BLUETOOTH ROBOT CONTROL USING SMART PHONE

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Abstract: In This project aim is to design a Robot Control by Bluetooth. The functioning is based on Arduino microcontroller, Bluetooth module, dc motors and motor drivers. Arduino uses ATmega328 microcontroller. Our plan is to code the entire functioning using programming. Then the code will be simulated on software and later it can be interfaced with the hardware. Android app controls movement of the robot.

We have chosen this for our mini project as robotics played a major role in our day-to-day activities. The gap between Robot and human beings are reducing with the introduction of new technologies. This paper will give the detailed explanation of motion technology through android smart phone with built in Bluetooth module to control the movement of a robot. Microcontroller controls the speed and direction of the Bluetooth module. The remote is android app. Bluetooth is used for the communication between microcontroller and android app. Bluetooth is an example for wireless communication.

Keywords: Arduino UNO, Bluetooth Module, DC Motors, Motor drivers.

I. INTRODUCTION

In recent years, the field of robotics has experienced significant advancements, with various applications emerging in different sectors. One exciting aspect of robotics is the ability to control robots wirelessly, allowing for greater mobility and flexibility in their operations.

Bluetooth technology, commonly found in smartphones, offers a convenient and accessible means of controlling robots remotely. In this introduction, we will explore the concept of a Bluetooth-controlled robot using a smartphone and highlight its key components and functionalities.

II. LITERATURE SURVEY

The author-Ronny Mardiyanto heri suryantmojo[1] "controlling of operated robots in the underwater by developing a hand gesture recongnition sensor which works based on accelator and gyroscope".

Dr. R. V Dharaskar S.A.Chabria Sandeep ganorkar[2] proposed the design of "human robot voice interface". It plays a very important role in controlling a robot by the human voice in various situation and for different kinds of applications.

Jorge kazacos winter[3] has developed the design of robot automation controlled by android. The main aim of this design is to control the robot wirelessly. The information is transferred between the smart phone and the robotic device.

According to 'Everton Rafael da Silva and Breno list Ramano[4] .In this paper, the robot is designed using aurdino and controlled by software. The researches have analysed the simulation of experiment and believed to use this kind of prototype to perform the desired operation.

In this design[5], The robotic car controlled by infrared TV remote was implemented. The car can be controlled in all the four directions but the IR remote limits its distance and efficiency as it cannot be controlled the object blocking line-of-sight from the operator. So, it cannot be controlled from a far distance.

In this design[6], the authors have worked based on the IR remote controlled car which user IR remote system for controlling of robotic car.
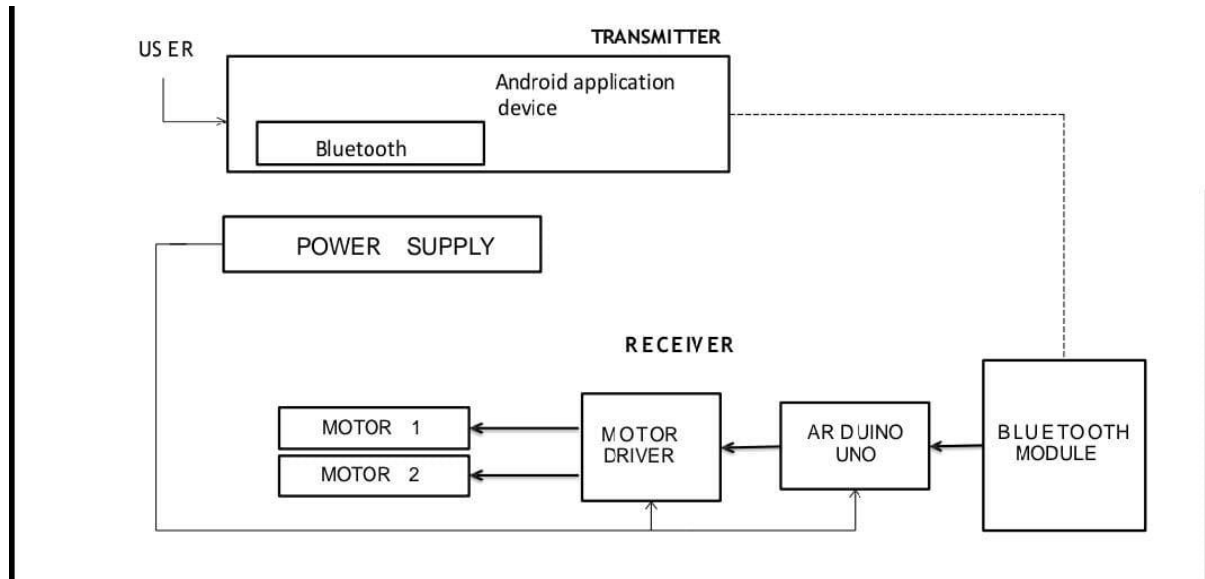
III. PROPOSED SYSTEM

Fig 1 . System block diagram

This block diagram of of Robot control using smartphone. It works in accordance with the user command. According to the command given by the user the robot will rotate.

The DC motor will rotate these sensors are according to it, which interms controlled by a Atmega328 Microcontroller. every basic electronic circuit will operate under regulated 5v DC. When the user gives the command through Bluetooth it is received by Arduino. According to it will rotate.
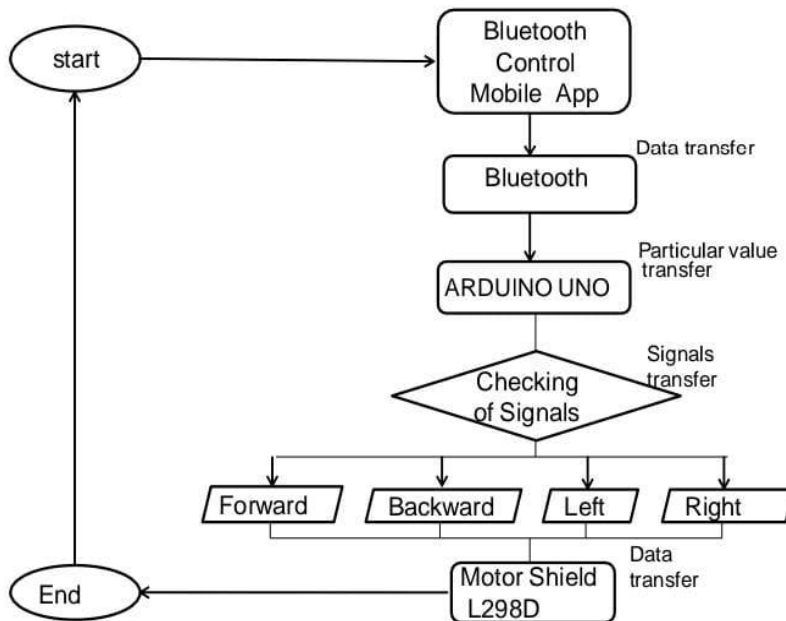

Fig 2. Flow chart

IV. METHODOLOGY

The Methodology of the Bluetooth control robot using smartphone is:

1. We could notice the power source, four 1.5 volt are connected to the 12V power supply pin of L298 Motor Driver and ground of motor drive Arduino UNO. This supplies essential power to the circuit.
2. Digital wires of Arduino are connected with the input1, input2, input3 and input4 of the motor drive. Motors are connected to the either sides of motor drive which are the output terminals.
3. To complete the power source circuit, 5V of motors drive is connected to Vin power supply of Arduino UNO, which supplies power to bluetooth module. Ground to ground connections are made as shown.
4. Transistor logic pins, transmitter(TX) and receiver(RX) of Arduino UNO are connected to RXD and TXD of HCO5 respectively. Before connecting to the Bluetooth module the program is executed in the Arduino programming app and after correcting the errors it will uploaded to Arduino.
5. Motor driver is connected to control the speed and direction at the same time.Which will convert the low current to high current to rotate the motors.
6. Bluetooth is used for the communication between the robot and the android app.It is used for the wireless communication.
7. According to the command the motor will rotate

HARDWARE IMPLEMENTATION:

AURDINO UNO - Microcontroller board based on the atmwga328P. 14 digital input/output pins and 6 analog inputs.

BLUETOOTH MODULE HC-05 - It is designed for transparent wireless serial connection setup. Low power1.8v operation.

L298N DC MOTOR DRIVER - DC MOTOR DRIVER is a dual H-bridge motor which allows speed and direction control of two DC motors at the same time.

DC MOTOR - DC Motor is controlled by DC voltages and moves in forward, backward, left and right direction according to the polarity of voltage applied.

POWER SUPPLY - 18650 Battery. Software used - C Language,Android mobile phone app

CONCLUSION

Thus in this project we designed a Bluetooth robot which can be controlled by android mobile phone. We programmed Arduino and designed the robot as shown in the diagram above which will receive the commands from the user and move accordingly. The final product we obtained is Bluetooth control using smartphone.

The entire design was also proposed which could be practically made to give a much better future commercial products. For future it could be added with sensors like humidity sensor etc..,thereby we can use it in various fields.

We can update the code according to our applications. However it has some disadvantages we can overcome them in the future.

FUTURE SCOPE

We can interface sensors to this robot so that it can monitor some parameters.

We can add wireless camera to this report

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