

For more Project details visit:

<http://www.projectsof8051.com/microcontroller-based-line-follower-robot/>

Code	Project Title
1262	Microcontroller based Line Follower Robot

## Synopsis for Microcontroller based Line Follower Robot

### What is a line follower?

Line follower is a machine that can follow a path. The path can be visible like a black line on a white surface (or vice-versa) or it can be invisible like a magnetic field.

### DESIRED SPECIFICATIONS

- 1) For proper functioning of the robot needs a voltage supply of about 12V
- 2) The robot should be able to distinguish between the white and the black surface.
- 3) If the black surface suddenly ends, the robot should keep on moving in the direction it last moved until the black line is again there.

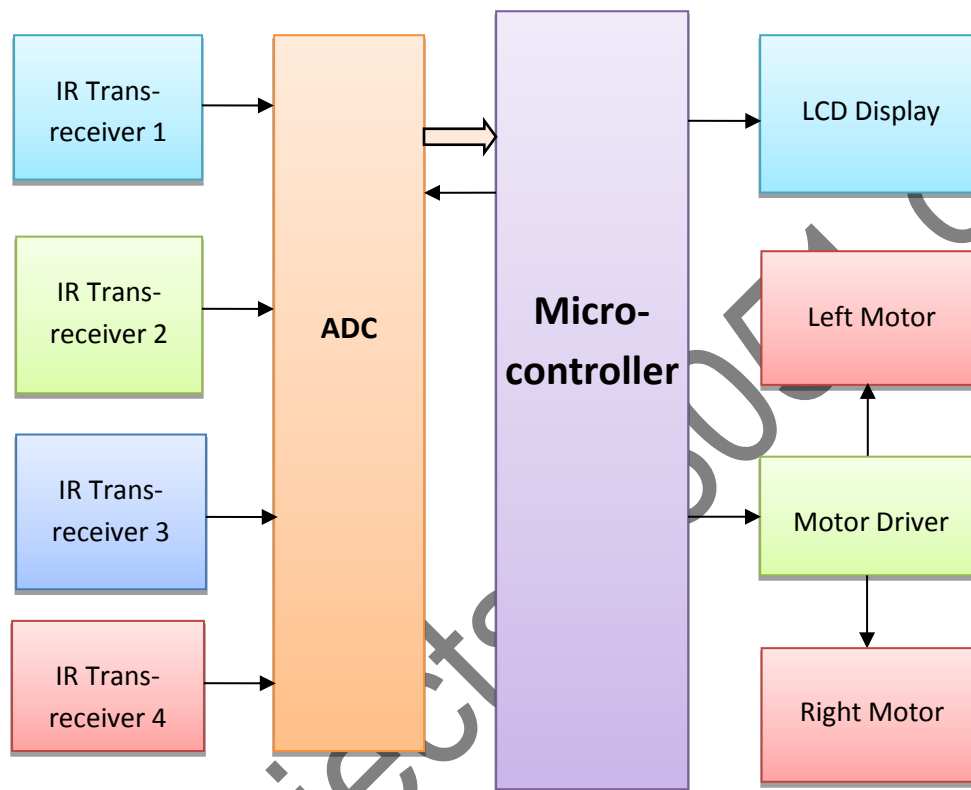
## INTRODUCTION:

The aim of the project is to make a robot which can follow a black strip on a white floor. The robot can be used in industries to carry daily operation of carrying material from one place to another. in the rescue operation. Thus the robot can act as a path guider.

This project consists of a Robot which follows a black line drawn on a plain white surface. Whenever power supply on Robot is turned on, the Robot starts following the Line. That is why it is called Line follower robot. This robot utilizes a array of Infrared transmitters and receivers. Simple Line follower Robot can be built without microcontroller.

This is an advanced Line follower robot using microcontroller. This robot utilizes a feedback mechanism. By this we mean that whenever robot is turned on it immediately moves in a forward direction. Then it reads the input from IR sensors. If robot is on track then it continues to move in forward direction. However if the feedback mechanism tells microcontroller that robot is not following the line then Microcontroller turns the Robot in Left or right direction depending upon the input from Left and Right Infrared receivers.

## 2. Block Diagram



## 3. Block Diagram Description

- 1) Infrared transmitter
- 2) Infrared sensor / receiver
- 3) Analog to Digital converter
- 4) Microcontroller
- 5) LCD Display
- 6) Motor driver
- 7) DC Motor

## WORKING

Obviously the line following robot will need to see the line, therefore we require a light detector of some sort. We also would like it if the line following robot could do this regardless of the ambient conditions (is the room dark or light? is it lit by sunlight or artificial light?). So the robot will also need its own illumination source. The weapon of choice here will be Infra Red (IR) light.

To make this easy for ourselves the light only needs to be constant... if a white line is present then it will reflect a lot of IR from our source. If the line is black then we see the opposite effect. All we need is an IR emitters and detector pairs. Also we need DC motors and Motor driver ICs.

## Applications and Advantages:

Applications of Line Follower Robot:

1. The robot can be used as a guide to guide the visitors from the entrance to the main office.
  2. It can help doctors to carry the medicines from one ward to another.
  3. It also can be used to rescue the people by extinguishing fire in a building.
  4. When man power does not work to rescue then the robot can done this job.
- 1) This project can be used in has industrial application. In Industries it can be used to take the visitor from main gate to the desired place or unit. Robot will be kept on gate and a Line will be drawn from the gate to the respective unit.
  - 2) In industries it can also used to carry goods or any material from one place to another place automatically. This will remove the human interactions.

3) This robot can carry the hazardous materials like radio active material, poisonous gas cylinder which humans can not carry easily.

### **Advantages of Line Follower Robot:**

1) This project is easy to make and easy to use.

### **Future Development:**

1. We can provide voice feedback system.