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AUTONOMOUS MOBILE ROBOT FOR ESSENTIAL DELIVERY AT COVID CENTRES

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ABSTRACT:

The Design of Autonomous Mobile Robot For Essential Delivery at Covid Centresis an implementation of the industrial path follower robot. The ongoing COVID-19 pandemic has already provided numerous instances of robotics being used to assist agencies with the detection and care of infected populations and prevent further transmission. The robots paths are planned according to beds in Hospital. Considering the current disastrous situation, robots are well suited for caring for the well-being of COVID-19 patients thus replacing or at least sharing the workload of the medical staff in hospitals under oversaturated conditions. Due to increasing demands for patient supervision, the jobs like supply of food, medicines, Etc. , As become human interaction. So, a microcontroller based path following robot carrying medicine can be designed for providing the medicine to the patient whenever they need it. A path follower robot is electronic systems that can detect and follow path on the floor. Such robots with automated controls and minimum human assistance can cover a large number of patients in a single stretch. It is easy to operate this Robot mainly consists of Sensors, Motors, Microcontrollers and etc.

1.INTRODUCTION

A path follower robot is electronic systems that can follow path on the floor. Such robots with automated controls and minimum human assistance can cover a large number of patients in a single stretch. It is easy to operate this Robot mainly consists of Sensors, Motors, Microcontrollers and etc.This kind of robot can be used in Military purposes, delivery services, transportation system, blind assistive etc.

Review stage

The path follower robot is a mobile machine that can detect and follow the line drawn on the floor. Generally, the path is predefined and can be either visible like a black line on a white surface with a high contrasted colour.

Final Stage

This kind of Robot will sense the line with its Infrared Ray (IR) sensors that installed under the robot. After that, the data is transmitted to the processor by specific transition buses.

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Hence, the processor is going to decide the proper commands and then it sends them to the driver and thus the path will be followed by the path follower robot.

2.PATH FOLLOWER ROBOT

This Path Follower Robot is a device which follows the line drawn on the floor surface, this line should be in black or in the high constrastedcolour. With the help of IR Sensor signal to the processor the robot follows the line.It is easy to operate because it is automated machine by connecting Bluetooth it can also be controlled by mobile device.This path follower robot consists of microcontroller, IR sensors, motors, L293D etc.

3.APPLICATIONS

They can be used in industries as automated equipment carriers..

It can be used for home for floor cleaning etc.

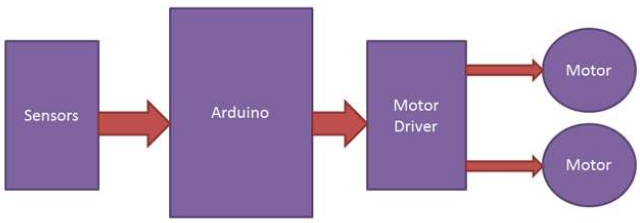
In hotels they are being used for the transfer of things from one place to another following a straight path.

It can be used for domestic purposes.

It is used in the industry to carry parcels or materials from one place to another utilizing the crane system.

It is used to carry children in shopping malls and entertainment places.

4.WORKING BLOCKDIAGRAM



Concept of working of Path follower is related to light. We use here the behavior of light at black and white surface. When light fall on a white surface it is almost full reflected and in case of black surface light is completely absorbed. This behavior of light is used in building a Path follower robot.

Here in this arduino line follower robot when sensor senses white surface then arduino gets 1 as input and when senses black line arduino gets 0 as input.Then the motor drives by this signal passed by the arduino .

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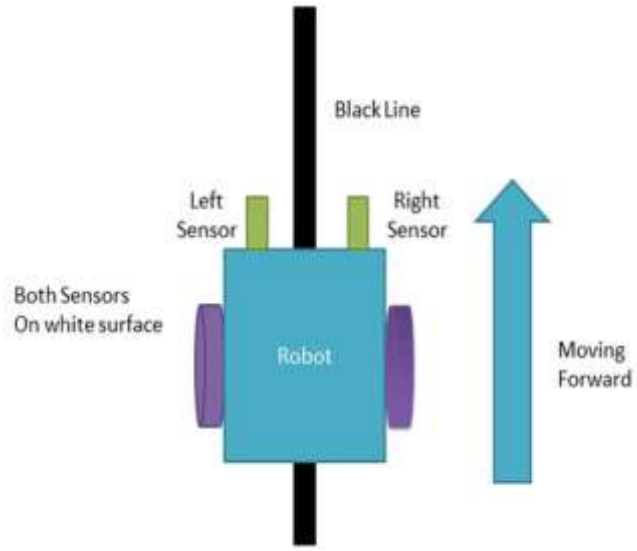
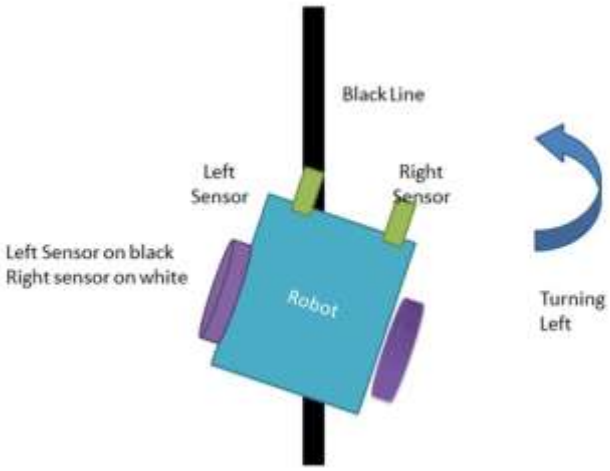
WORKING

Here in this project we are using two IR sensor modules namely left sensor and right sensor. When both left and right sensor senses white then robot move rd.

If left sensor comes on black line then robot turn left side.





If right sensor sense black line then robot turn right side until both sensor comes at white surface. When white surface comes robot starts moving on forward again.

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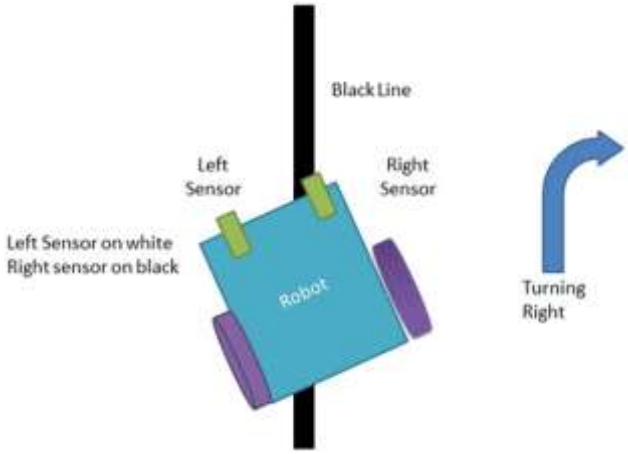
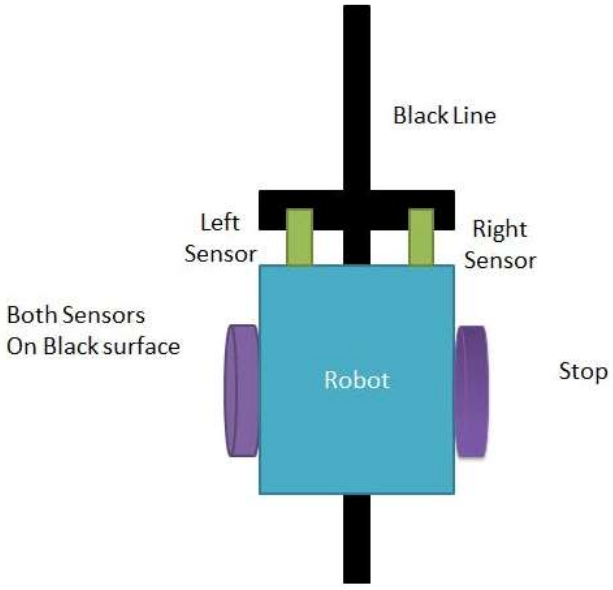


If both sensors comes on black line, robot stops.



5.SIMULATION

This path follower robot is simulated with the help of C language by the Arduino software which is as below:

constint in1 = 2;

constint in2 = 4;

constint in3 = 5;

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```
constint in4 = 7;
intLEFTsensor= A0;
intRIGHTsensor = A3;
#define en1 3
#define en2 6

int M1_Speed = 128; // speed of motor 1
int M2_Speed = 128; // speed of motor 2

//booleanpush_button = LOW;

constint pushbutton=8;

void setup() {

Serial.begin(9600);
pinMode(en1,OUTPUT);
pinMode(en2,OUTPUT);

pinMode (in1, OUTPUT);
pinMode (in2, OUTPUT);
pinMode (in3, OUTPUT);
pinMode (in4, OUTPUT);

pinMode(RIGHTsensor, INPUT);
pinMode(LEFTsensor, INPUT);
```

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```
pinMode(pushbutton,INPUT);


}
void loop() {

intRight_Value = digitalRead(RIGHTsensor);
intLeft_Value = digitalRead(LEFTsensor);

// push_button = digitalRead(pushbutton);
Serial.print(digitalRead(pushbutton));
if(Right_Value==0 &&Left_Value==0)
 {
digitalWrite(in1,HIGH);
digitalWrite(in2,LOW);
digitalWrite(in3,HIGH);
digitalWrite(in4,LOW);

analogWrite(en1, M1_Speed);
analogWrite(en2, M2_Speed);
  }

//   Right Turn
else if((Right_Value==1) && (Left_Value==0))
{
digitalWrite(in1,HIGH);
digitalWrite(in2,LOW);
digitalWrite(in3,LOW);
```

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```
digitalWrite(in4,HIGH);

analogWrite(en1, M1_Speed);
analogWrite(en2, M2_Speed);
 }

// Left Turn
else if((Right_Value==0)&&(Left_Value==1))
{
digitalWrite(in1,LOW);
digitalWrite(in2,HIGH);
digitalWrite(in3,HIGH);
digitalWrite(in4,LOW);

analogWrite(en1, M1_Speed);
analogWrite(en2, M2_Speed);
 }

// Stop
else if((Right_Value==1)&&(Left_Value==1))
{
digitalWrite(in1,LOW);
digitalWrite(in2,LOW);
digitalWrite(in3,LOW);
digitalWrite(in4,LOW);

 if (digitalRead(pushbutton)==HIGH)
```

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```
{

digitalWrite(in1,HIGH);
digitalWrite(in2,LOW);
digitalWrite(in3,HIGH);
digitalWrite(in4,LOW);
analogWrite(en1, M1_Speed);
analogWrite(en2, M2_Speed);
delay(1500);

}
}

}
```

6.LIMITATIONS

Path follower robot follows a black line about 1 or 2 inches in width on a white surface.

Line tracing robots are simple robots with an additional sensors placed on them.

It always needs a path to run either white or black since the IR rays should reflect from the particular path.

Slow speed and instability on different line thickness or hard angle.

CONCLUSION AND FUTURE SCOPE

The Robot follows a specific line path simultaneously. This line follower robot with multiple modes compatibility works perfectly fine as it is designed to do .And thus attempt will be made to solve the unplanned and unauthorized area using robot. The slot type and state of the slot will been identified using Sharp IR Sensor. And simultaneously we can perform the operation of Buzzer beep operation, object identification, Lcd display, robot direction control operation and will finally execute in stops given near to the end.

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The line follower developed is also sensing any type of obstacle in its way and can also control speed with the help of speed regulator. Further improvement can be done in the robot by using more number of IR sensors or an array or IR sensors.

10. REFERENCES

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