## MINI PROJECT REPORT

### (2019-20)

LINE FOLLOWING ROBOT



**SYNOPSIS**

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1. **PROBLEM STATEMENT**

In the industry carriers are required to carry products from one manufacturing plant to another which are usually in different buildings or separate blocks. Conventionally, carts or trucks were used with human drivers. Unreliability and inefficiency in this part of the assembly line formed the weakest link. The project is to automate this sector, using carts to follow a line instead of laying railway tracks which are both costly and an inconvenience.

1. **OBJECTIVE**

The objective of this project is:

* To design and construct the platform of line following robot using infrared sensors. Infrared (IR) radiation is electromagnetic radiation of a wave length longer than that of visible light.
* To apply and study the concept of Drive Motor L293D. Motor is a machine or device that converts any form of energy into mechanical energy or imparts motion. A geared motor is a rotary actuator that allows for precise control of angular position, velocity and acceleration.
* It can help can in automating medical centers by carrying the medicines from doctors to patients in particular time laps. It can also help in automating the industrial machinery goods to transport from one place to other.
* The minimum number of motors allows the robot to minimize the power consumption while constructing a program that can produce coordination of multi-degree of freedom for the movement of the robot.

1. **METHODOLOGY**

Methodology is the complete planning for the whole final project flow to smoothen the final project flow, methodology need to be arranged properly as neat as possible. The logic is derived for the intelligence of the robot. It is programmed and burn it to the Arduino UNO by using the software Arduino IDE. The accuracy and viability of the program and electronic components is tested in the simulation software Proteus. It helps the project to achieve its achievement on each stage and not flow outside the topic or in more specific, the final result will be achieved according to the problem statement stated. Therefore, it is important to know and understand deeply every single process in project methodology. Among needed to be done is finding enough information about line follower robot.

1. **PROJECT SCOPE**

This scope of work is listed as below:

* More Infrared sensor was used to detect the black line.
* More efficient dc motors were chosen to drive the line following robot.
* Use of color sensor.
* Use of camera for better recognition and precise tracking the path.

1. **HARDWARE USED**

* Chassis Plate
* Geared Motor
* Wheels
* Motor Driver L293D
* Arduino UNO
* Battery
* Jumper Wire
* Switches
* Screws
* Screw driver
* Castor wheel
* IR Sensor
* Diode
* Register (1k)

**6. CONCLUSION**

In its current form robot is enough capable. It can follow any curve and cycle. We must build a robot that has light weight and high speed because points are awarded based upon the distance covered and the speed of the overall robot. Therefore, we used two high speed motors and high sensitivity sensors circuit.

The body weight and wheels radius have effects on speed too. The weight of the designed robot is around 300 grams and it can be lighter. To get better maneuver, we must build a robot that uses two motors and two wheels on the rear and a free wheel on the front.

The designed robot has two infrared sensors on the bottom for detect line. Arduino UNO and Motor driver L293D were used to control direction and speed of motors. The robot is controlled by the Arduino UNO. It basically changes the motor direction by giving signal to motor driver according to the received signals from IR sensors.