COLOR SELECTOR ROBOT

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OUTLINE:

- Introduction
- What is color selector robot
- Hardware components
- Software needed
- Methodology
- Problems and constraints

INTRODUCTION:

- *Robotics is a science that combines the computer, mechanical and electrical engineering.*

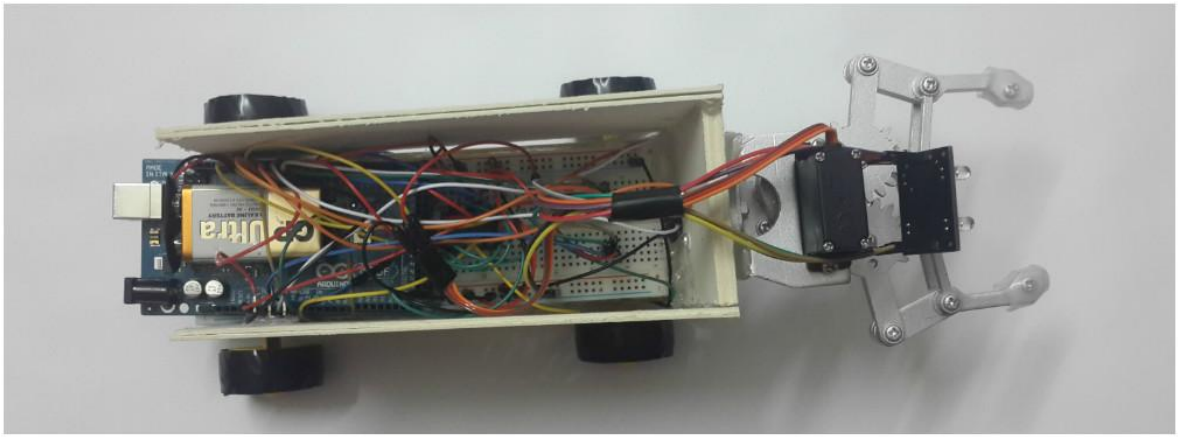
- *It deals with the design, construction, operation, and application of robots.*

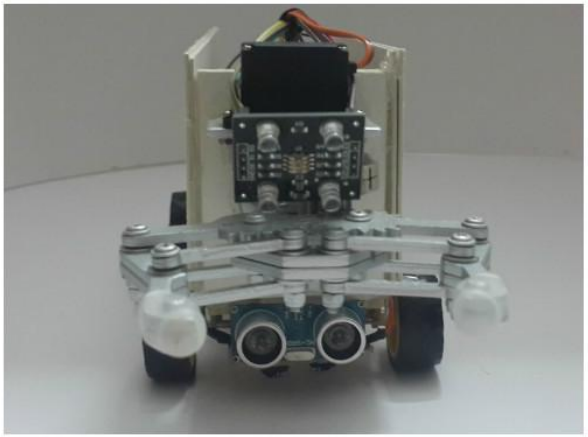
WHAT IS CSR:

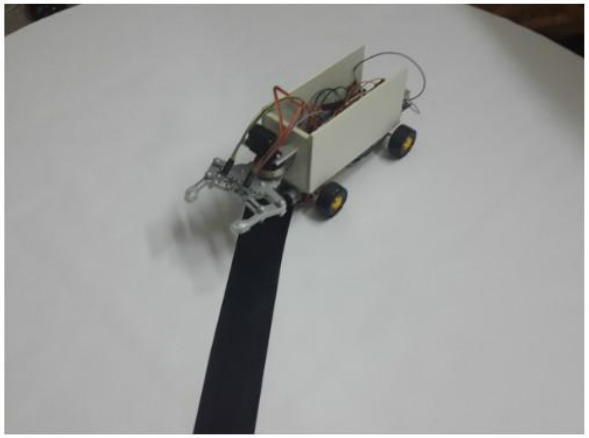
- *Color selector robot is an autonomous robot that works independently without any control or navigation.*

- *Its work depends on the programming that has been set in the microcontroller that used for the robot.*

WHAT IS CSR:





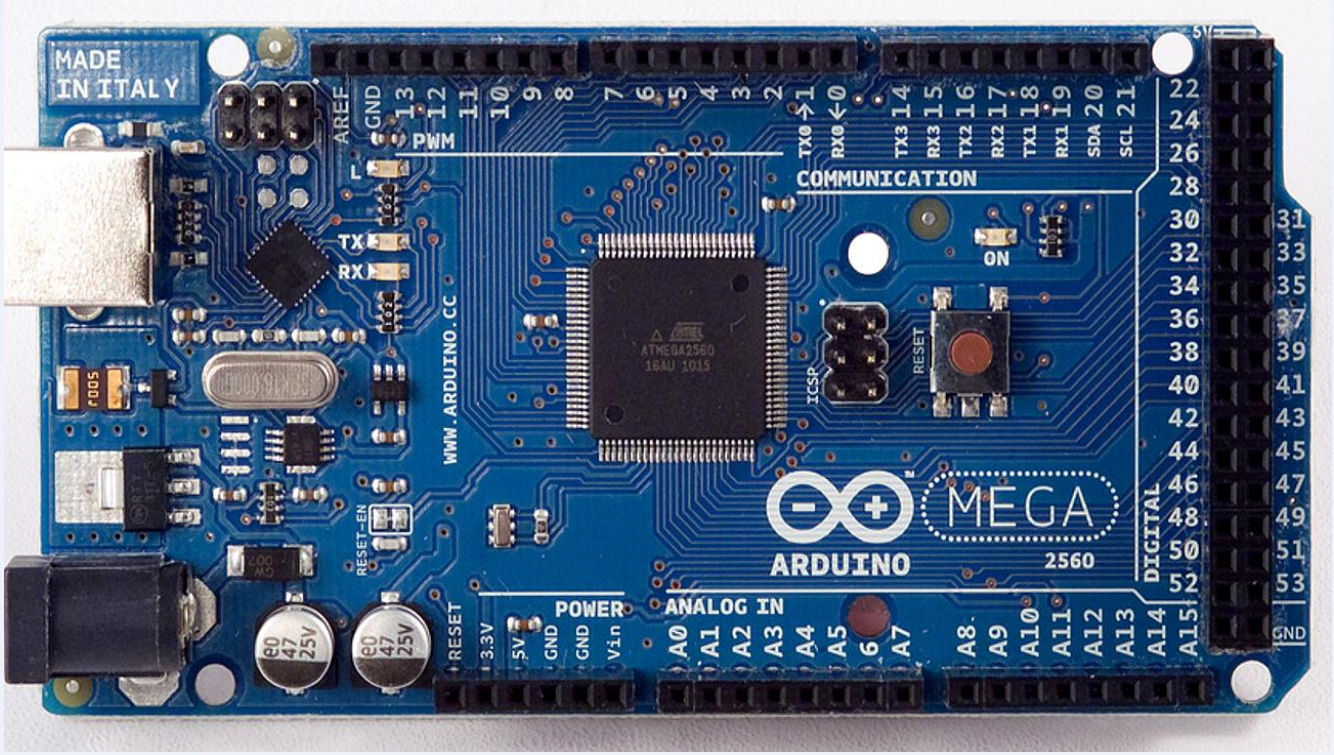


FEATURES:

- *Localization.*
- *Object detection.*
- *Color recognition.*
- *Line following.*
- *Material handling.*

HARDWARE COMPONENTS

HARDWARE: ARDUINO BOARD



Arduino MEGA 2560

HARDWARE: OV7670 CAMERA

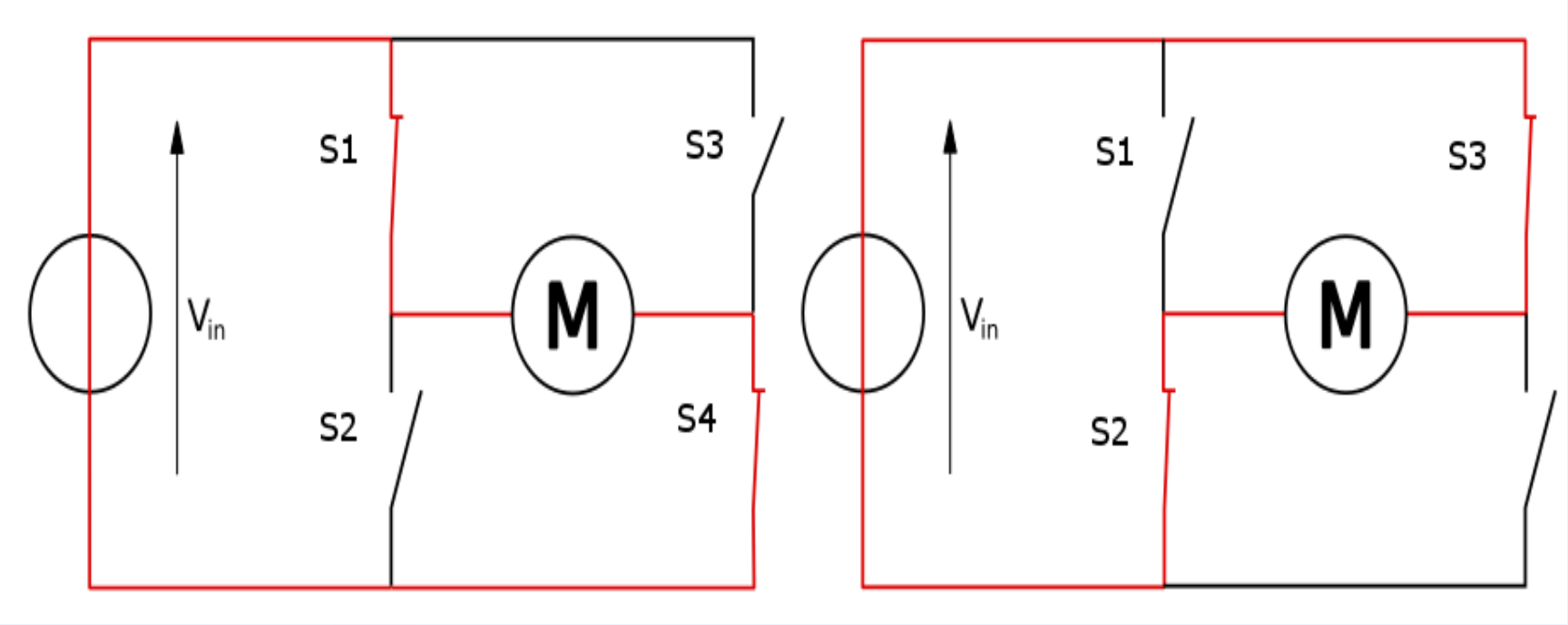
OV7670

HARDWARE: DC MOTORS & HBRIDGE

DC MOTOR

L293D

HARDWARE: DC MOTORS & HBRIDGE



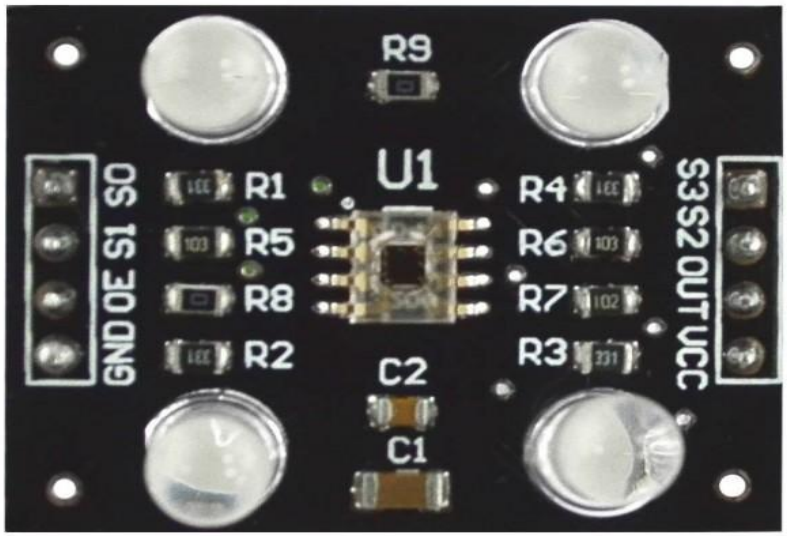
HARDWARE: ULTRASONIC SENSOR

ultrasonic sensor(HC_SR04)

HARDWARE: IR SENSOR

IR receiver transmitter (TCRT5000)

HARDWARE: COLOR SENSOR



color sensor(TCS3200)

S0	S1	OUTPUT FREQUENCY SCALING (f_o)
L	L	Power down
L	H	2%
H	L	20%
H	H	100%

S2	S3	PHOTODIODE TYPE
L	L	Red
L	H	Blue
H	L	Clear (no filter)
H	H	Green

HARDWARE: CLAW & SERVO MOTOR

Robotic Claw - MKII

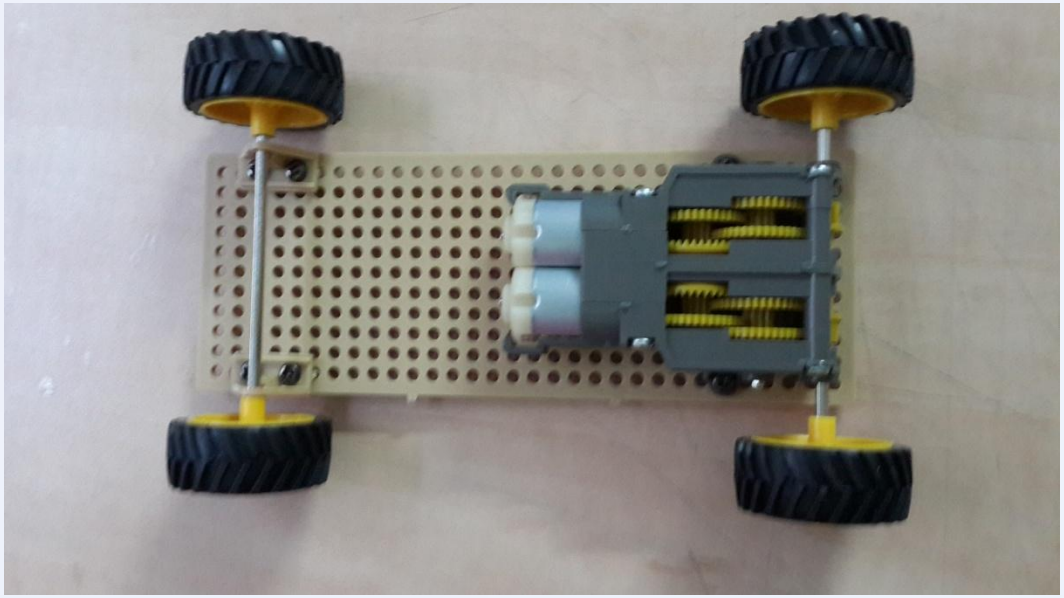
10333 servo motor

SOFTWARE NEEDED

- *We used arduino software to program the arduino board.*
- *The following libraries where used:*
  - *New Ping library : to read the ultrasonic .*
  - *Servo library : to control the servo motor and the claw .*

METHODOLOGY:

- *four wheeled vehicle with two wheels attached to H-Bridge and DC motors.*

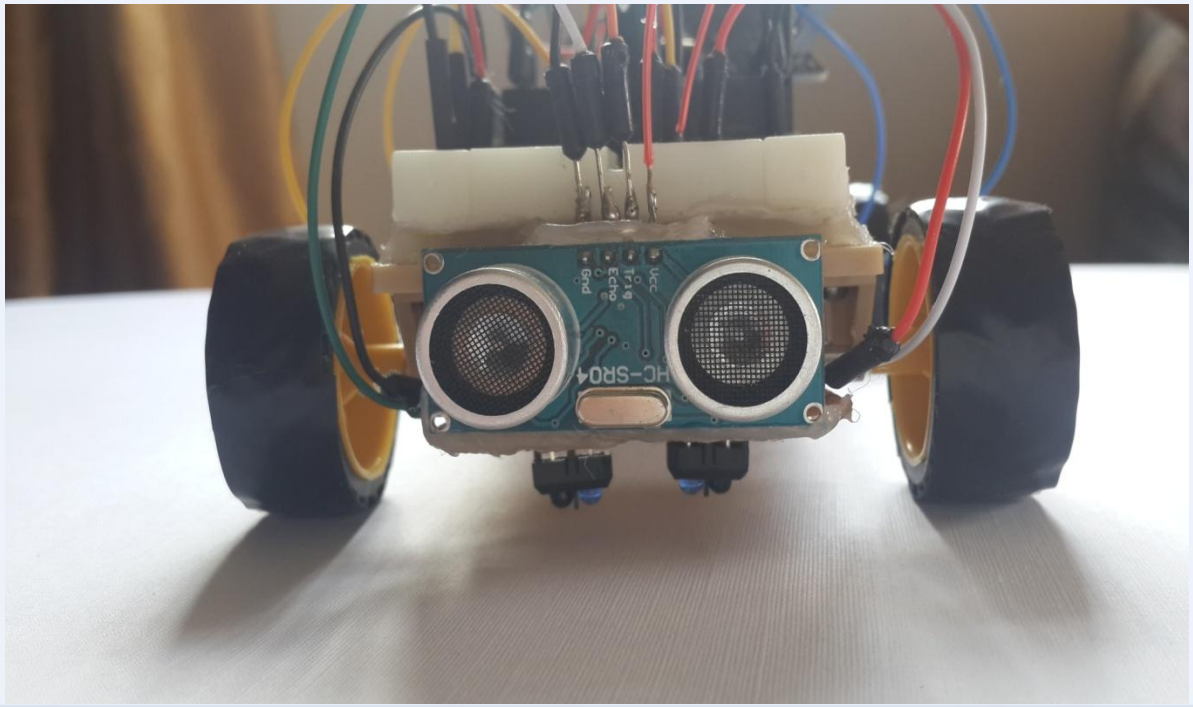


METHODOLOGY :

- *circular Playground with 1 meter diameter and a white surface.*
- *A black line lead the robot to the target .*

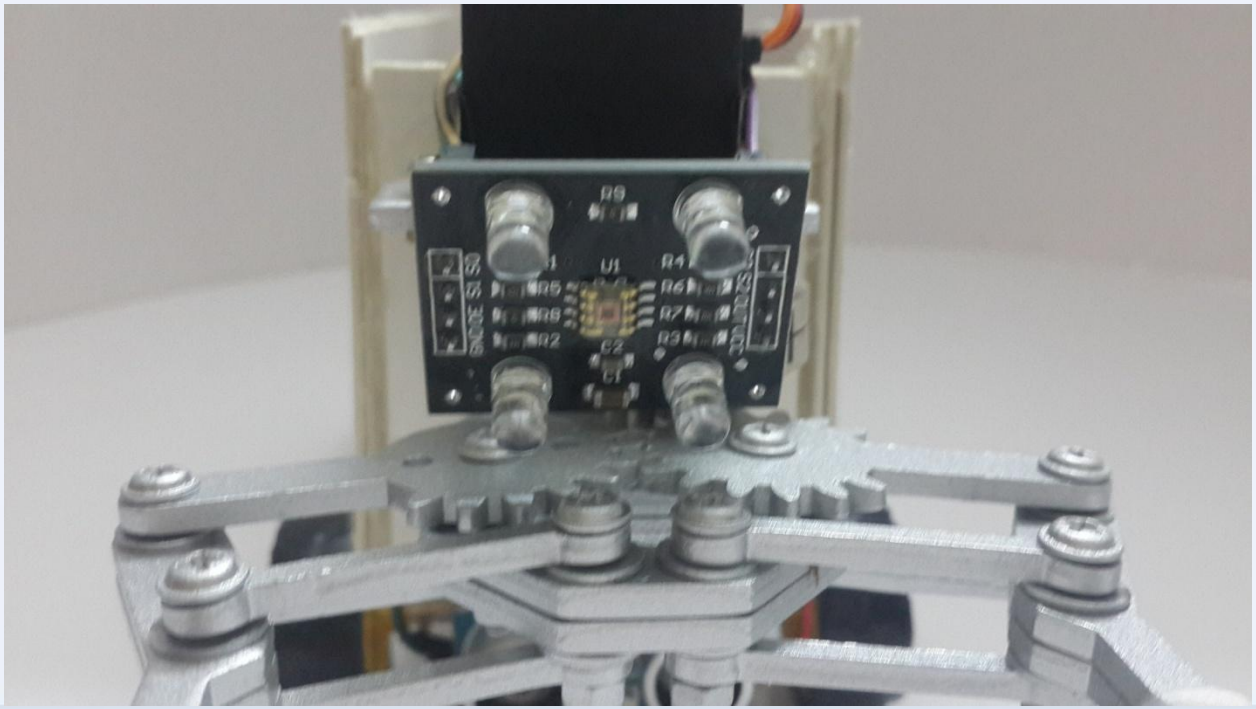
METHODOLOGY :

- *HC_RS04 ultra sonic for object detection.*



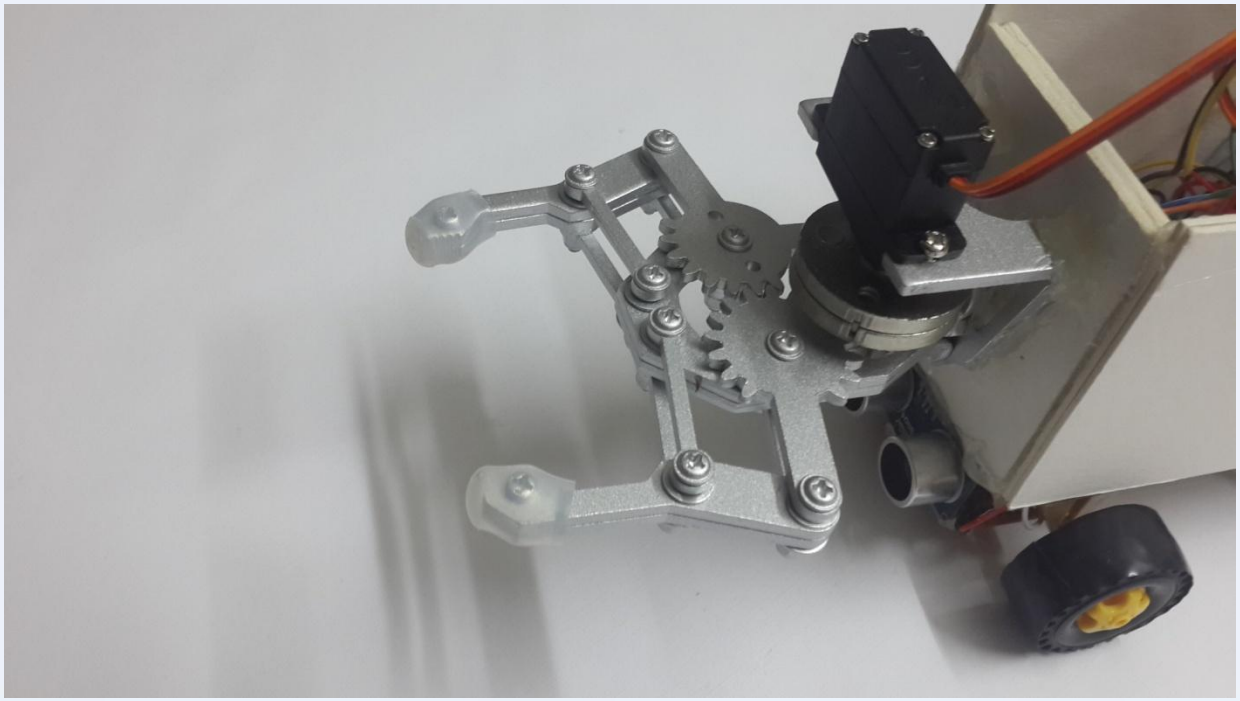
METHODOLOGY :

- *CTS3200 color sensor for color identification.*



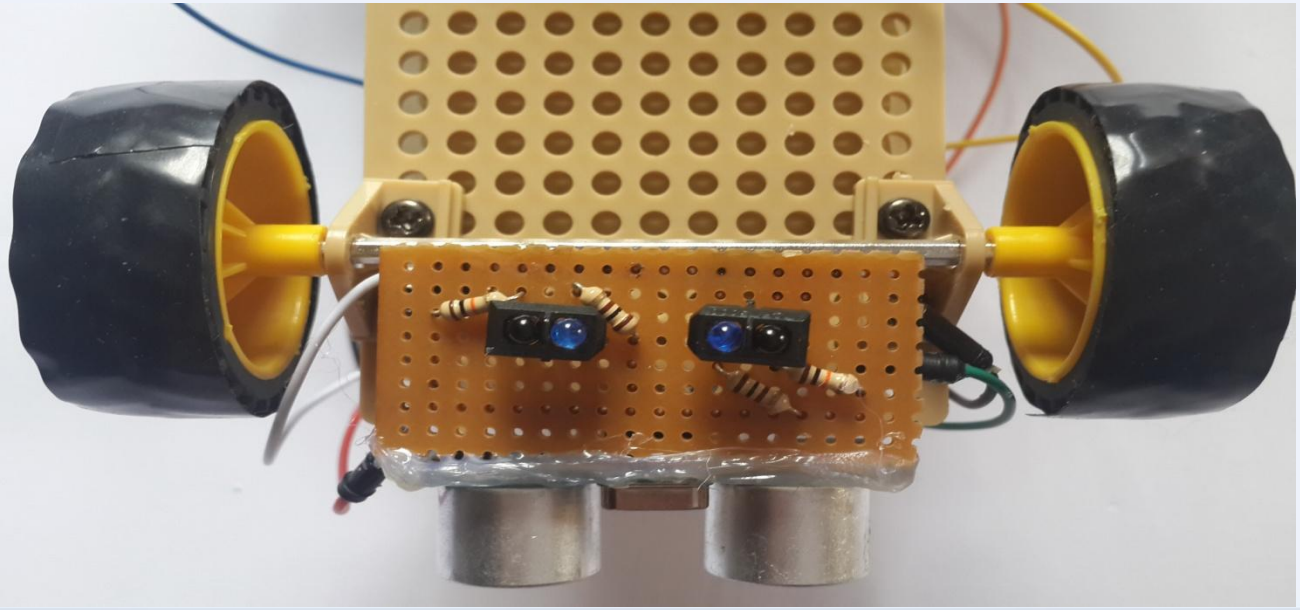
METHODOLOGY :

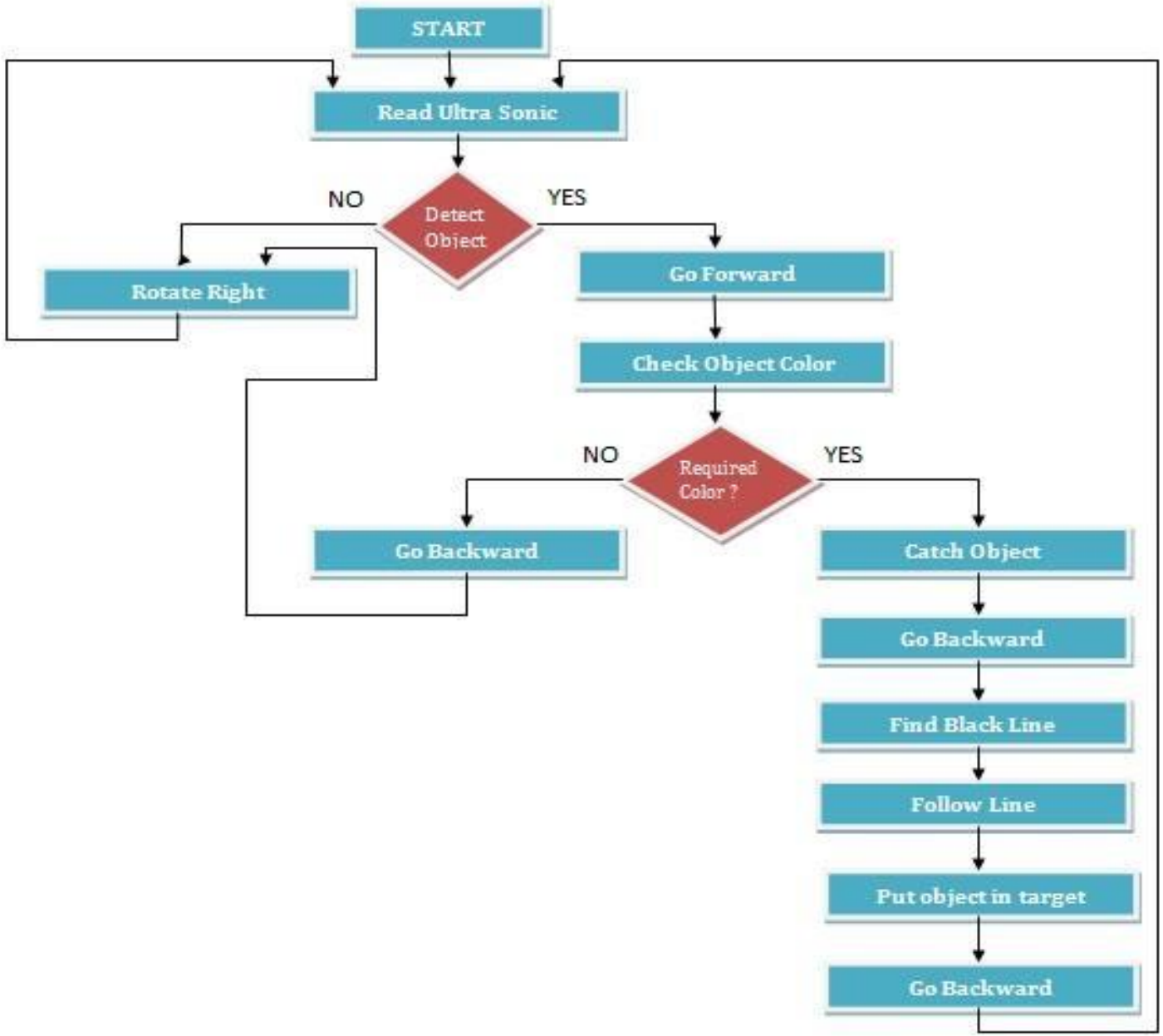
- *mechanical claw to grab the object.*



METHODOLOGY:

- *two RCTC5000 IR receiver transmitters for line following*




START
Read Ultra Sonic
Detect Object
NO
YES
Rotate Right
Go Forward
Check Object Color
Required Color ?
NO
YES
Go Backward
Catch Object
Go Backward
Find Black Line
Follow Line
Put object in target
Go Backward

PROBLEMS & CONSTRAINTS

- *Image processing Vs. sensors.*
- *Robot assembly.*
- *Hardware compatibility.*
- *Hardware availability.*

 THANK YOU