Mini Bot using Arduino and Android App

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CHARUSAT
CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

CERTIFICATE

This is to certify that the report entitled "**Mini Bot Using Arduino And Android App**" is a bonafied work carried out by **Mr. Rutvik J. Patel (16IT090)** under the guidance and supervision of **Prof. Hemant Yadav** for the subject **Software Group Project-II(IT345)** of **5th** Semester of Bachelor of Technology in **Information Technology** at Faculty of Technology & Engineering – CHARUSAT, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidate **himself** has duly been completed, and fulfills the requirement of the ordinance relating to the B.Tech. Degree of the University and is up to the standard in respect of content, presentation and language for being referred to the examiner.

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Abstract

In this project I have a made a robot which is controlled by any android device by designing an android application using Arduino Uno. I have written the Arduino library's from which robot moves left, right, forward, backward using the android application.

The application having five major buttons left, right, forward, backward and stop.

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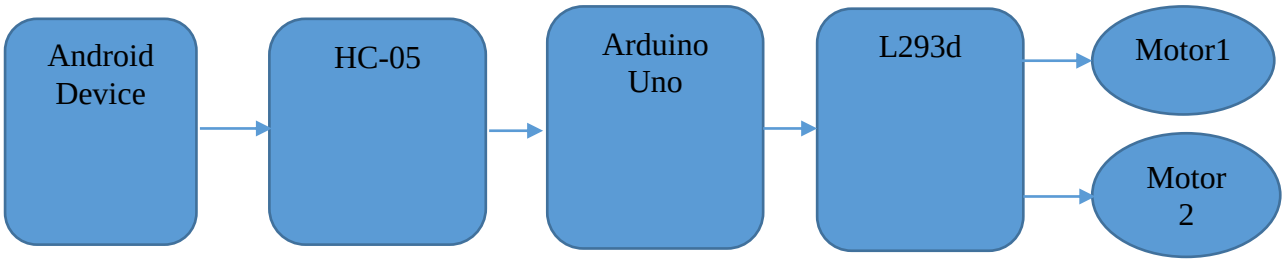
Chapter 1: Project Definition

- In this project to establish communication between Arduino and Android I have use the Bluetooth module HC-05. It sends data over short distances.
- Android devices also give us a wide platform to work and it can be easily integrate with any other device.
- Here I have also use the two DC motors and L293d motor driver IC to control the motor accordingly to its application.
- It works on only +5v dc supply to apply power to the motor there is input port of +12v.
- Here the motor works on +9v dc supply.

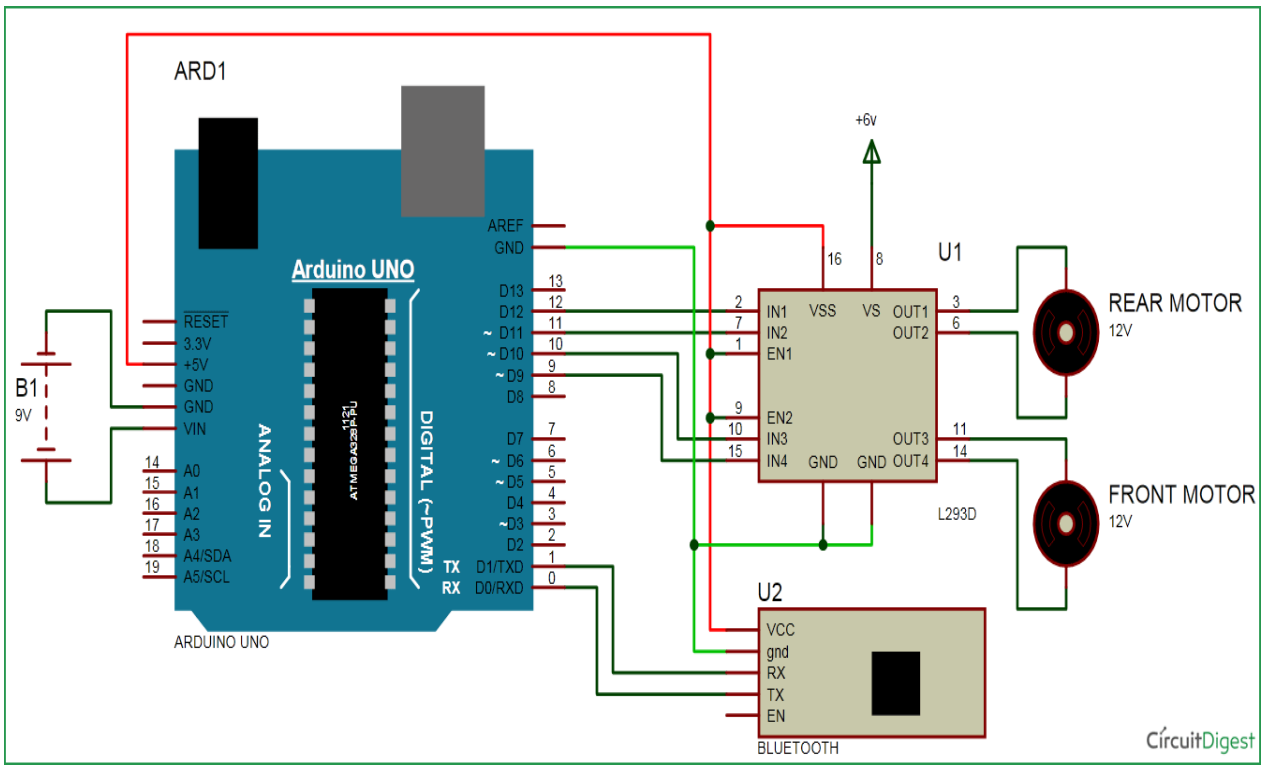
Block diagram



Explanation

- Here the android device sends the data from the Bluetooth to the HC-05 and then the data is transmitted to the Arduino then accordingly to the information Arduino send data to l293D accordingly it moves the robot left, right, forward, backward and stop.

Circuit Diagram



Explanation

Here the Arduino is connected with the L293d, HC-05, and the L293d is connected with the motors. L293d is connected with the 9,10,11,12 number of pins with the Arduino and HC-05 is connected with the 0,1 pins of Arduino which are RX, TX of the Arduino. The HC-05 RX is connected with the TX of the Arduino and the TX of Bluetooth module is connected with the RX of the Arduino. The output of the L293d is connected with the motors. As application sends the data from the Bluetooth to the HC-05 it receives the data and send to the Arduino and the Motor works.

Chapter 2: Objectives

- User just have to give commands to the bot through an android application.
- Android Application's command performs by receiving and transmitting signal from the Bluetooth Module (HC05) which is connected with Arduino and Motor driver (L293D).

Chapter 3: Software and Hardware Requirements

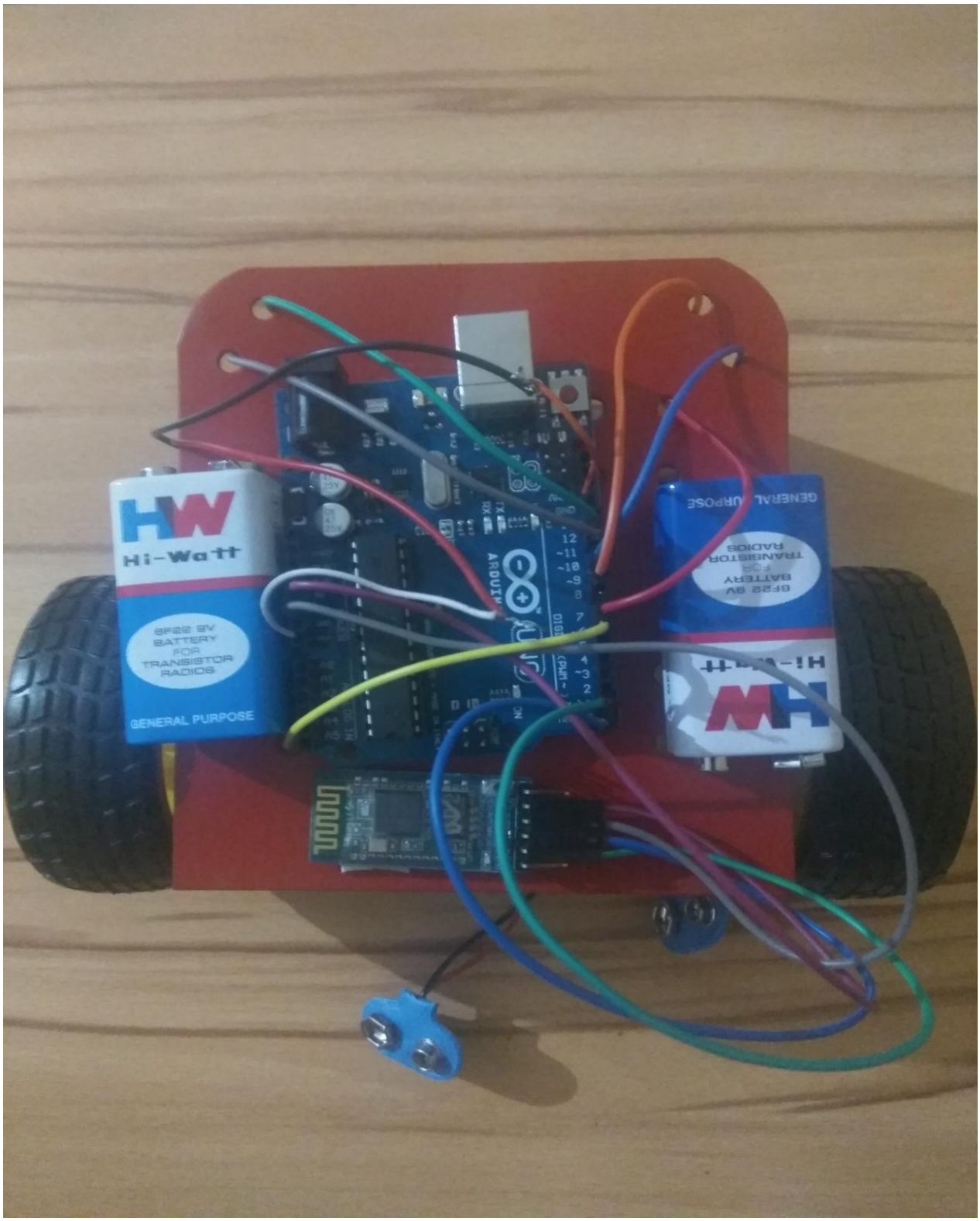
- **Software Requirements:** Arduino IDE, Android Application

- **Hardware Requirements:** Arduino, L293D Motor Driver, DC motors, HC05 Bluetooth module, Batteries (9 volts), Wires.

Chapter 4: Major Functionality

- This bot has the Bluetooth module(HC05) to catch the commands from the android application so basically it is completely wireless path between bot and remote(App).
- It can be used in many field likewise in the military purposes.
- It can be used as a toy car.
- We can add one mini camera on it and can check robbery type process and record it.
- We can also pass some message with the help of that.

Chapter 5: Screenshots of project output



Chapter 6: Limitations of project

- If in between moving bot any dc battery goes down (Discharge) then bot will be stop because bot can not gain power from that battery.
- There can be a surface problem.
- There can be a connection problem.

Chapter 7: Outcome

- In this project I have learned how interface Arduino with the Bluetooth module.
- I have also learned how to deal with some embedded components.
- I have learned some more application of the Arduino.
- More importantly I have made this project just gain some more knowledge in the field of embedded systems.

Chapter 8: Future Enhancement

- By using more efficient motor-driver which can handle more voltage from battery, we can extend the lifetime of the bot
- By putting a mini camera in front of the bot we can record or see some activities.
- We can add an ultrasonic sensor to detect any obstacle within 10 cm.
- Ultrasonic sensor is to prevent the accident, if any obstacle comes within 10 cm it will stops the motor, and the bot will stop moving.

Chapter 9: References

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