice, Gesture, Joystick, Bluetooth

I.   INTRODUCTION

This project helps to control the robot in 4 different ways depicting all the different techniques for controlling a robot. The four techniques used are: Gesture, Joystick, Voice and command. For this ATMEGA16 microcontroller is integrated in this system and for communication Bluetooth is used by using RS32 protocol and USART (Universal Synchronous Asynchronous Receiver transmitter) which makes it possible to control the robot using all these different techniques. An HC-05 Bluetooth Module has been used with the baud rate of 9600.

The controlling device may be an android based smartphone/tab etc. having an android OS. The android controlling system provides a good GUI that makes it easy for the user to control the vehicle. The transmitter uses an android application required for transmitting the data.

The Android application acts as an interface to provide the input (via voice, gesture, command or joystick). The data is transmitted to the Bluetooth Module by using the Bluetooth of the android device. The Bluetooth to Bluetooth link uses an USART, RS232 protocol. Once the input is received by the Bluetooth module attached to the controller, the module writes the data on the controller. The controller uses the program code to evaluate what action is to be performed on the reception of a particular input and hence performs the actions, as in this case controls the motors, thereby providing the output.
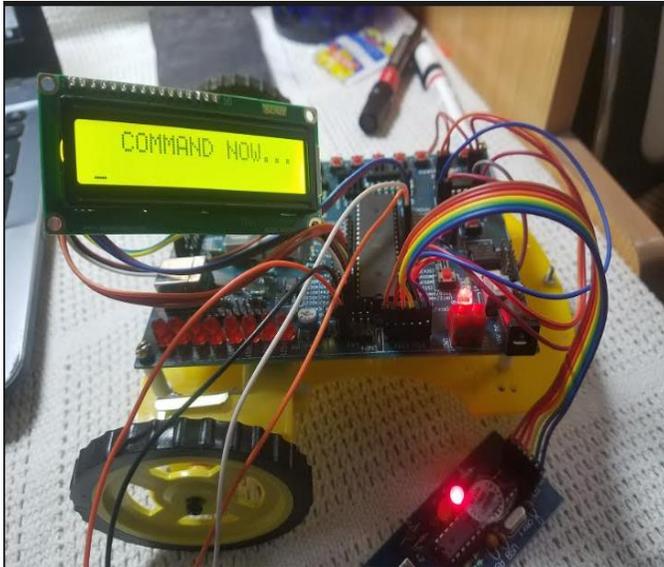
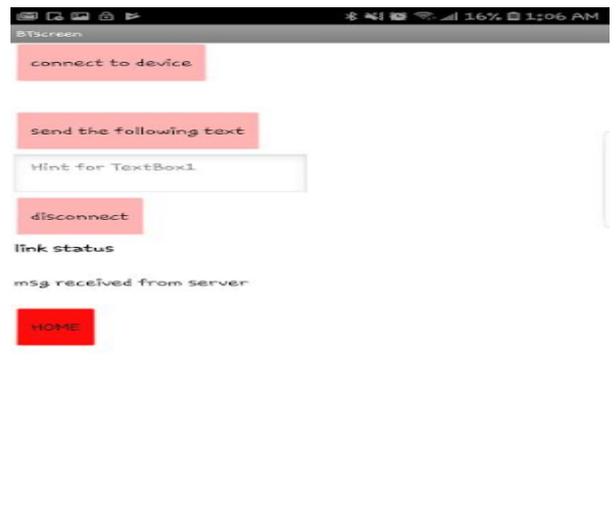## II.   BLOCK DIAGRAM
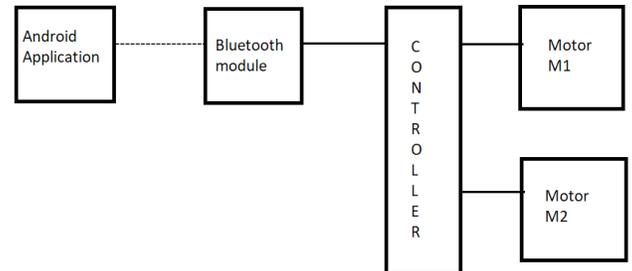
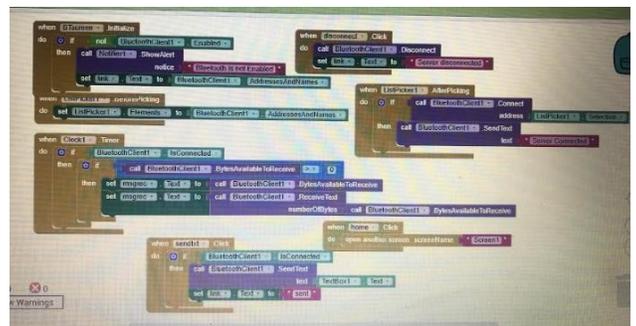

III.   FLOWCHART
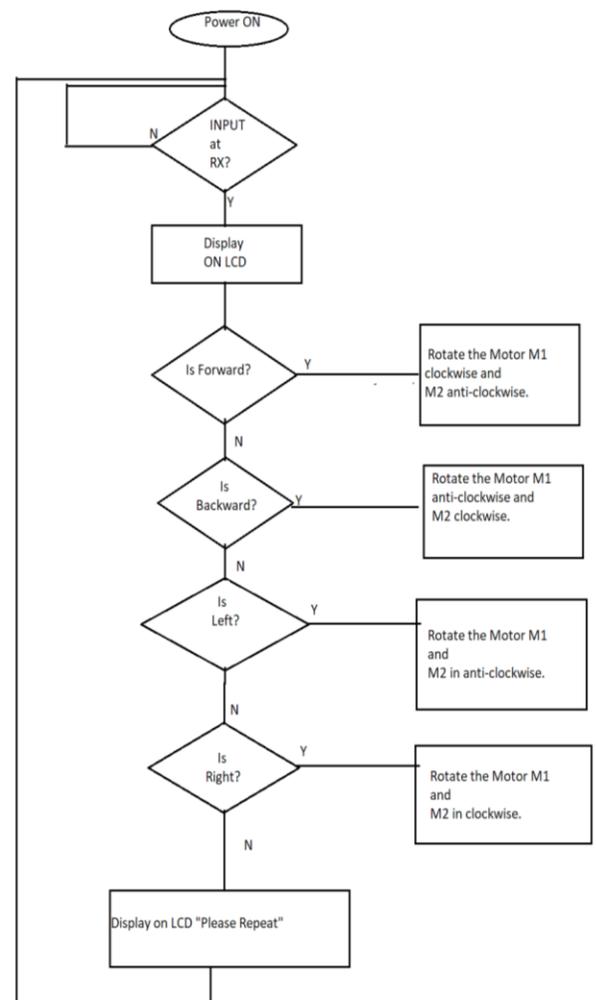
IV.   HARDWARE

V.   SELF DEVELOPED APP

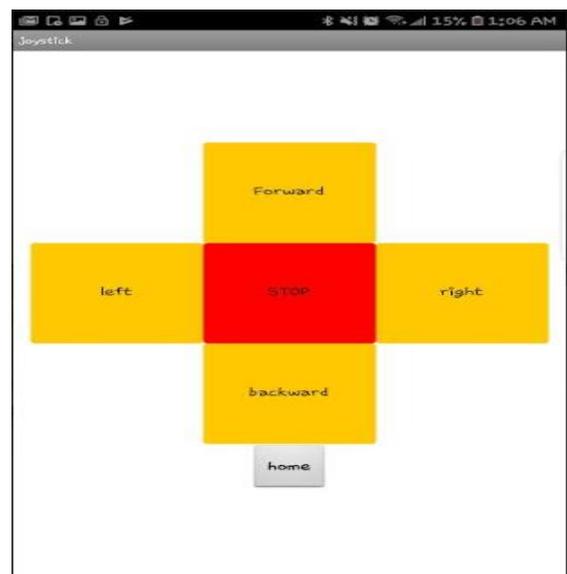This app has been developed on MIT app inventor 2 specifically to fulfil the requirements of this project.

Home screen

Bluetooth design

Bluetooth blocks

Joystick

VI.   CONCLUSION

This project completely reforms the robotic vehicle and gives it a new dimension. It can easily recognize any type of input commands and runs smoothly

VII.   FUTURE SCOPE

This project provides a lot of scope for future developments just by making small changes or adding certain new features. Some of the examples can be seen.

It guides the blind persons to reach a particular Destination by using the voice feature.

It is used to guide visitors in an organization by providing information about the facilities available.

The photo electric sensor in the robot will sense the obstacles and it will make decisions according to the obstacles.

VIII.   REFERENCES

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