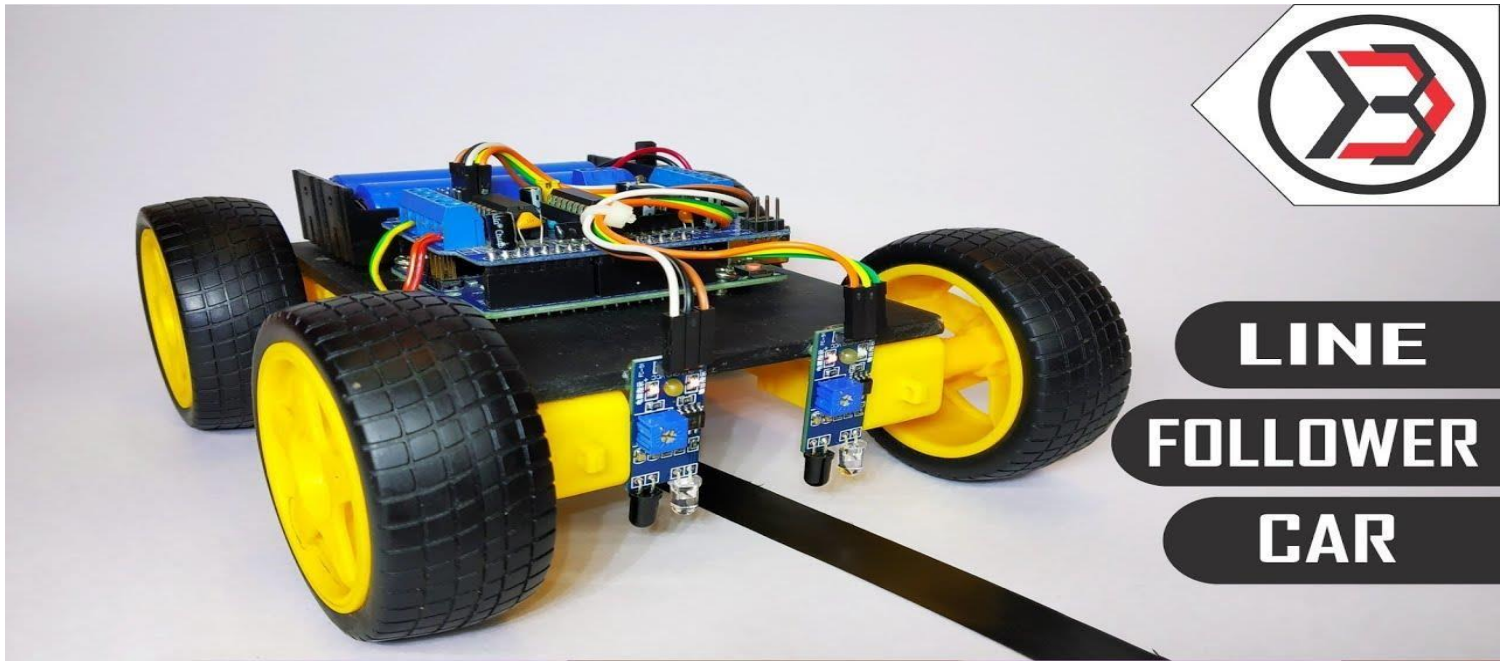
Line Follower Robot

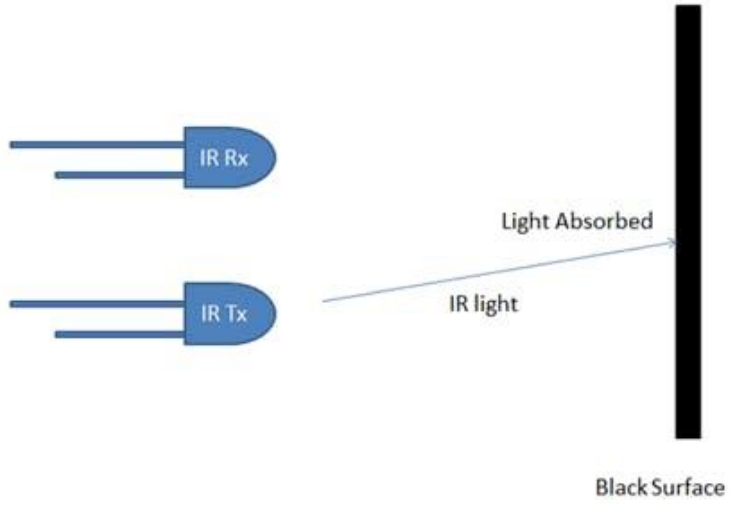


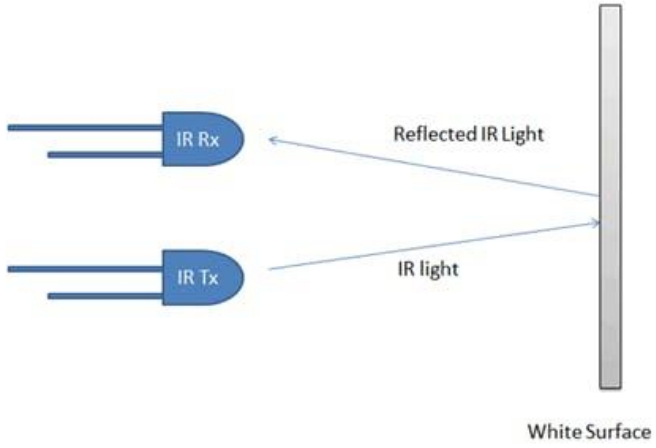
Team Members:

Code	Name	No.
1701133	محمد احمد عبد العزيز احمد حال	1
1700897	عمر محمد احمد شوقي	2
1700895	عمر مجدي عز الدين	3
17t0346	احمد جابر عبد العزيز	4
17E0020	خالد احمد محمد عبدالعزيز	5

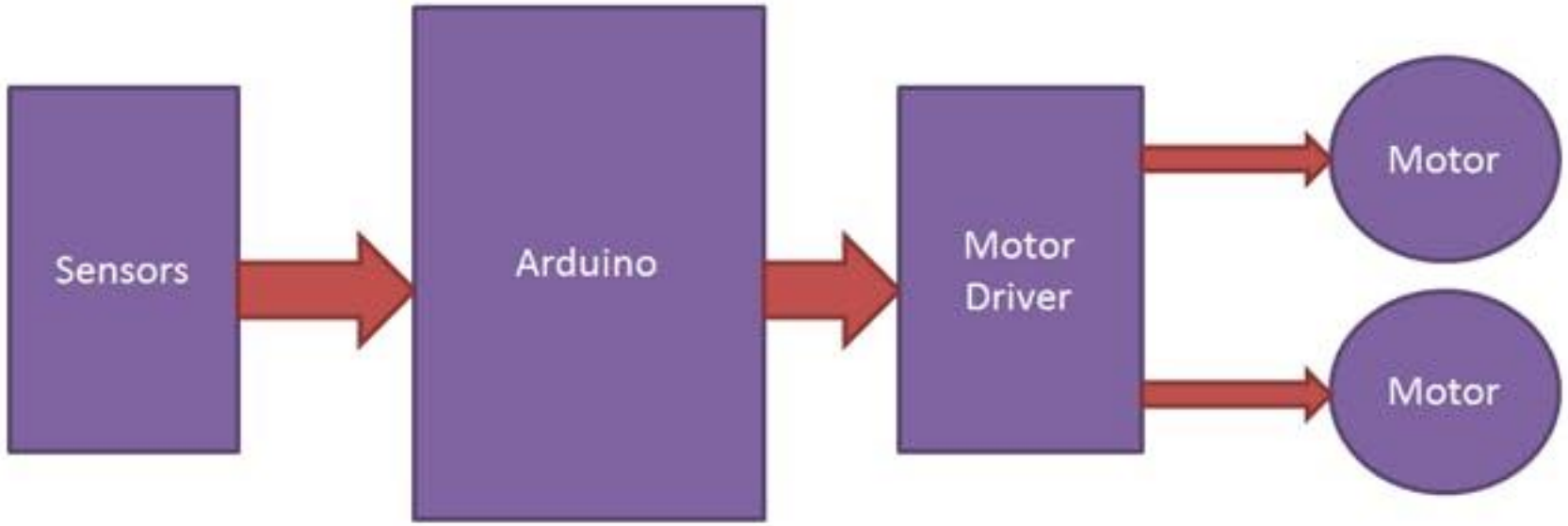
Concepts of Line Follower :

Concept of working of line 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 line follower robot.





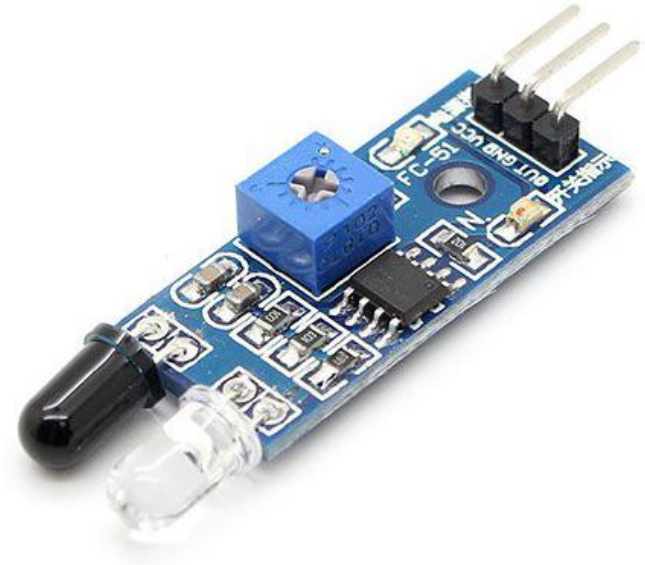
Working of Line Follower Robot using Arduino:



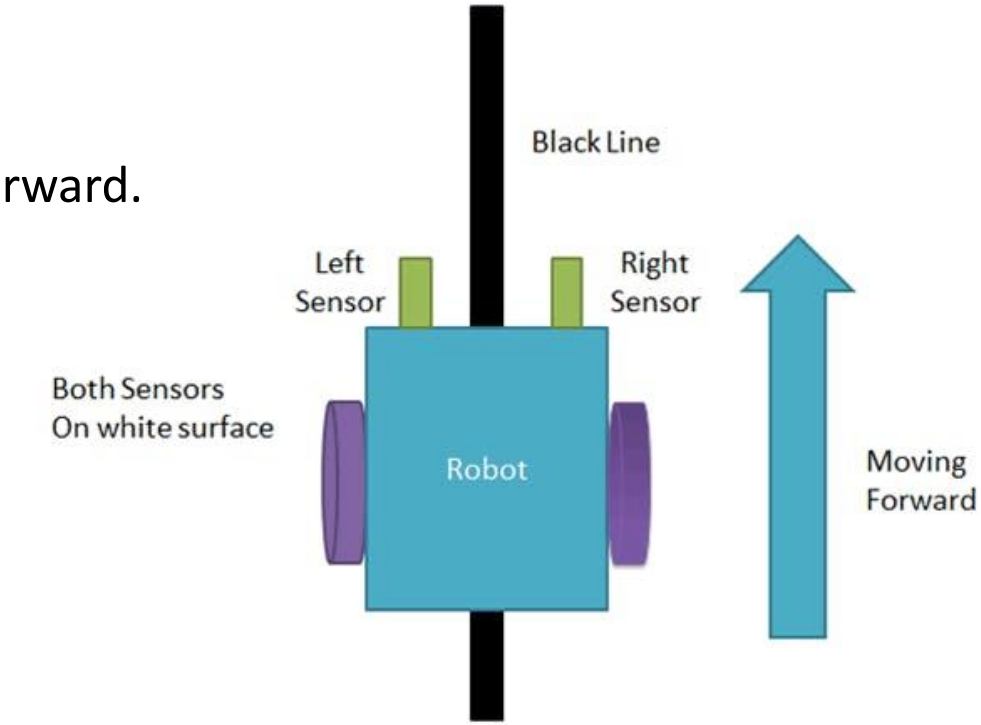
Sensors Used:

1- IR Transmitters and receivers also called photo diodes:

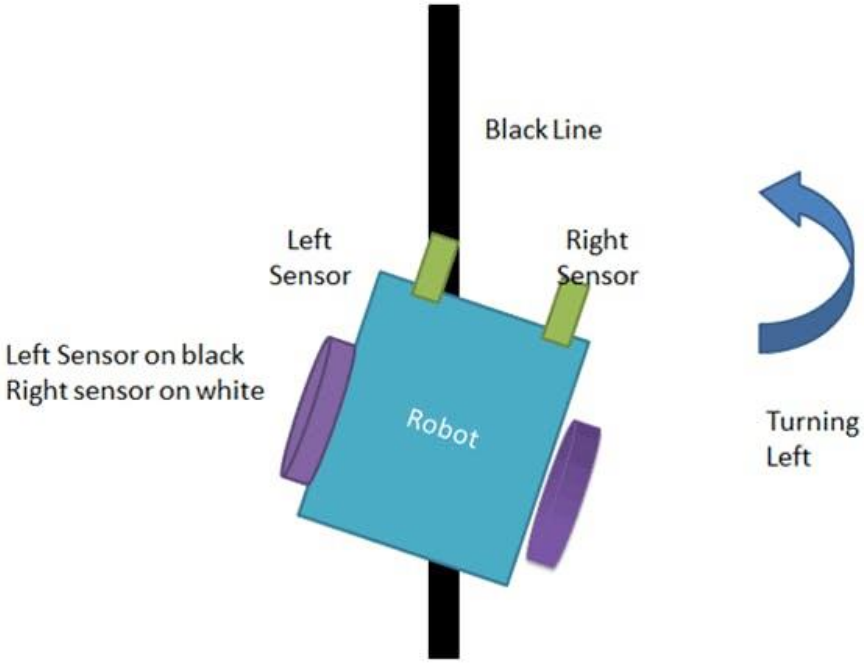
When infrared rays falls on white surface, it’s reflected back and caught by photodiodes which generates voltage changes. When IR light falls on a black surface, light is absorb by the black surface and no rays are reflected back, thus photo diode does not receive any light or rays.
Here in this arduino line follower robot when sensor senses white surface then arduino gets 1 as input and when senses black line arduino gets 0 as input.



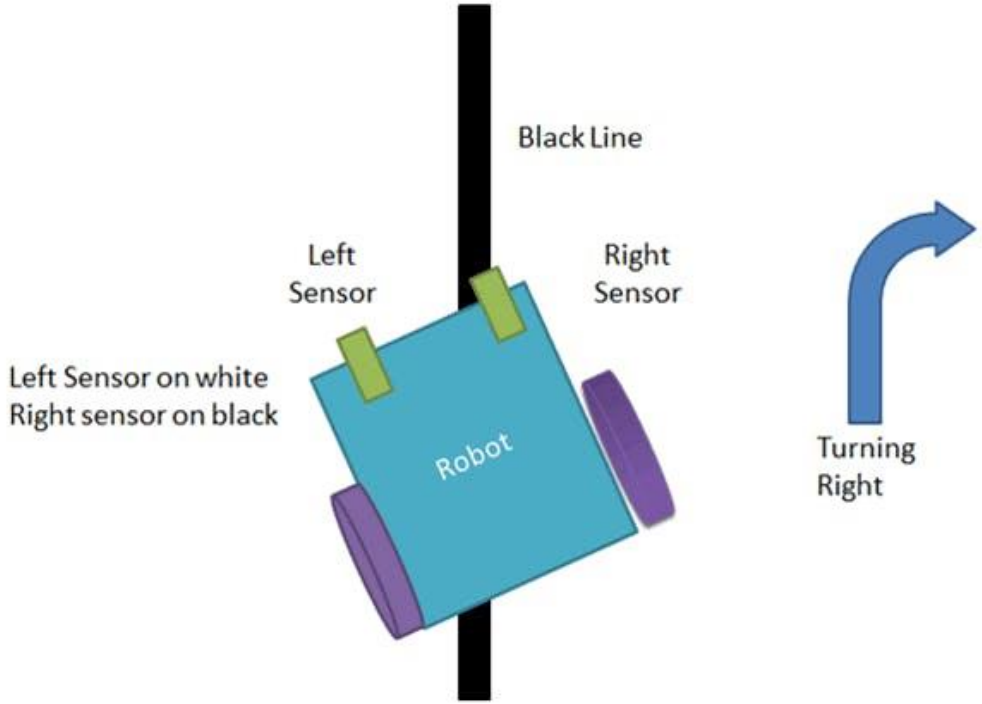
When both left and right sensor senses white then robot moves forward.



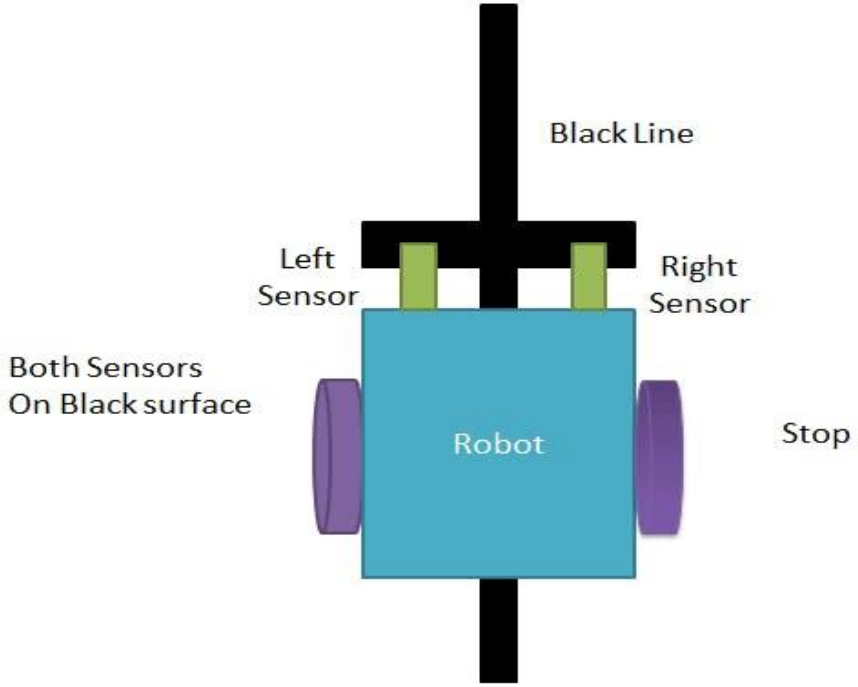
If left sensor comes on black line then robot turns left side.



If right sensor sense black line then robot turn right side until both sensor comes at white surface.



If both sensors comes on black line, robot stops



2- Ultrasonic Sensor:

It measures the distance of a target object by emitting **ultrasonic** sound waves, and converts the reflected sound into an electrical signal.

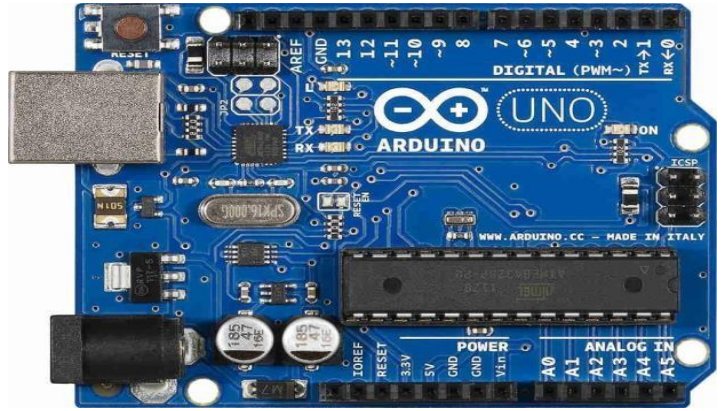
3- LDR Sensor:

This sensor for detect the light around the car so the lights of the car will be on or off based on the sensor signal.

Parts Used:

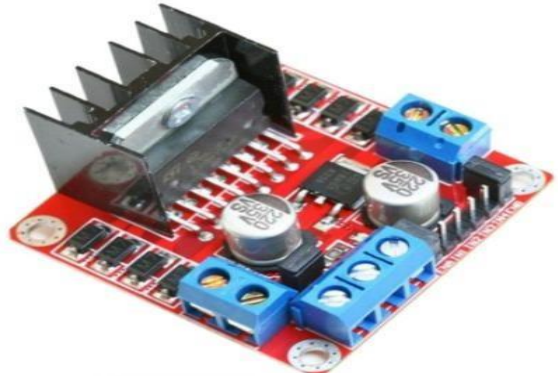
1- Arduino:

This part consist of physical programmable circuit and piece of software, it’s responsible for programming this car as desired and control it.



2- H -bridge motor driver

This part used for control the motors direction.



3- LEDs:

These LEDs will be on or off based on the light sensor’s readings

4- DC geared motor with wheels

This part is responsible for moving the car by the power that transmitted from DC geared motors to the wheels.

5- Small acrylic plate panel

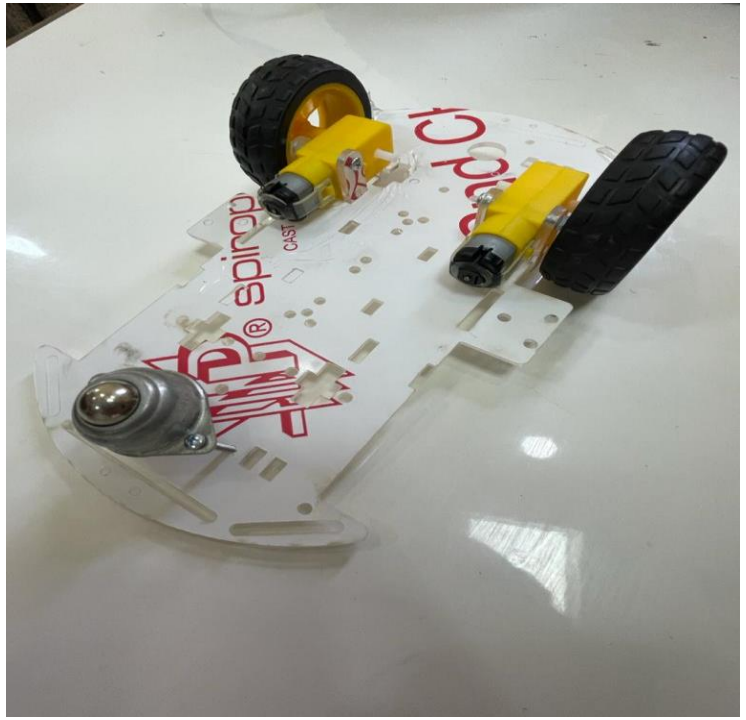
This part is for car chassis as all parts will be fixed on it.

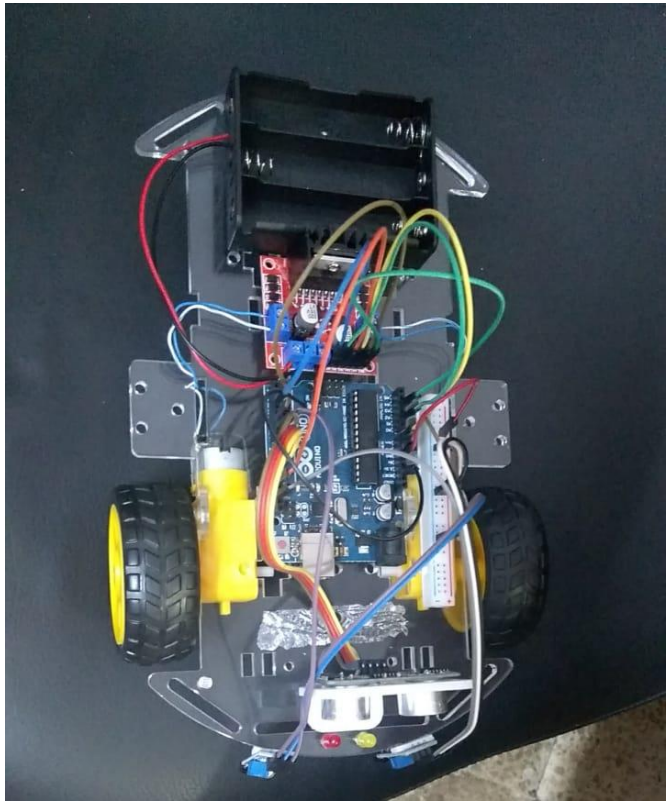
6- Metal caster Wheel

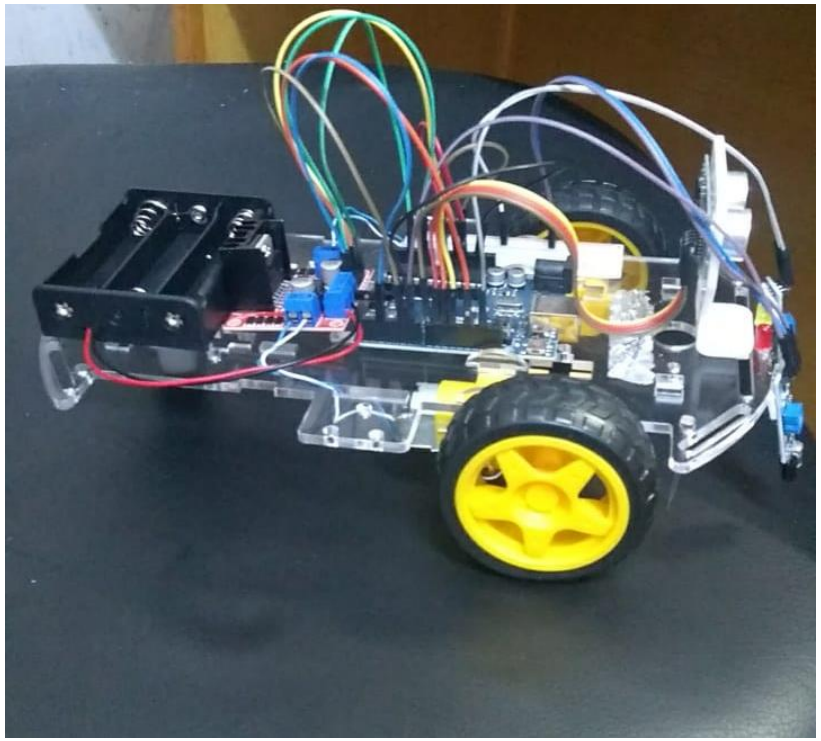
This part is responsible for make the car horizontal and more stable during moving and turning.

7- Battery and Battery Holder

Progress:



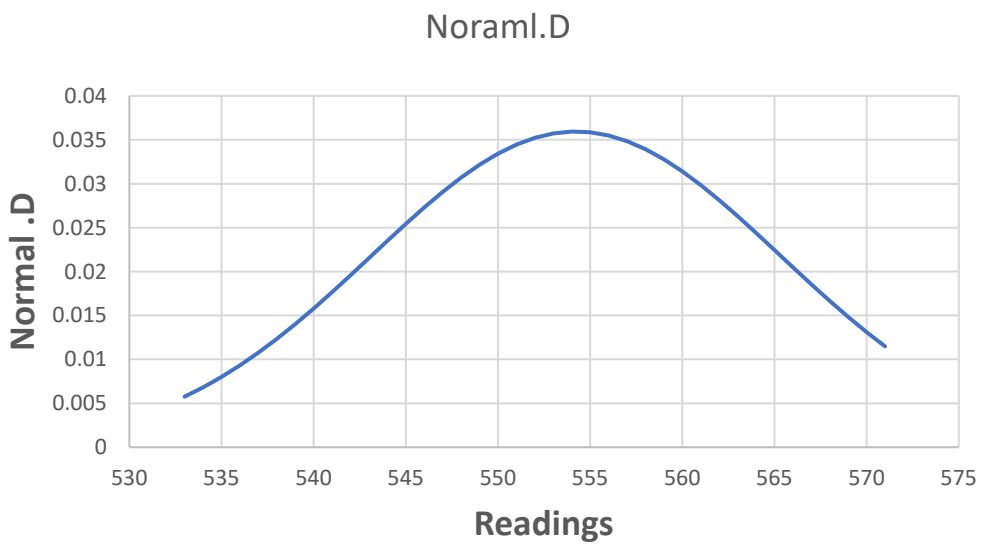




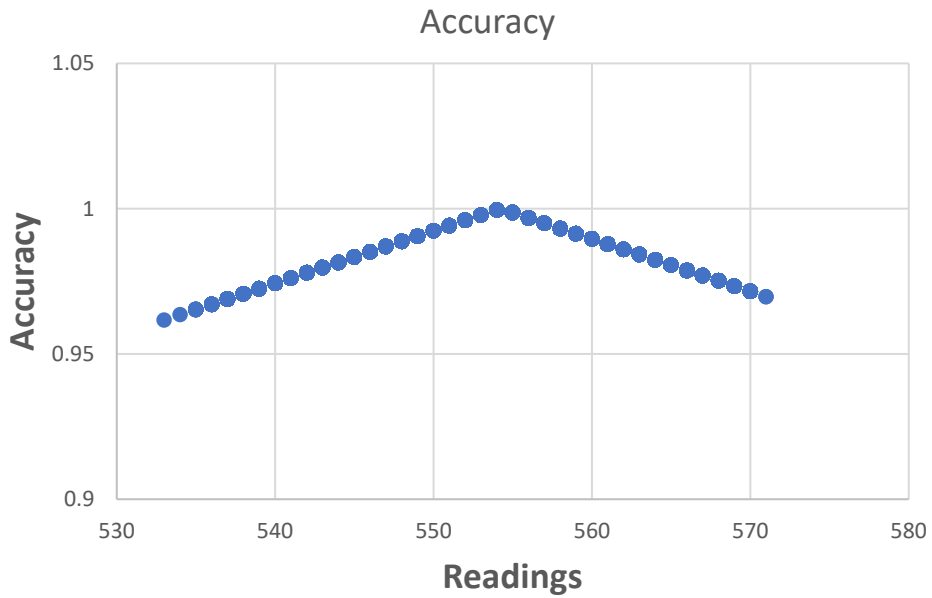
Sensors Readings:

LDR Sensor Readings at room light:

Normal Distribution Graph

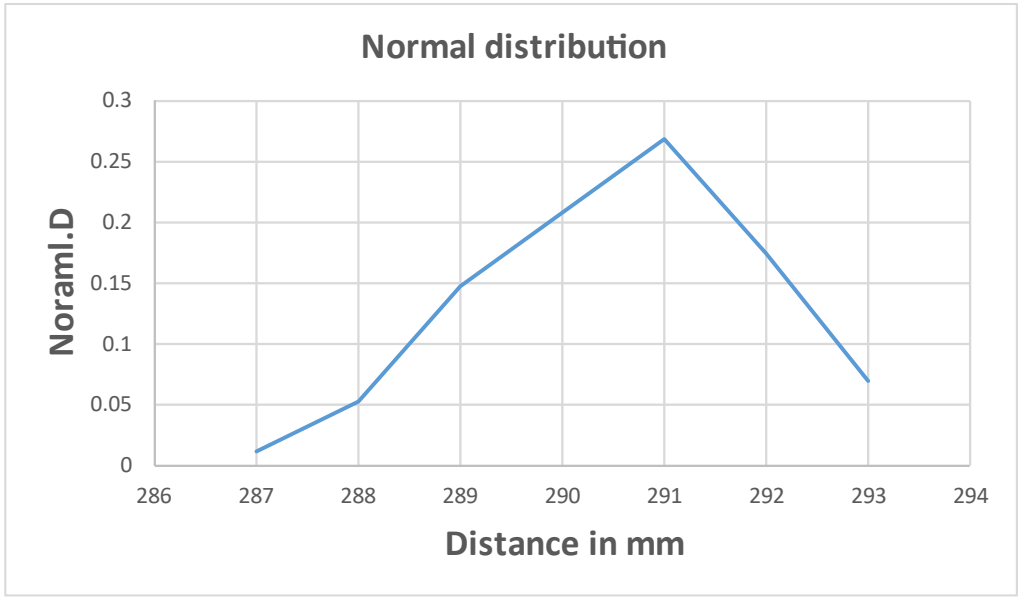


Accuracy Graph

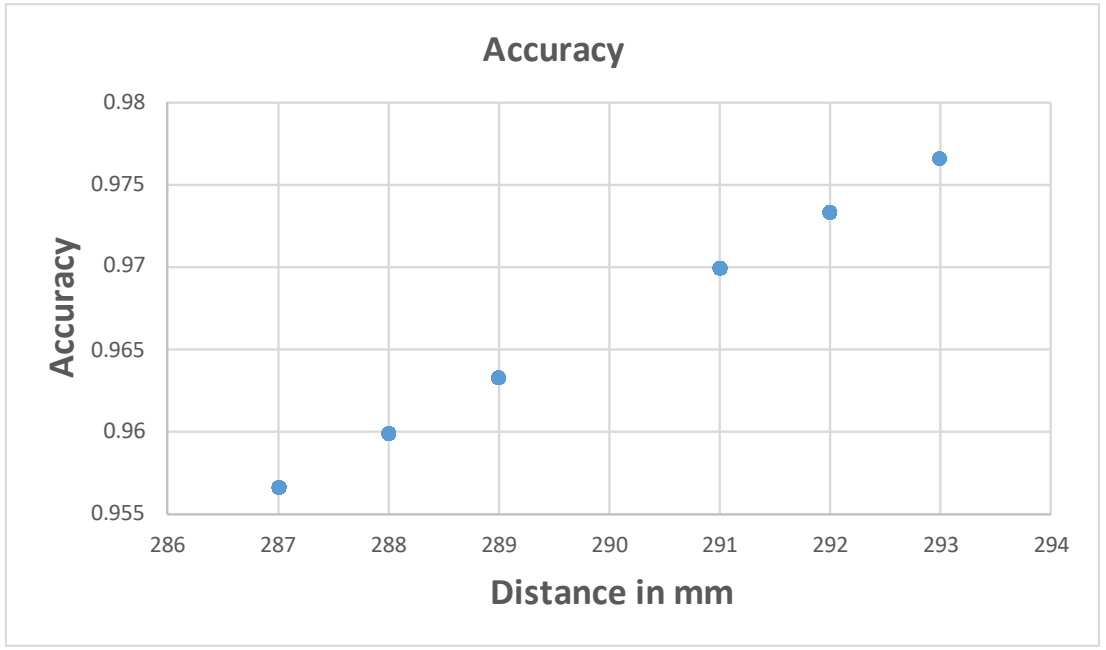


Us Sensor Readings at Actual distance 300 mm:

Normal Distribution Graph



Accuracy Graph



END OF SLIDES