

MODULE 12: LINE FOLLOWER ROBOT

PROJECT 3

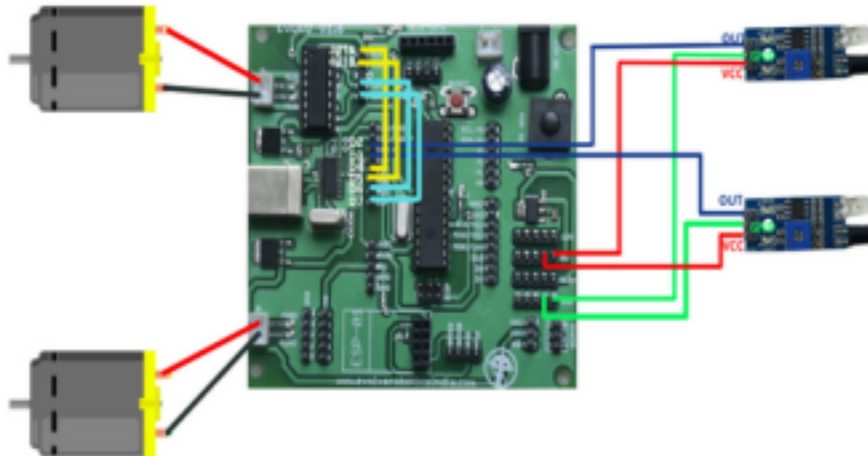
AIM:

CONSTRUCT AN LINE FOLLOWER ROBOT USING IR SENSOR

COMPONEENTS USED:

EVOED BOARD, IR SENSOR(2), MOTOR(2), JUMPER WIRES

CIRCUIT DIAGRAM:



WORKING PRINCIPLE:

- For this project, we are going with the IR sensor because of its higher accuracy. • We all know that the reflection of light on the white surface is maximum and minimum on the black surface because the black surface absorbs maximum amount of light. So, we are going to use this property of light to detect the line.
- To detect the line, we place two IR sensors one on the left and other on the right side of the robot as marked in the diagram below. We then place the robot on the line such that the line lies in the middle of both sensors.
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- Infrared sensors consist of two elements, a transmitter and a receiver. The transmitter is basically an IR LED, which produces the signal and the IR receiver is a

photodiode, which senses the signal produced by the transmitter.

- The IR sensors emits the infrared light on an object, the light hitting the black part gets absorbed thus giving a low output but the light hitting the white part reflects back to the transmitter which is then detected by the infrared receiver.
- Using the stated principle, we control the movement of the robot by driving the wheels attached to the motors, the motors are controlled by a microcontroller.

PROGRAM:

```
int IR1=A1; //Right sensor
```

```
int IR2=A2; //left Sensor
```

```
// motor one
```

```
int MotorA1=4; //Right motor
```

```
int MotorB1=5;
```

```
int MotorA2=6; //Left motor
```

```
int MotorB2=7;
```

```
void setup()
```

```
{
```

```
  pinMode(IR1,INPUT);
```

```
  pinMode(IR2,INPUT);
```

```
  pinMode(MotorA1,OUTPUT);
```

```
  pinMode(MotorB1,OUTPUT);
```

```
  pinMode(MotorA2,OUTPUT);
```

```
  pinMode(MotorB2,OUTPUT);
```

```
  Serial.begin(9600);
```

```
}
```

```
void loop()
```

```
{
```

```
  Serial.println(digitalRead(IR1));
```

```
  Serial.println(digitalRead(IR2));
```

```
  if(digitalRead(IR1)=HIGH && digitalRead(IR2)=HIGH) //IR will not glow on black line {
```

```
    digitalWrite(MotorA1,HIGH);
```

```
    digitalWrite(MotorB1,LOW);
```

```
    digitalWrite(MotorA2,HIGH);
```

```
    digitalWrite(MotorB2,LOW);
```

```
}  
else if(digitalRead(IR1)=LOW &&  
digitalRead(IR2)=HIGH) {  
    digitalWrite(MotorA1,LOW);  
    digitalWrite(MotorB1,LOW);  
    digitalWrite(MotorA2,HIGH);  
    digitalWrite(MotorB2,LOW);  
}  
    else if(digitalRead(IR1)=HIGH &&  
digitalRead(IR2)=LOW) {  
    digitalWrite(MotorA1,HIGH);  
    digitalWrite(MotorB1,LOW);  
    digitalWrite(MotorA2,LOW);  
    digitalWrite(MotorB2,LOW);  
}  
    else  
{  
    digitalWrite(MotorA1,LOW);  
    digitalWrite(MotorB1,LOW);  
    digitalWrite(MotorA2,LOW);  
    digitalWrite(MotorB2,LOW);  
}  
}
```