Module-X
Project Making

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ARDUINO COURSE GUIDE

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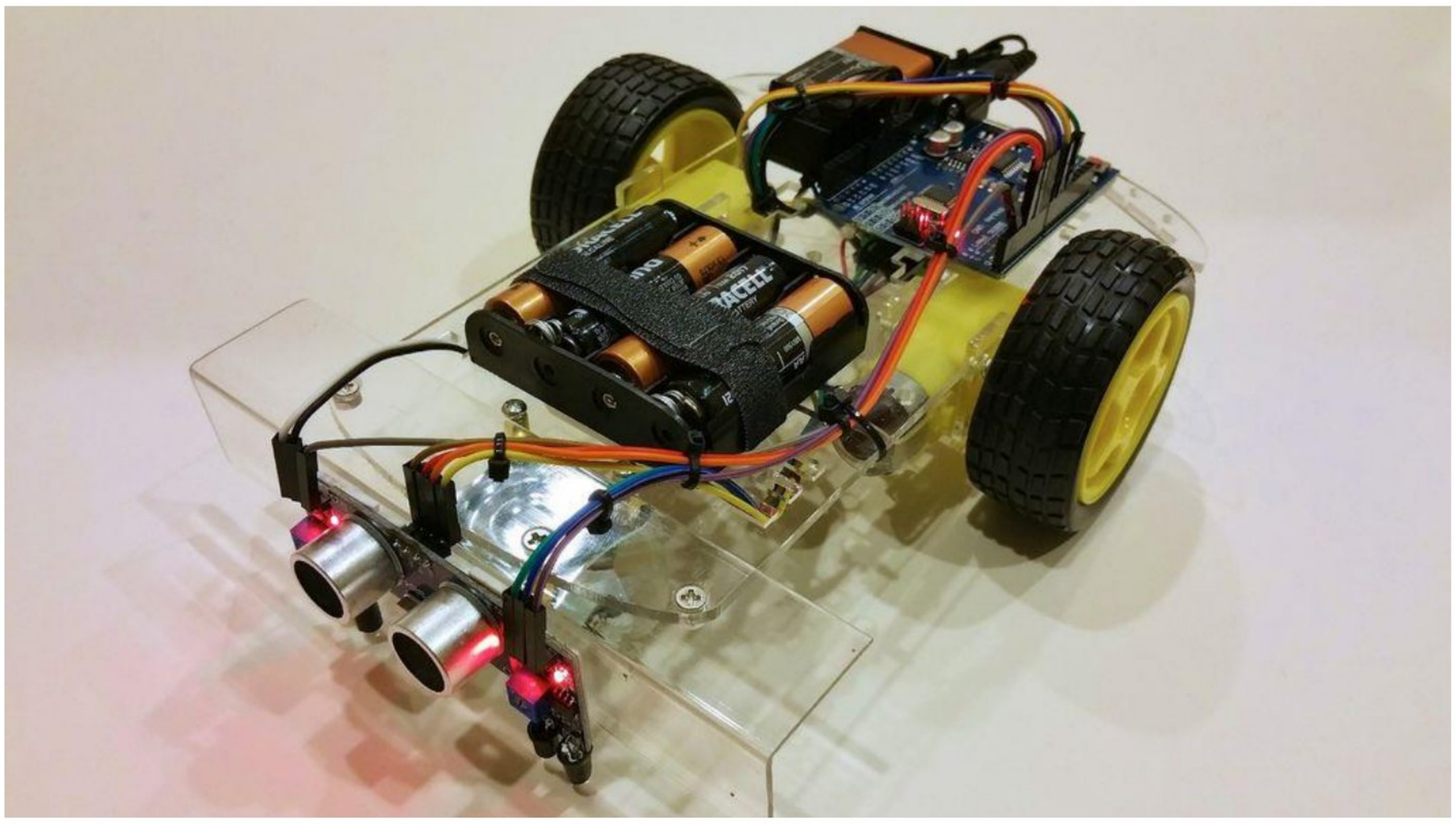
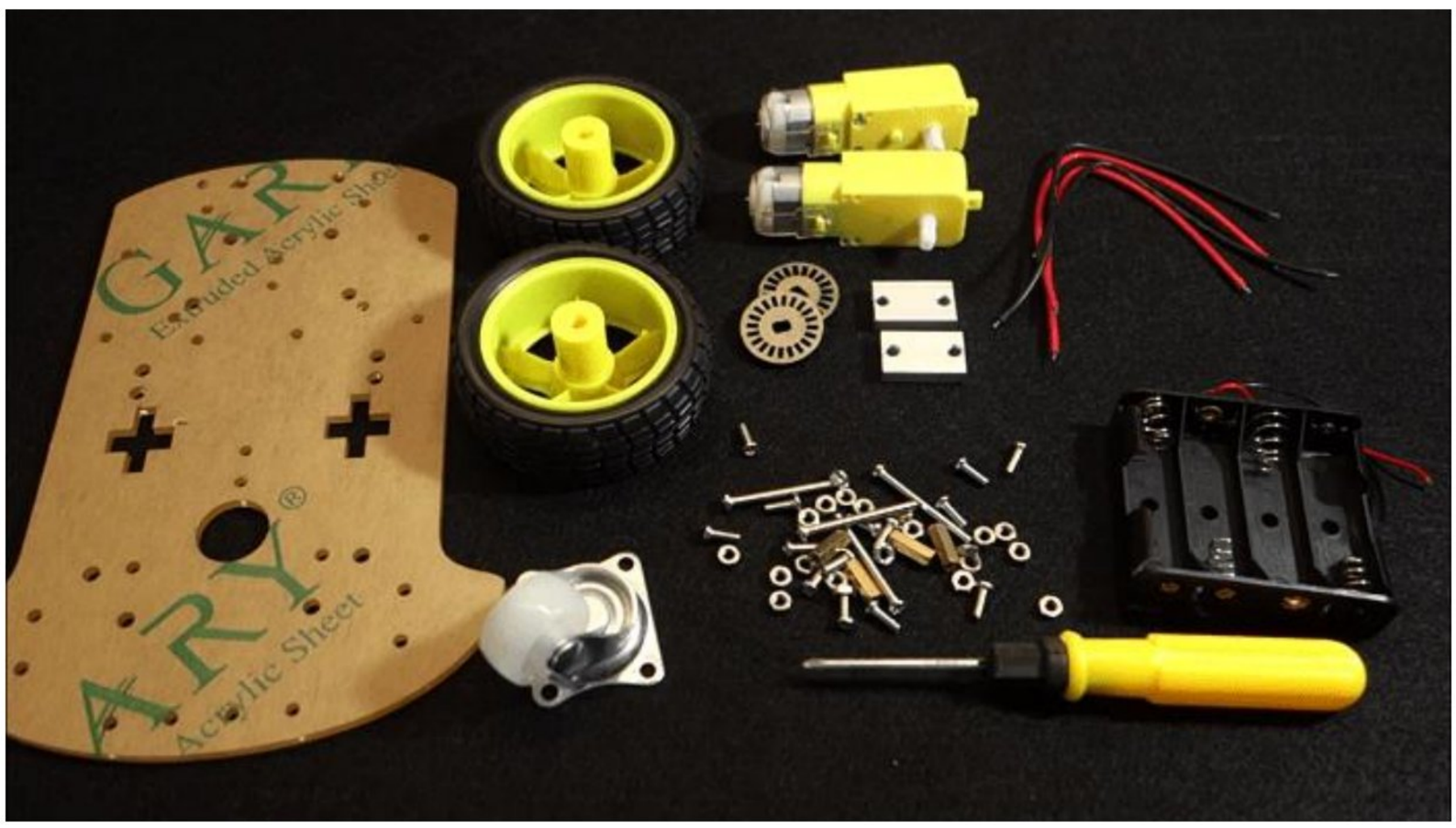
WHAT IS ROBOT?

A robot is a machine, especially one programmable by a computer, capable of carrying out a complex series of actions automatically. Robots can be guided by an external control device or the control may be embedded within.



Attaching Arduino and Components to Chassis

Gather all the necessary components.



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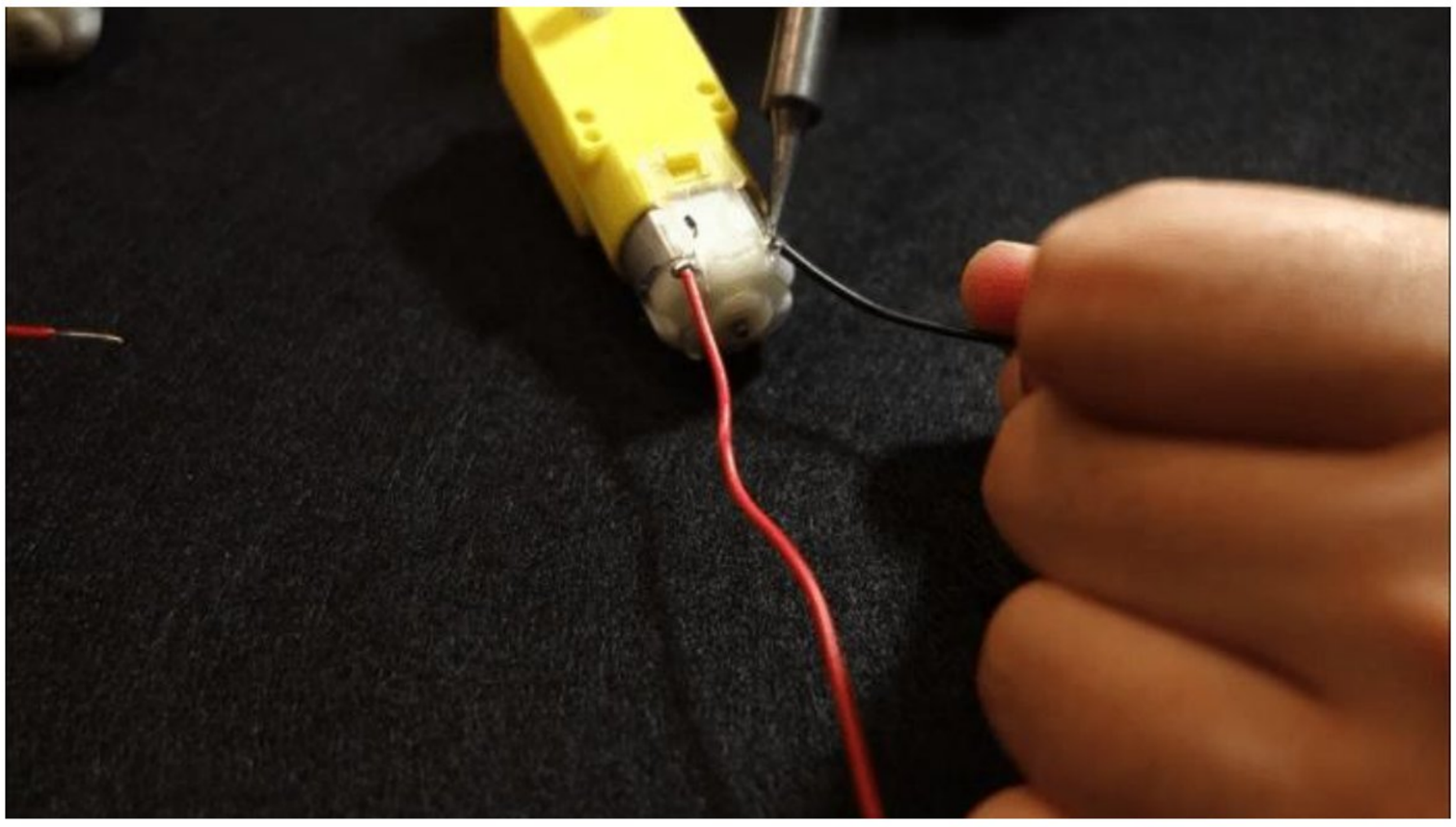
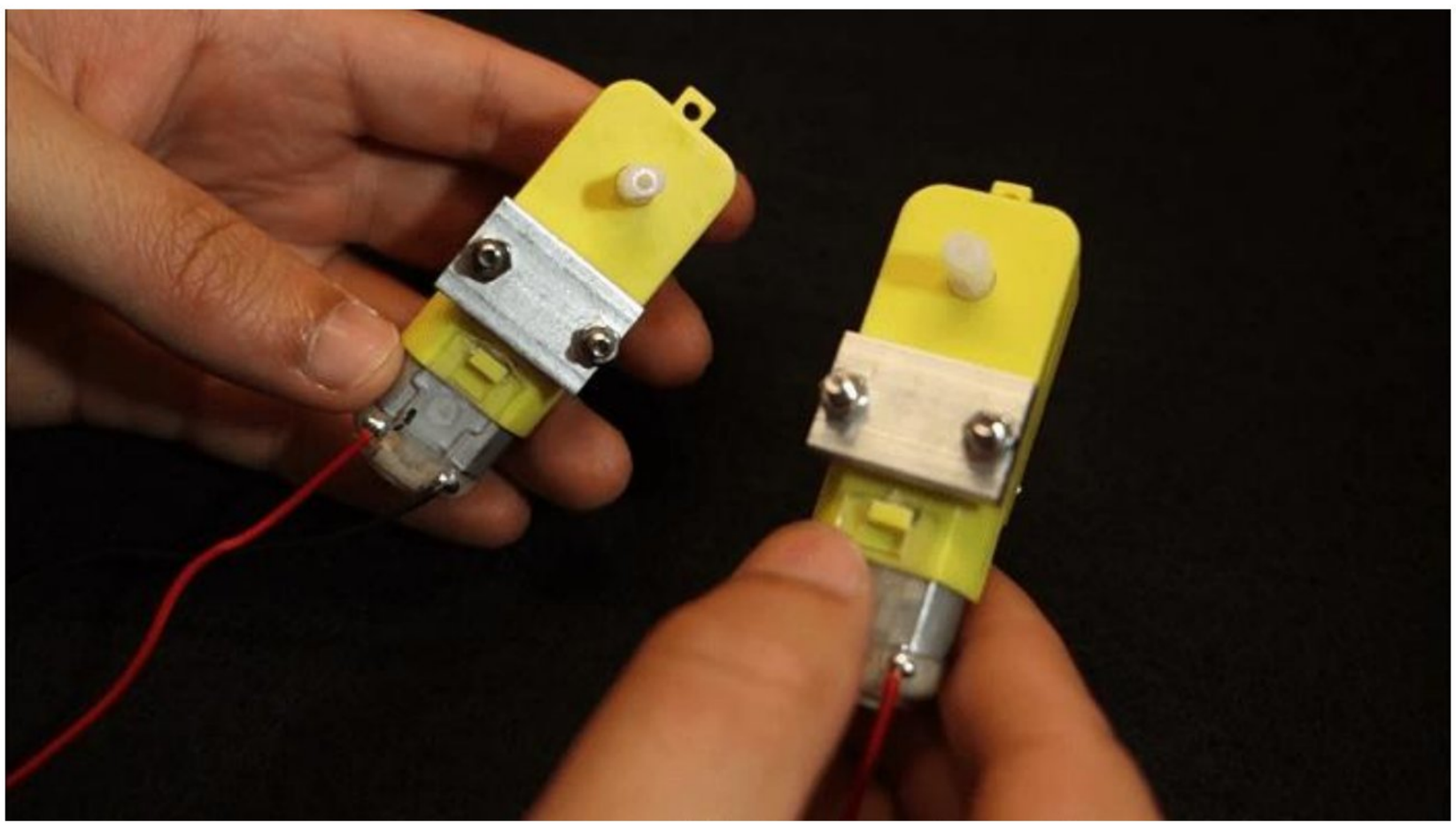
Grab the wire and solder it to the DC motor pin. Repeat that process to all the other wires.



Now, you need the screwdriver, bolts and screws, and those metal pieces. Start by attaching the metal pieces to the DC motors.



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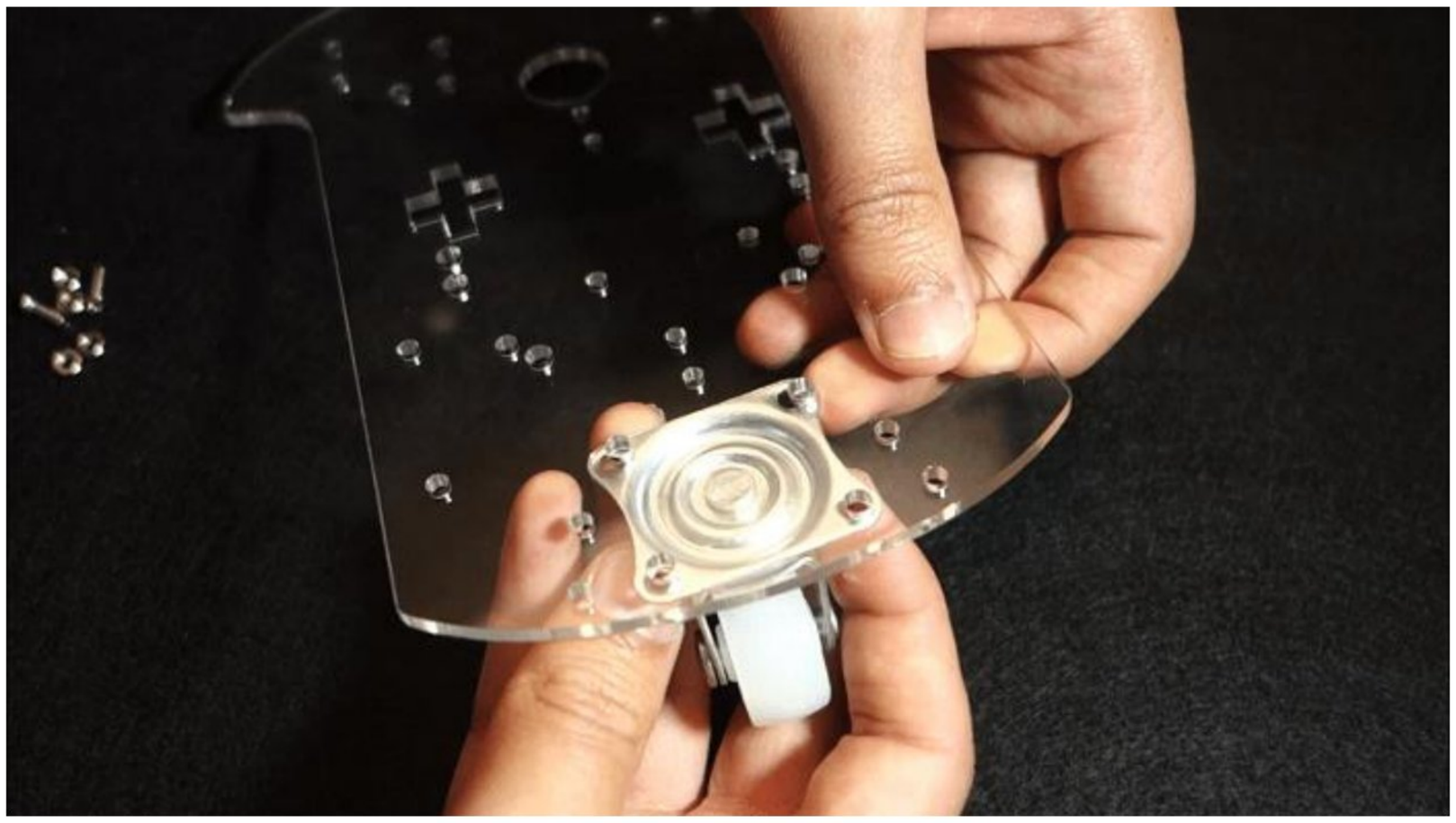
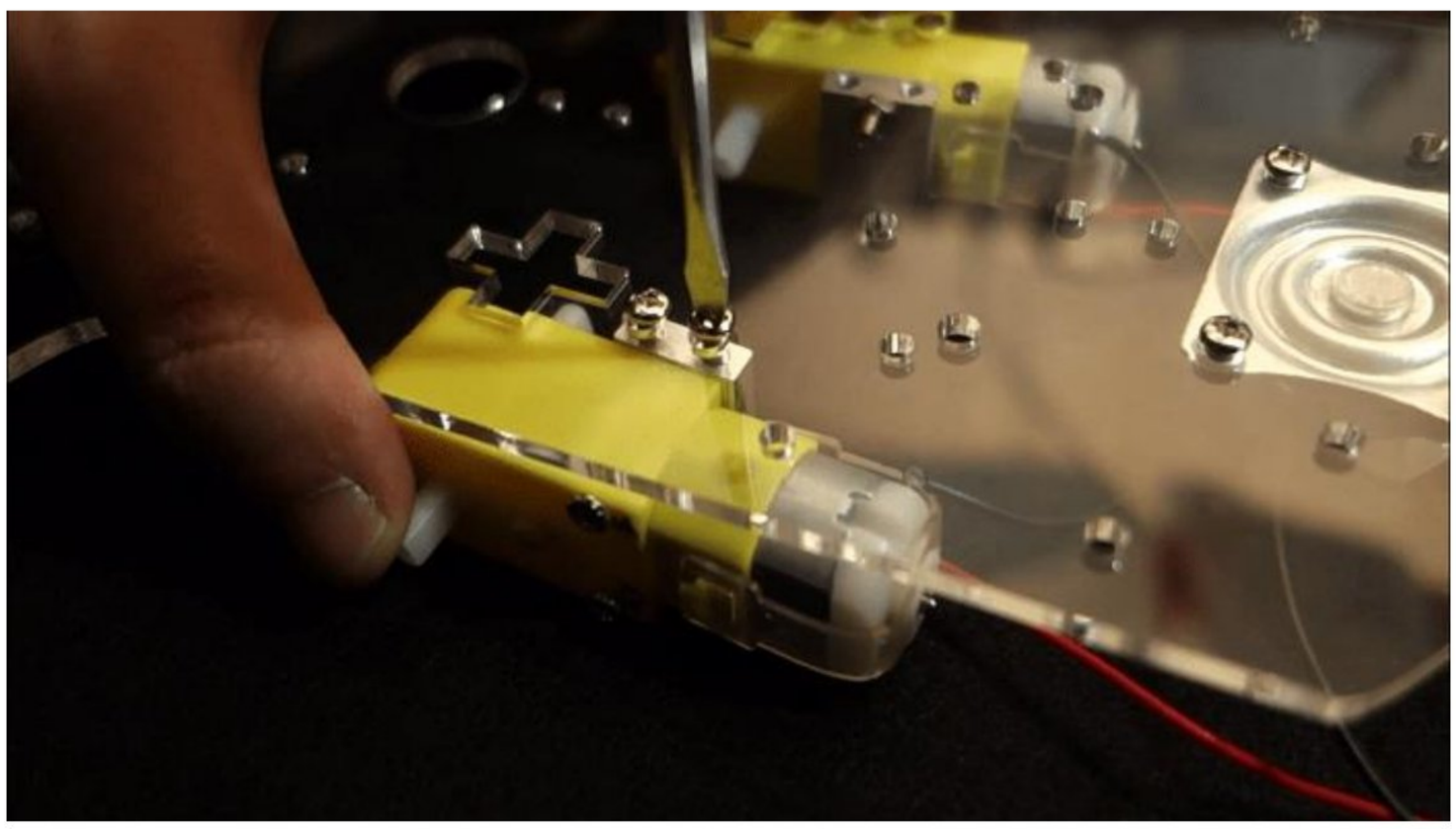
Grab the small wheel and attach it to the front part of the chassis.



Finally, it is time to attach the DC motors to the chassis.



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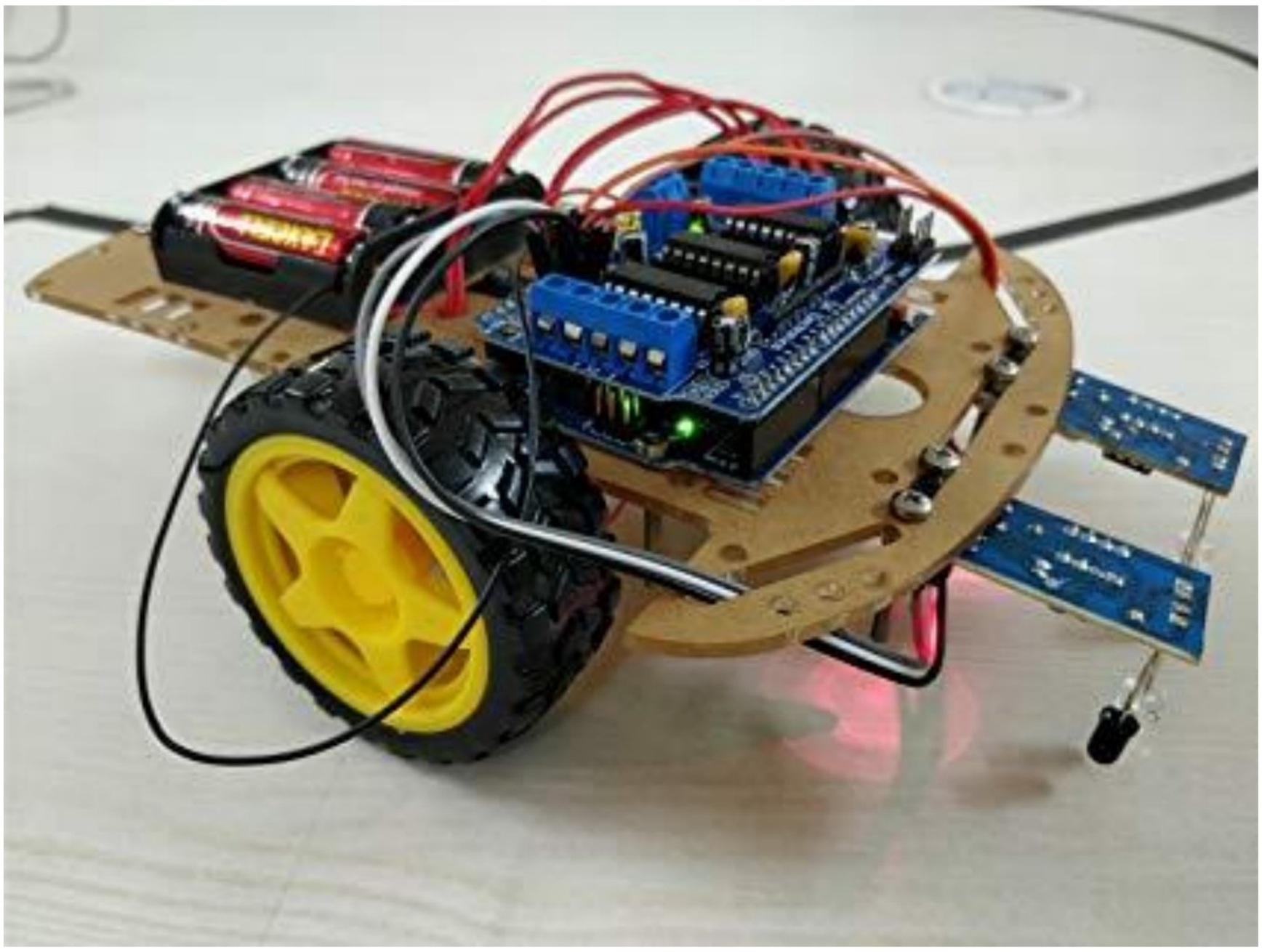
```
void motorstop();
{
digitalWrite(RightMotor1, LOW);
digitalWrite(RightMotor2, LOW);

digitalWrite(LeftMotor1, LOW);
digitalWrite(LeftMotor2, LOW);
}
```

2. LINE FOLLOWING ROBOT (LFR):

Line follower is an autonomous robot which follows either black line in white area or white line in black area. Robot must be able to detect particular line and keep following it.



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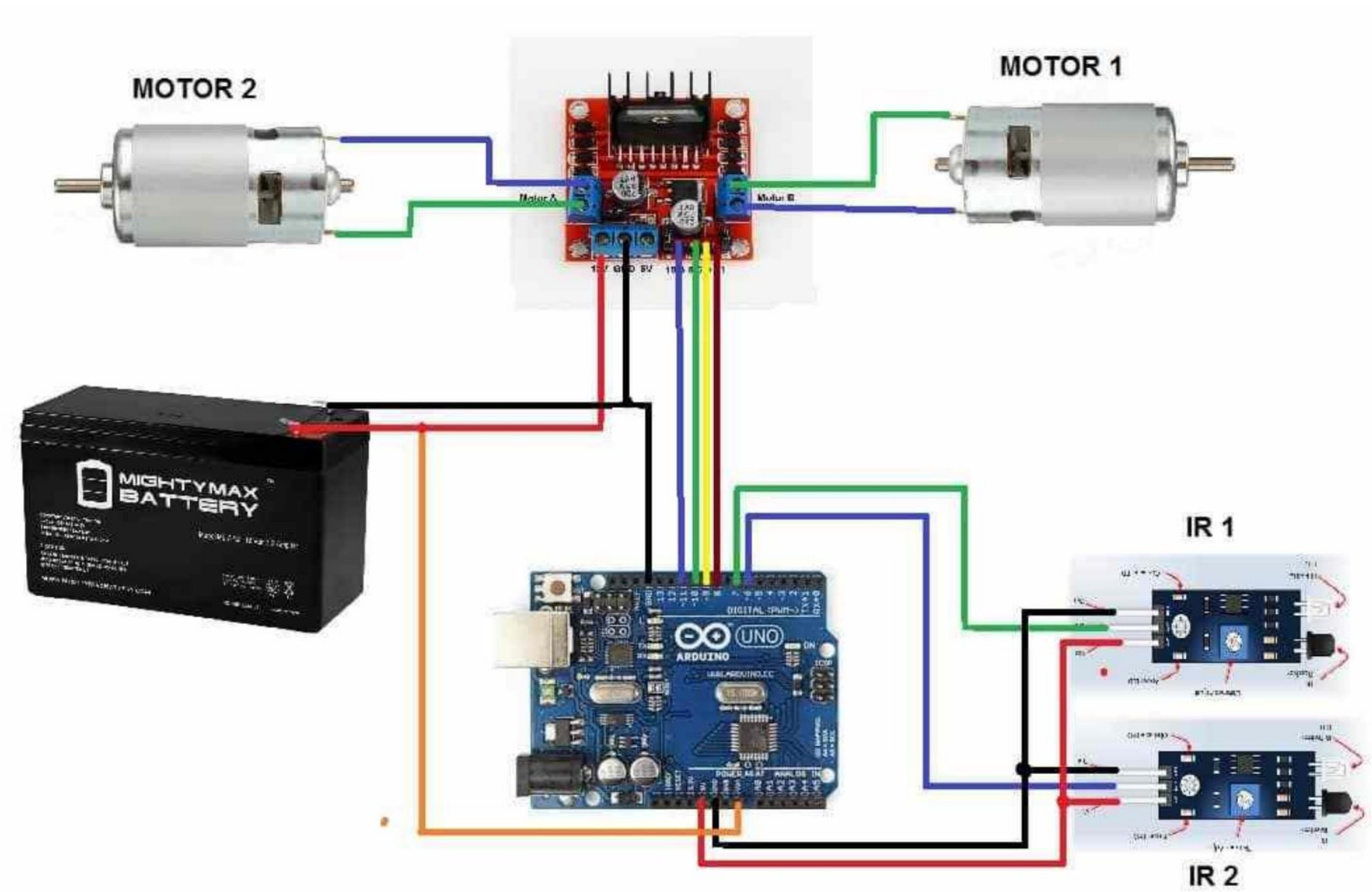
Components:

- Arduino Uno
- USB cable
- 3 IR Sensor
- 2 DC Motor
- 2-Wheel Chassis
- L298N Motor Driver
- 12V/9V battery with battery holder
- Jumper wires

Operating Voltage: 12/9 volts

Circuit Diagram:



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Coding:

```
//For Right Motor

int RightMotor1= 7;
int RightMotor2= 8;
int RightMotorSpeed= 6;


//For Left Motor

int LeftMotor1= 12;
int LeftMotor2= 13;
int LeftMotorSpeed= 11;

//For IR Sensors

int S0 = 2, S1 = 3, S2 = 4;                 //IR sensors
int S0sensor, S1sensor, S2sensor;      //Variable declaration of sensors

//Functions declaration

void fwd();
void bckwd();
void turnright();
void turnleft();
void motorstop();

void setup() {
// put your setup code here, to run once:
Serial.begin(9600);

pinMode(S0, INPUT);
pinMode(S1, INPUT);
pinMode(S2, INPUT);

pinMode(RightMotor1, OUTPUT);
pinMode(RightMotor2, OUTPUT);
pinMode(RightMotorSpeed, OUTPUT);

pinMode(LeftMotor1, OUTPUT);
pinMode(LeftMotor2, OUTPUT);
pinMode(LeftMotorSpeed, OUTPUT);

}
```


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```
void loop() {
//Reading the values of IR sensors
S0sensor = digitalRead(2);
S2sensor = digitalRead(3);
S1sensor = digitalRead(4);

//IR Commands

if (S0sensor == LOW) && (S1sensor == HIGH) && (S2sensor == LOW)
}
fwd();
}
else if ((S0sensor == HIGH) && (S1sensor == LOW) && (S2sensor == LOW))
{
turnright();
}
else if ((S0sensor == LOW) && (S1sensor == LOW) && (S2sensor == HIGH))
{
turnleft();
}
else if ((S0sensor == HIGH) && (S1sensor == HIGH) && (S2sensor == HIGH))
{
motorstop();
}

}

void fwd()
{ //Motor moving forward
digitalWrite(RightMotor1, LOW);
digitalWrite(RightMotor2, HIGH);
analogWrite(RightMotorSpeed, 250);

digitalWrite(LeftMotor1, LOW);
digitalWrite(LeftMotor2, HIGH);
analogWrite(LeftMotorSpeed, 250);
}
void turnleft()
{ //Right Motor on and Left Motor Off
digitalWrite(RightMotor1, LOW);
digitalWrite(RightMotor2, HIGH);
analogWrite(RightMotorSpeed, 250);

digitalWrite(LeftMotor1, HIGH);
digitalWrite(LeftMotor2, HIGH);
```


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```
}

void turnight();
{  //Right Motor Of, Left Motor On
digitalWrite(RightMotor1, HIGH);
digitalWrite(RightMotor2, HIGH);

digitalWrite(LeftMotor1, LOW);
digitalWrite(LeftMotor2, HIGH);
analogWrite(LeftMotorSpeed, 250);
}

void bckwd();
{
digitalWrite(RightMotor1, LOW);
digitalWrite(RightMotor2, HIGH);
analogWrite(RightMotorSpeed, 250);


digitalWrite(LeftMotor1, LOW);
digitalWrite(LeftMotor2, HIGH);
analogWrite(LeftMotorSpeed, 250);
}

void motorstop();
{
digitalWrite(RightMotor1, LOW);
digitalWrite(RightMotor2, LOW);

digitalWrite(LeftMotor1, LOW);
digitalWrite(LeftMotor2, LOW);
}
```


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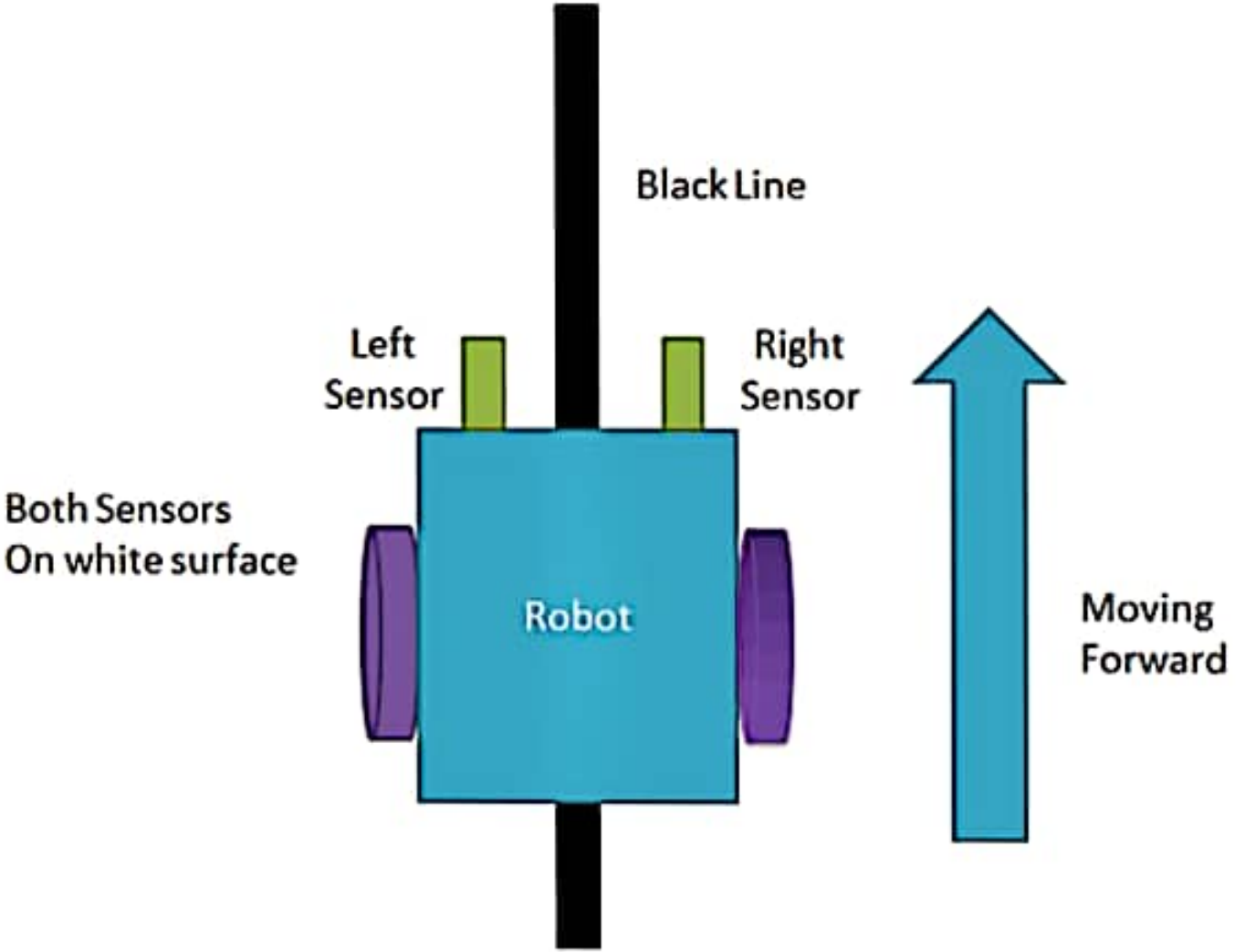

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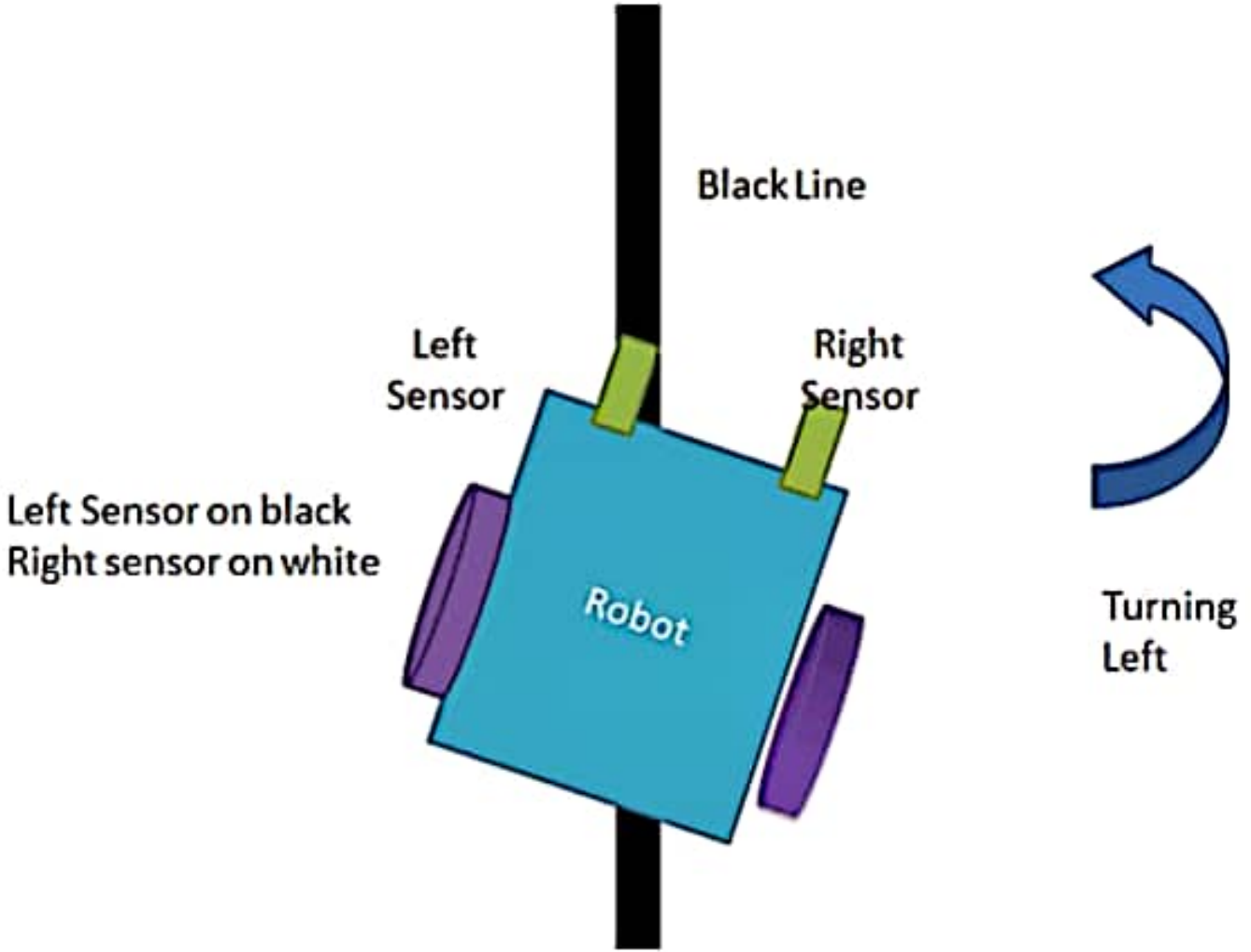

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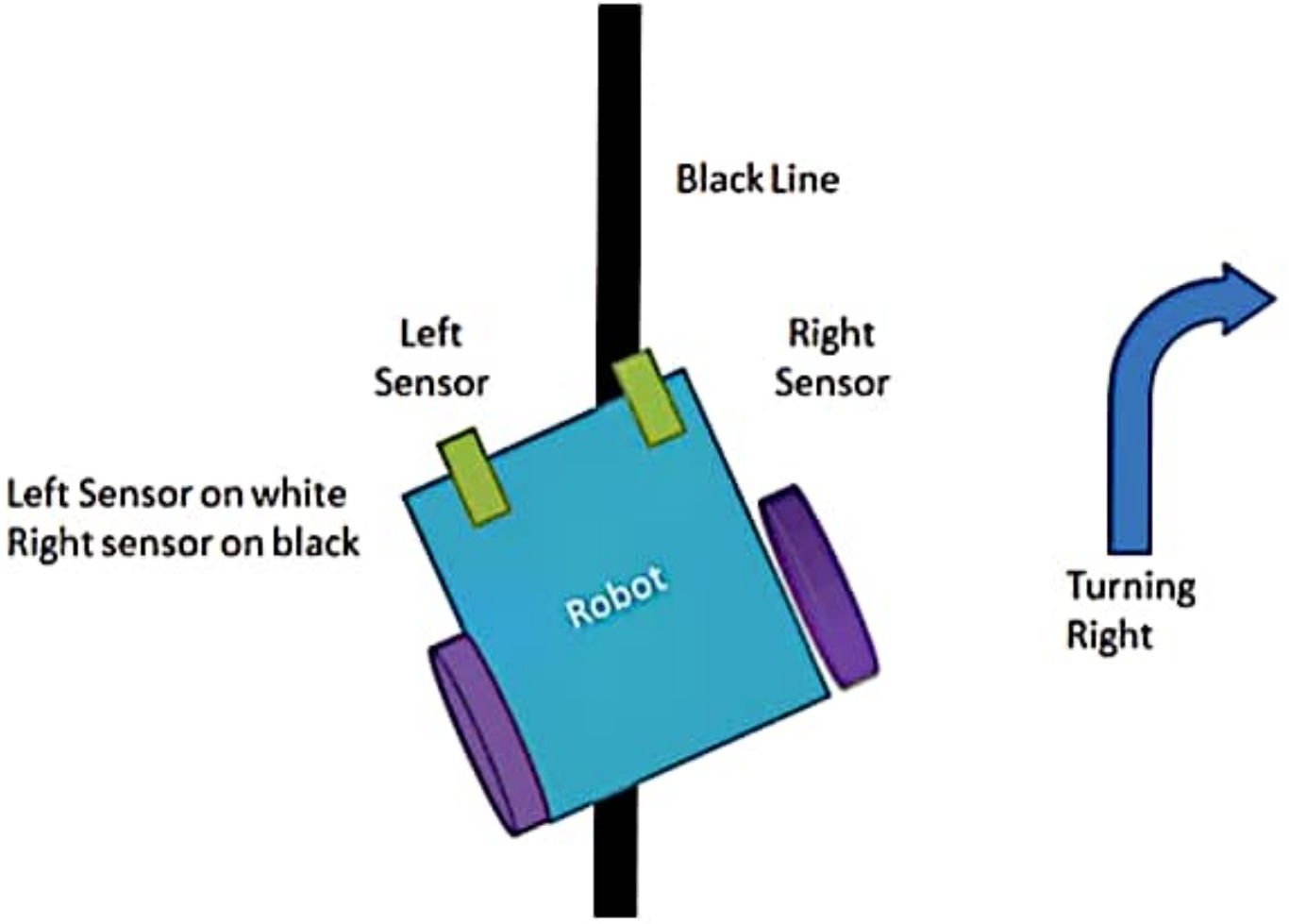

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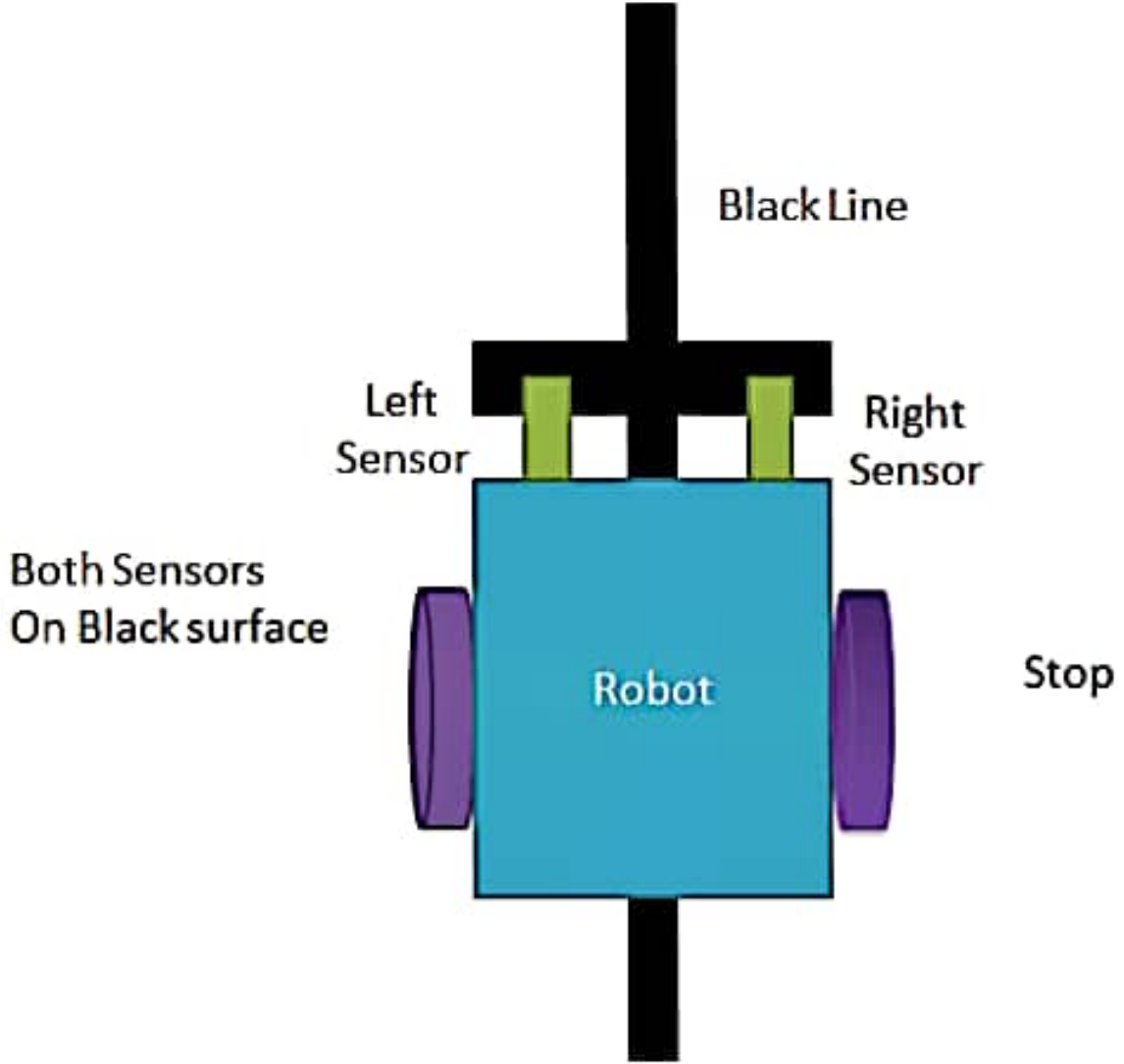

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