



Prototype Bluetooth control robot

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Abstract

The aim of our project is to design an android phone Bluetooth Control robot. The working is based on technique of Android OS, Arduino micro-controller, motor drivers, a Bluetooth module. Arduino is an open-source prototype device. This is a very simple android Bluetooth controlled robot, with an Arduino and Bluetooth module. The idea is to first code the entire working using our previous knowledge of c-programming. The code will then be simulated on Arduino software and later be interfaced with the hardware.

The controlling remote can be any smart device with android. All the controls of the vehicle will be on the app on that device which can be made by using MIT app inventor. We chose this for our major project as robotics has become a major part of our everyday lifestyle, in military applications, security purpose and also have a wide scope in the engineering field. It plays a huge role in the development of latest or upcoming technologies.

Keywords: *Android controlled robot, Arduino uno, Bluetooth, Geared motor, Prototype*

1. INTRODUCTION

In this project we are used to the application of microcontroller which is based on embedded system and wireless technology. It is most widely used in military application, industrial application for short range or a particular distance.

Various technologies are used in these days such as GSM, Wi-Fi, WLANs and Bluetooth. Every technique has its own particular characteristics and applications. Among these wireless connections, we are using Bluetooth technology. For this basically we are using geared motors for movement of robots, Arduino Uno for programming, Bluetooth HC-05 for wireless communication through android phones, MIT app inventor for creating android software to directly communicate through the Bluetooth.

2. SYSTEM DESIGN AND ARCHITECTURE

2.1 Arduino uno Board

The Arduino UNO is an open-source microcontroller board based on Microchip ATmega328P microcontroller and developed by Arduino.cc [2]. Arduino uno board is used as microcontroller. In Arduino uno the programming can be done in c language. It can provide output as per programming. It is act as brain of robot. The movement of robot is decided by microcontroller or the Arduino uno.



Fig 1: Arduino uno

2.2 Bluetooth module(HC-05)

Bluetooth is an interface between the microcontroller and smartphone. It is interfaced with the microcontroller over the serial UART port of micro-controller. Bluetooth is also used as either transmission or receive. It is IEEE 802.15.1 standardized protocol, through which one can build wireless Personal Area Network (PAN) [3][1]. It uses frequency-hopping spread spectrum (FHSS) radio technology to send data over air. It uses serial communication to communicate with devices. It communicates with microcontroller using serial port (USART)



Fig 2: Bluetooth Module(HC-05)

2.3 L293D Motor Driver IC

The LM293D is basically used for amplifying the current. L293D are quadruple high-current half –H drivers [3]. It is used for controlling motors. It is also interfaced or connected with microcontroller (Arduino uno). It is a dual H-Bridge motor driver IC.



Fig 3: Motor driver IC(L293D)

3. BLOCK DIAGRAM

The block diagram is consisting of an Arduino uno, a Bluetooth module, on motor driver IC (L293D) and two geared motors which are connected each other through connecting wires.

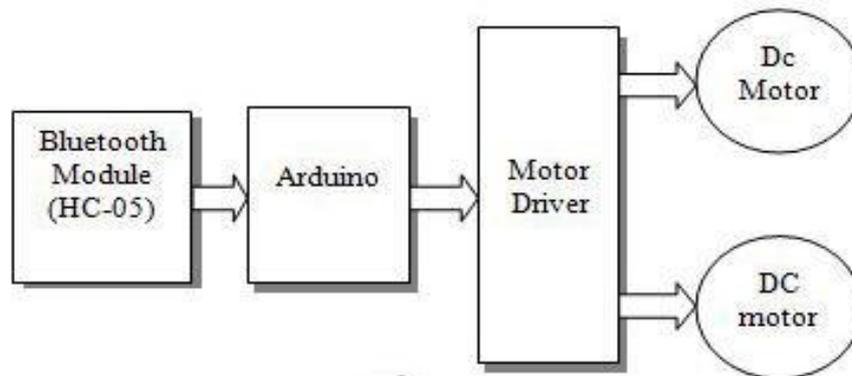


Fig 4: Block Diagram [1]

4. CIRCUIT DIAGRAM

The below given diagram which consists of an Arduino uno, two geared motors, one motor driver IC and a single Bluetooth module. The Arduino uno is programmed by using c-language. The connection between Bluetooth and Arduino uno is the transmission(TxD) port of Arduino uno is connected to the receiving(RxD) port of Bluetooth module and vice-versa, Vcc is power port of Bluetooth module which is connected with 5V of Arduino uno and similarly the GND of Bluetooth module is grounded in Arduino uno. The motor ports of motor driver IC are connected to the defined port of Arduino pin.

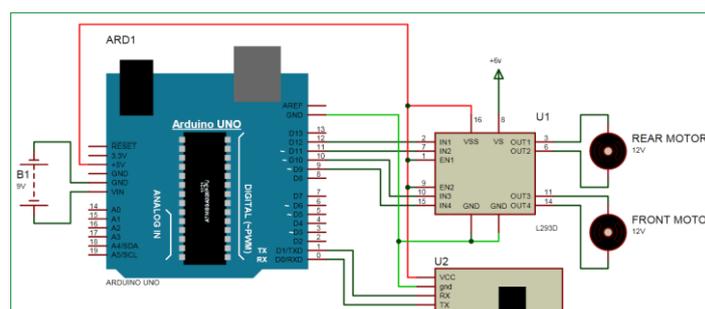


Fig 5: Circuit diagram [1]

5. CONCLUSION

In this project we are designing an android App with the help of MIT app inventor. It helps to communicate from Bluetooth with the android smartphone. We programmed Arduino uno by using Arduino software. On the



programming of Arduino uno we are using c-language. This project is very simple, efficient and easy to operate. The robotic car will receive signal through Bluetooth and move according to command.

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