

BLUETOOTH CONTROLLING CAR

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ABSTRACT:

Arduino Bluetooth control vehicle is a straightforward robot vehicle that can be constrained by your cell phone. This Smartphone gives a Bluetooth sign to the vehicle and from the sign, the vehicle works. For running the vehicle remotely we are utilizing the HC-05 Bluetooth module. The project is Bluetooth based because it gives us wider range of control and more efficiency. It also gives us the advantage of changing the remote anytime, meaning that we can use any android devices including phones, tablets, computers. Physical barriers like walls, doors, etc. do not effect in controlling the car.

KEYWORDS:

Bluetooth control car, Bluetooth module, Arduino Uno, L298N driver module, Gear Motors.

INTRODUCTION:

For a robot that performs autonomously, the communication between the person and the robot is the most important factor. A significant awareness has been observed regarding the usage of such a technology. This research has a trivial involvement in the development of such robots. A robot that functions fully autonomously should not only complete the jobs that are desired of them but also somehow establish a connection between themselves and the person operating them. A lot of research has been done of these kinds of robot and a lot of work still needs to be done. In order for a robot to communicate and interact with the person, it should also be capable of following that particular person. Keeping this in mind, there should be a capacity in the robot to get information from the surroundings while perusing the required object. The primary goal of our work was to design and fabricate a robot that not only tracks the target but also moves towards it while doing the tracking. All the processing is carried out by the different components such as sensors, motors, processor and controller.

COMPONENTS:

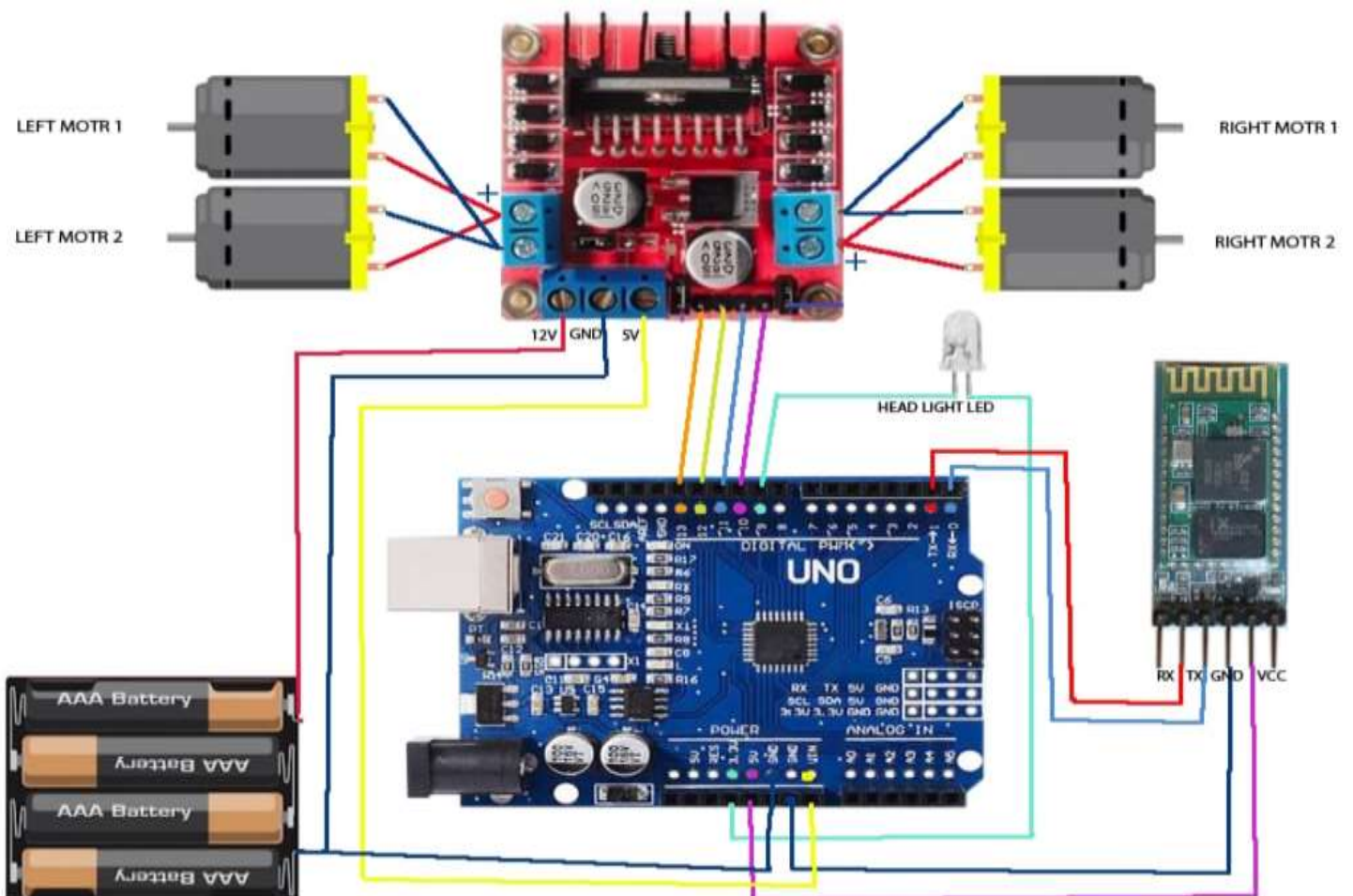
The human following robot has the following main components are:

1. Arduino Uno
2. L298N Motor driver
3. Bluetoothmodule
4. Four DC Geared Motors

- ## TOOLS:

1. Soldering Iron
2. Glue gun
3. Screwdriver
4. Wire Strippers
5. Connecting wires

CIRCUIT DIAGRAM:



WORKING:

When you come near to the robot starts to follow you. there are 4 wheels in the robot. and 4 motors attached to the chassis. Now there are three sensors on the robot one is an ultrasonic sensor and two IR sensor which arranges like two sensors left and right to the ultrasonic sensor. and when you put your hand near to the ultrasonic sensor the robot will start forward.

If you turn your hand to the left side the Arduino robot moves on the left side, and if you put your hand in the right the robot will move in the right direction. so, how the whole system works we will talk about this.

When you put your hand in from of the ultrasonic sensor then the sensor detects you and sends this information to the Arduino. there is some distance prefix in the Arduino so if your hand is away from the sensor, it will not read that and if your hand is near to the sensor, it will read Now Arduino knows that there is something in front of the sensor and Arduino send some instruction to the motor driver and motor driver trigger the motors. and the Arduino robot starts to move forward we need to run all motor forward.

Now, what about the sensors. IR sensor works on infrared light which can also detect the object near to it. So, there is two IR sensor one is at the left side of ultrasonic sensor and other is at the right side of the ultrasonic sensor. when anything comes near to the left sensor Arduino got the information that there is something is near to the left sensors and according to the code, the robot will turn to the left. and the same process for the right sensor. So this is how the human following robot works.

ARDUINO



It is the brain of our project. It can give all the command to their sub ordinate components which should by operated by the human behaviour. And it also gives feedback to the other components and human. So that it can be the used as a medium of communication between human and robots & vice versa. It has specification of 8-bit CPU, 16 MHZ clock speed, 2 KB SRAM 32 KB flash Memory, 1 KB EEPROM.

DC MOTORS



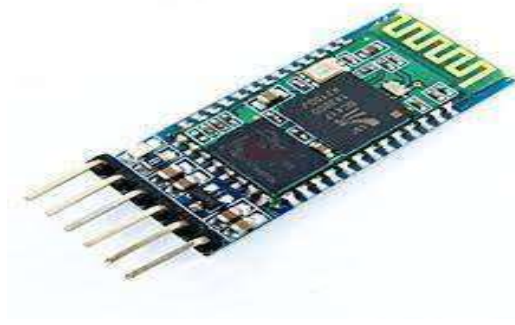
DC Motor is a device that converts any form of energy into mechanical energy or imparts motion. In constructing a robot, motor usually plays an important role by giving movement to the robot. Here 4 DC motor are used to drive the robot.

MOTOR DRIVER:



The Motor Driver is a driver module for motors that allows you to use Arduino to control the working speed and direction of the motor. The Motor driver can either be powered by Arduino directly or by an external 6V~15V power supply via the terminal input.

BLUETOOTH MODULE



APPLICATIONS:

- 1.Remote object controlling
- 2.wireless car controlling

CODE:

```
char t;
```

```
void setup() {  
  pinMode(13,OUTPUT); //left motors forward  
  pinMode(12,OUTPUT); //left motors reverse  
  pinMode(11,OUTPUT); //right motors forward  
  pinMode(10,OUTPUT); //right motors reverse  
  pinMode(9,OUTPUT); //Led  
  Serial.begin(9600);  
}
```

```
void loop() {  
  if(Serial.available()){  
    t = Serial.read();  
    Serial.println(t);  
  }
```

```
  if(t == 'F'){ //move forward(all motors rotate in forward direction)  
    digitalWrite(13,HIGH);  
    digitalWrite(11,HIGH);  
  }
```

```
  else if(t == 'B'){ //move reverse (all motors rotate in reverse direction)  
    digitalWrite(12,HIGH);  
    digitalWrite(10,HIGH);  
  }
```

```
  else if(t == 'L'){ //turn right (left side motors rotate in forward direction, right side  
    motors doesn't rotate)
```

```

digitalWrite(11,HIGH);
}

else if(t == 'R'){ //turn left (right side motors rotate in forward direction, left side
motors doesn't rotate)
digitalWrite(13,HIGH);
}

else if(t == 'W'){ //turn led on or off)
digitalWrite(9,HIGH);
}
else if(t == 'w'){
digitalWrite(9,LOW);
}

else if(t == 'S'){ //STOP (all motors stop)
digitalWrite(13,LOW);
digitalWrite(12,LOW);
digitalWrite(11,LOW);
digitalWrite(10,LOW);
}
delay(100);
}

```

CONCLUSION:

A successful implementation of a prototype of Bluetooth control car is illustrated in this paper. This robot does not only have the detection capability but also the following ability as well. While making this prototype it was also kept in mind that the functioning of the robot should be as efficient as possible. Tests were performed on the different conditions to pin point the mistakes in the algorithm and to correct them. The different sensors that were integrated with the robot provided an additional advantage. The project is Bluetooth based because it gives us wider range of control and more efficiency. It also gives us the advantage of changing the remote anytime, meaning that we can use any android devices including phones, tablets, computers. Physical barriers like walls, doors, etc. do not effect in controlling the car