



# BLUETOOTH CONTROLLED CAR

EMBEDDED SYSTEMS  
PROJECT

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## ABOUT OUR PROJECT

This was our basic project to get familiar with the components and the coding part. This project mainly introduced us to the working of Arduino Uno, Bluetooth sensor(HC05), Ultrasonic Sensor and motor drivers(L298N).

## PROGRESSION

Initially we started with the a two wheeled prototype as below:



Further we proceeded to added another pair of dummy wheels in the front and switched to four wheeled prototype. We also added LEDs and ultrasonic sensor and conditioned them using the code.

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## INDIVIDUAL CONTRIBUTION:

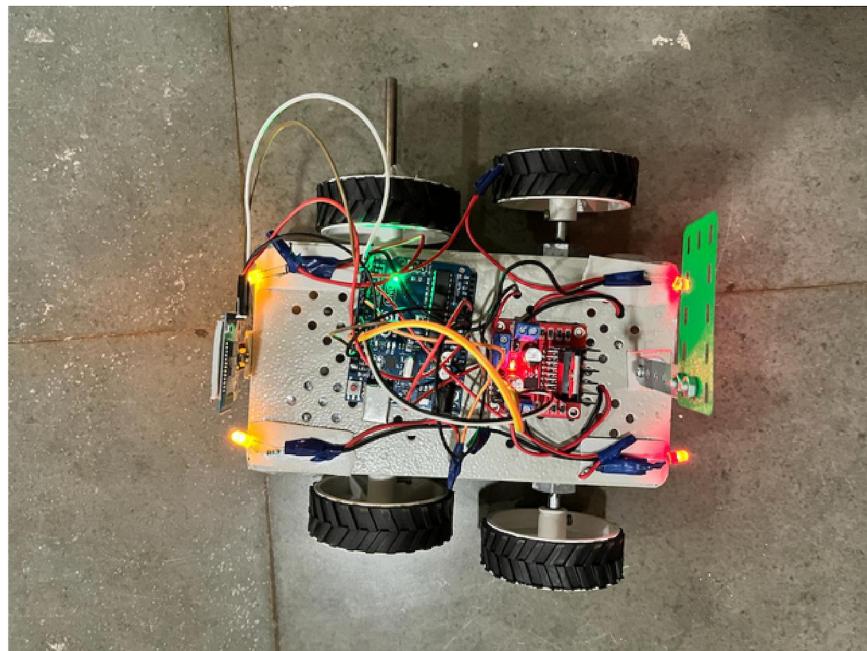
1. Shubham Mittal – Arduino Coding, hardware setup and bluetooth control.
2. Vedant Mahadik – Hardware setup, Bluetooth control, report writing.
3. Vaidahi Pohekar – Arduino coding,circuit formation, report writing.
4. Mehak Malik – Circuit formation, model designing.

## WORKING OF THE MODEL

This model can go forward and backwards and side ways by turning two motors in opposite directions. The front LEDs light up when the model is in forward motion and the back lights light up in similar fashion. The ultrasonic sensor is used to stop the model if it senses an object in front of it.

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## COMPONENTS USED



Servo motors  
LED lights  
Arduino UNO  
Motor drivers (L298N)  
Bluetooth Sensor (HC05)  
Ultrasonic sensor

**Video link:**

[https://drive.google.com/file/d/100WfGOwF1A7hEKqn0yvxPB2naTgG7B\\_/view?usp=sharing](https://drive.google.com/file/d/100WfGOwF1A7hEKqn0yvxPB2naTgG7B_/view?usp=sharing)

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## ARDUINO CODE USED:

```
int t;
int trigPin = 2;// declaring trigger pin for ultrasonic sensor
int echoPin = 5;// declaring echo pin for ultrasonic sensor
long duration;
int distance;
// pin no 3,4,6,7 are used for blinking the leds
// pin no 10,11,12,13 are used for controling the mortors.
void setup() {
pinMode(4,OUTPUT);//we are declaring the pinmode
pinMode(3,OUTPUT);//we are declaring the pinmode
pinMode(10,OUTPUT);//we are declaring the pinmode
pinMode(11,OUTPUT); //we are declaring the pinmode
pinMode(12,OUTPUT); //we are declaring the pinmode
pinMode(6,OUTPUT); //we are declaring the pinmode
pinMode(13,OUTPUT);//we are declaring the pinmode
pinMode(7,OUTPUT);//we are declaring the pinmode
pinMode(trigPin, OUTPUT);//we are declaring the pinmode
pinMode(echoPin,INPUT);//we are declaring the pinmode

Serial.begin(9600);

}

// t is the integer variable which is getting values through bluetooth
void loop() {
if(Serial.available()){
t = Serial.read();
Serial.println(t);
}

if(t == 'F'){      // this block of code is for forward motion of car
digitalWrite(13,1);
digitalWrite(12,0);
digitalWrite(11,1);
digitalWrite(10,0);
digitalWrite(6,1);
digitalWrite(3,0);
digitalWrite(4,0);
digitalWrite(7,1);

}
```

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## CONTINUE..

```
else if(t == 'B'){    // this block of code for reverse motion of car
    digitalWrite(12,1);
    digitalWrite(13,0);
    digitalWrite(11,0);
    digitalWrite(10,1);
    digitalWrite(3,1);
    digitalWrite(4,1);
    digitalWrite(6,0);
    digitalWrite(7,0);

}

else if(t == 'S'){    // this block of code is for stopping the car
    digitalWrite(11,0);
    digitalWrite(10,0);
    digitalWrite(12,0);
    digitalWrite(13,0);
    digitalWrite(3,1);
    digitalWrite(4,1);
}

else if(t == 'R'){    // this block of code is for right turn of the car
    // for right turn we are reversing the right wheel of the car and moving
    the left turn in forward direction.
    digitalWrite(11,1);
    digitalWrite(10,0);
    digitalWrite(12,1);
    digitalWrite(13,0);
    digitalWrite(6,1); //and we are blinking the right led when we are doing right turn
    delay(70);
    digitalWrite(6,0);
    delay(70);

    digitalWrite(6,1);
    digitalWrite(3,0);
    digitalWrite(4,0);
    digitalWrite(7,0);
}

else if(t == 'L'){    // this block of code is for left turn of the car
    digitalWrite(11,0); // for left turn we are reversing the left wheel of the car and moving
    the right turn in forward direction
    digitalWrite(10,1);
    digitalWrite(12,0);
    digitalWrite(13,1);
```

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## CONTINUE..

```
digitalWrite(7,1);
delay(70);
digitalWrite(7,0);
delay(70);

digitalWrite(7,1);
digitalWrite(3,0);
digitalWrite(4,0);
digitalWrite(6,0);
}

//Ultrasonic sensor code
digitalWrite(trigPin,LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);
duration = pulseIn(echoPin, HIGH);
distance = duration * 0.034 / 2;
if (distance < 5){ // here we are measuring the distance if the distance is less than 5
we are stopping the car and blinking the red leds.
    digitalWrite(11,0);
    digitalWrite(10,0);
    digitalWrite(12,0);
    digitalWrite(13,0);
    digitalWrite(3,1);
    digitalWrite(4,1);
}

delay(100);
}
```

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THANK  
YOU!