

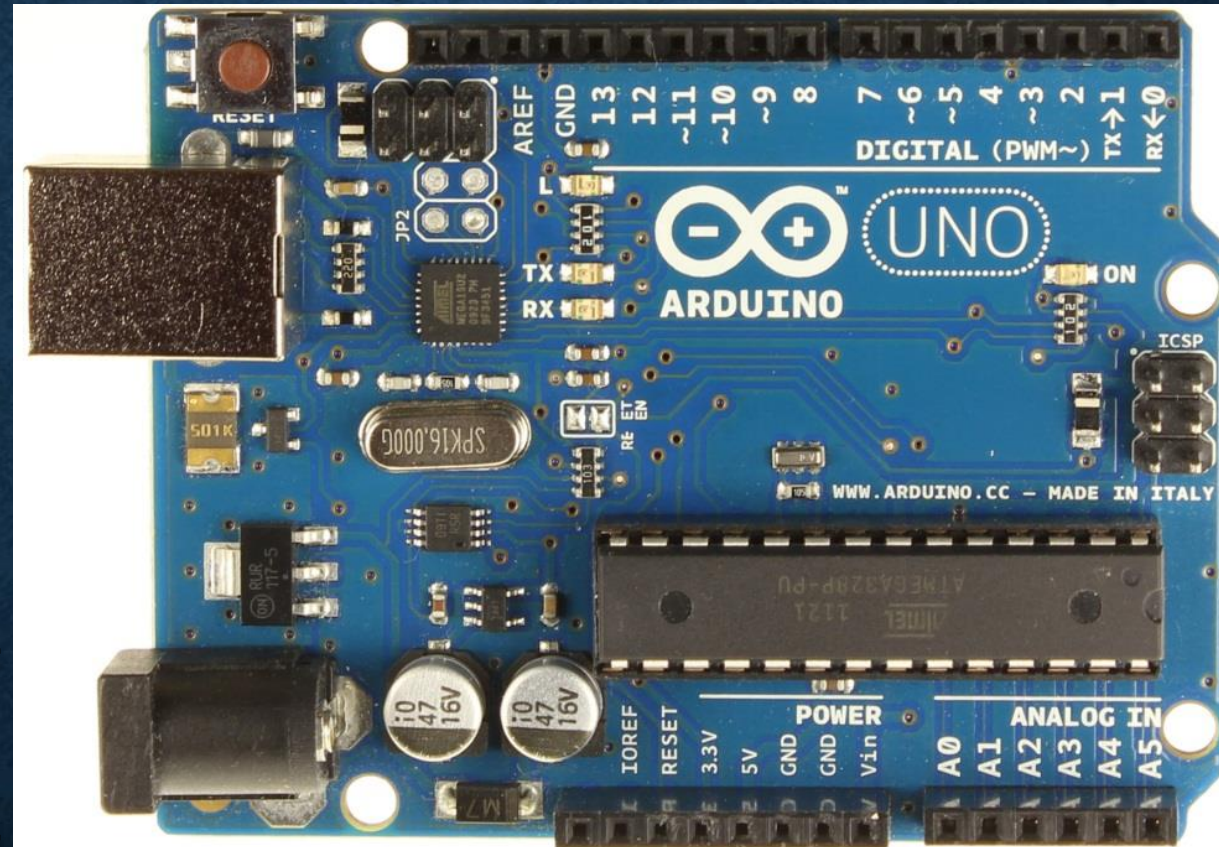
INTRODUCTION TO ARDUINO

- Arduino is a company which manufactures different single board microcontrollers and microcontroller kits for building digital devices and interactive devices.
- Arduino board designs use a variety of microprocessors and controllers.
- The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards or breadboards (*shields*) and other circuits

Digital Input / Digital output
(PWM on pins 3, 5, 6, 9, 10, 11)

USB
connection

7-12 volt
input power
(9v is
common)



Power
pins

Analog input
/ Digital input
or output

LINE FOLLOWING ROBOT

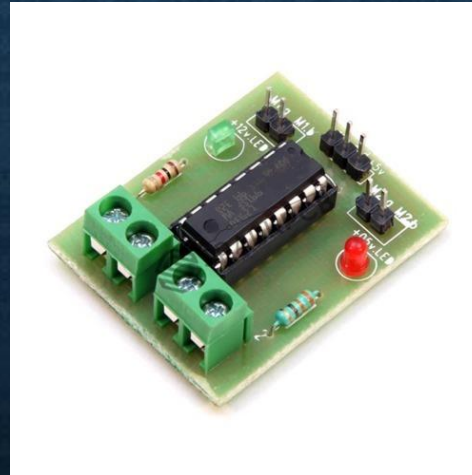
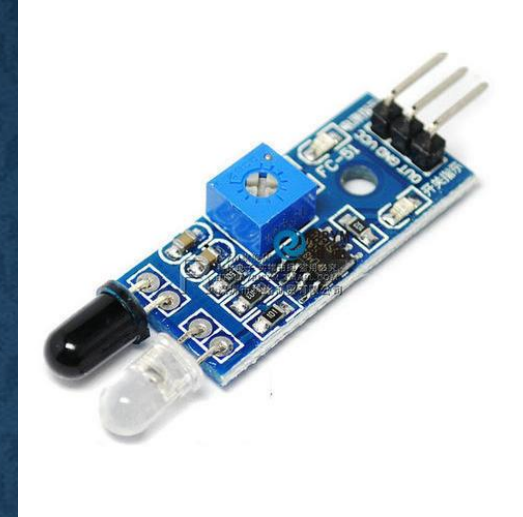
- Line Follower is an autonomous robot which follows either black line in white area or white line in black area, this can be of several different types also.

But all of those ,basically detects a predefined path and that path may contain any definite line pattern or any kind of obstacles.

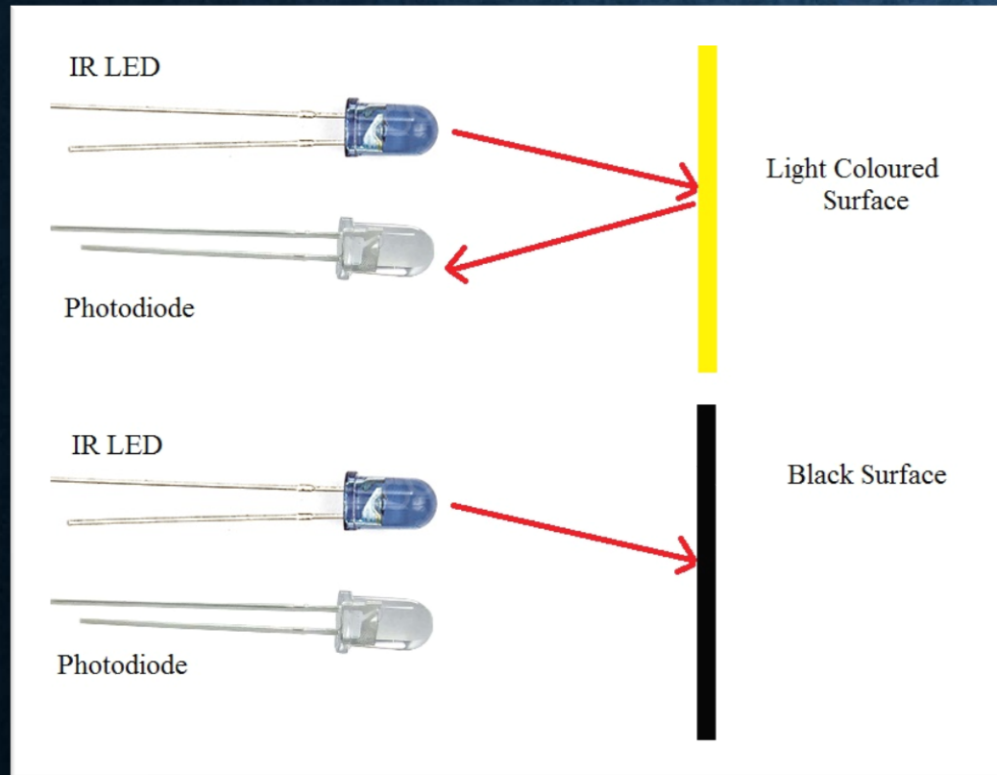
- It generally uses proximity sensors to detect the signals coming from the paths.
- It consists of two geared motors which is responsible to make the robot move.

COMPONENTS USED

- ARDUINO UNO BOARD
- MOTOR DRIVER(L293D IC)
- BASIC ANALOG IR SENSORS MODULES
- GEARED MOTORS
- CHASIS



WORKING OF IR SENSORS



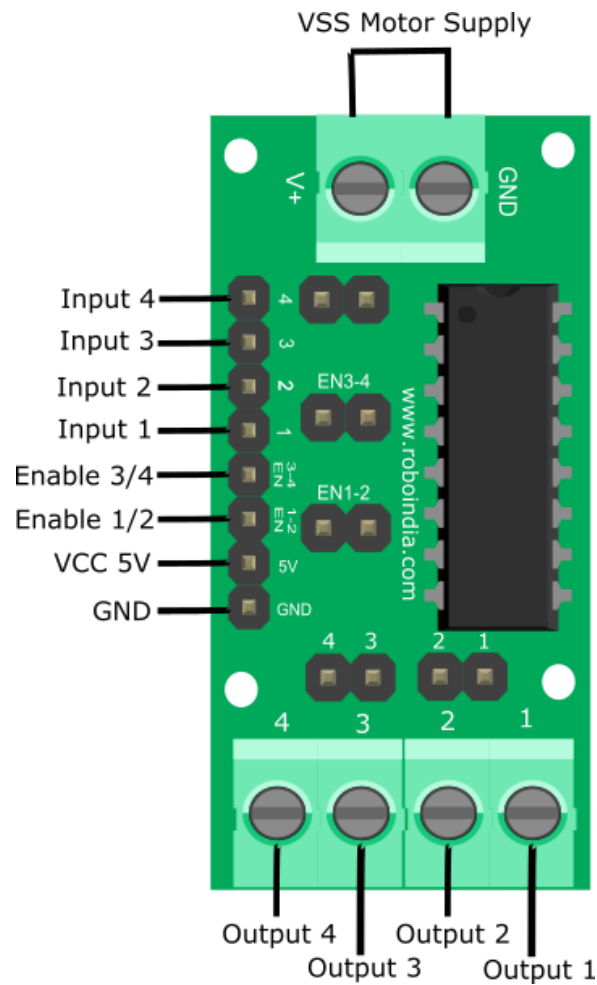
- We use here the behavior of light at black and white surface. When light fall on a white surface it is almost full reflected and in case of black surface light is completely absorbed.

CONTD..

- Our Line Following Robot is going to work based on the inputs given by 2 IR sensors Module used in LFR.
- In LFR , it gets the data from IR Sensors and based on the output from IR sensors, it executes the hardware components which is, it gives the instructions to motors to get on or off.
- Our Line following robot will move forward as long as both motors are in on mode.

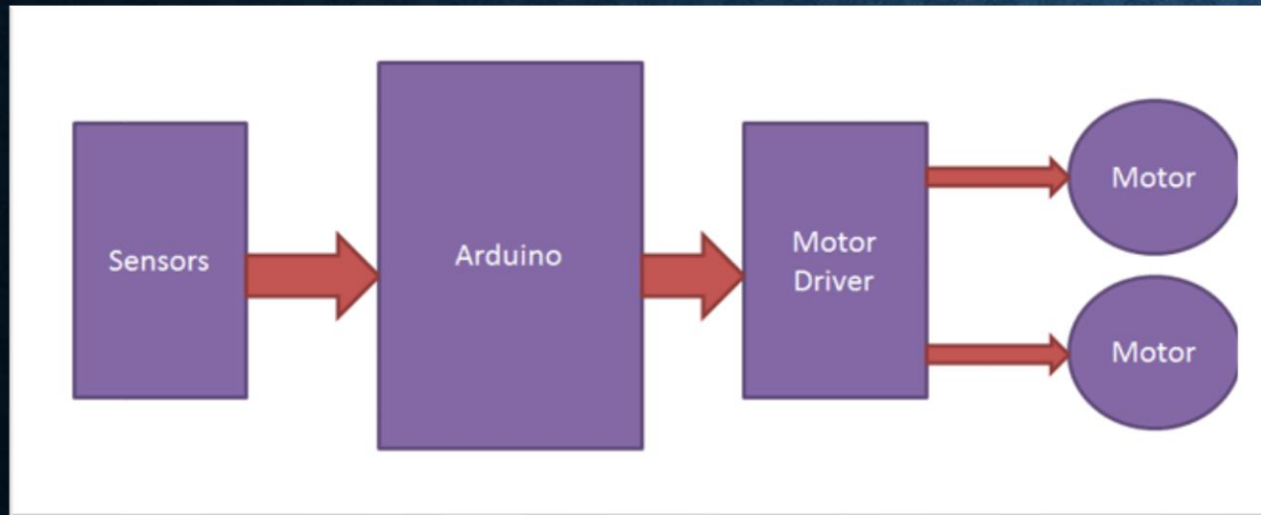
If the left motor is off and Right is on then it will take a right turn and Vice-Versa.

L293D MOTOR DRIVER



- It allows you to control the working speed and direction of two motors simultaneously.
- L293D is a 16 Pin Motor Driver IC. This is designed to provide bidirectional drive currents at voltages from 5 V to 36 V.

FINAL BLOCK DIAGRAM OF LINE FOLLOWING ROBOT



- IR sensors are detecting the black paths and sending their signals to our Arduino Microcontroller.
- Then, Arduino board will send the instructions to motor drivers based on our given programme logic.
- Finally, the motor will start operating as required by programmer.

FIGURE OF A SIMPLE LINE FOLLOWING ROBOT.



APPLICATIONS

- Industrial automated equipment carriers.
- Automated cars.
- Tour guides in museums and other similar applications.
- Deliver the mail within the office building
- Deliver medications in a hospital.