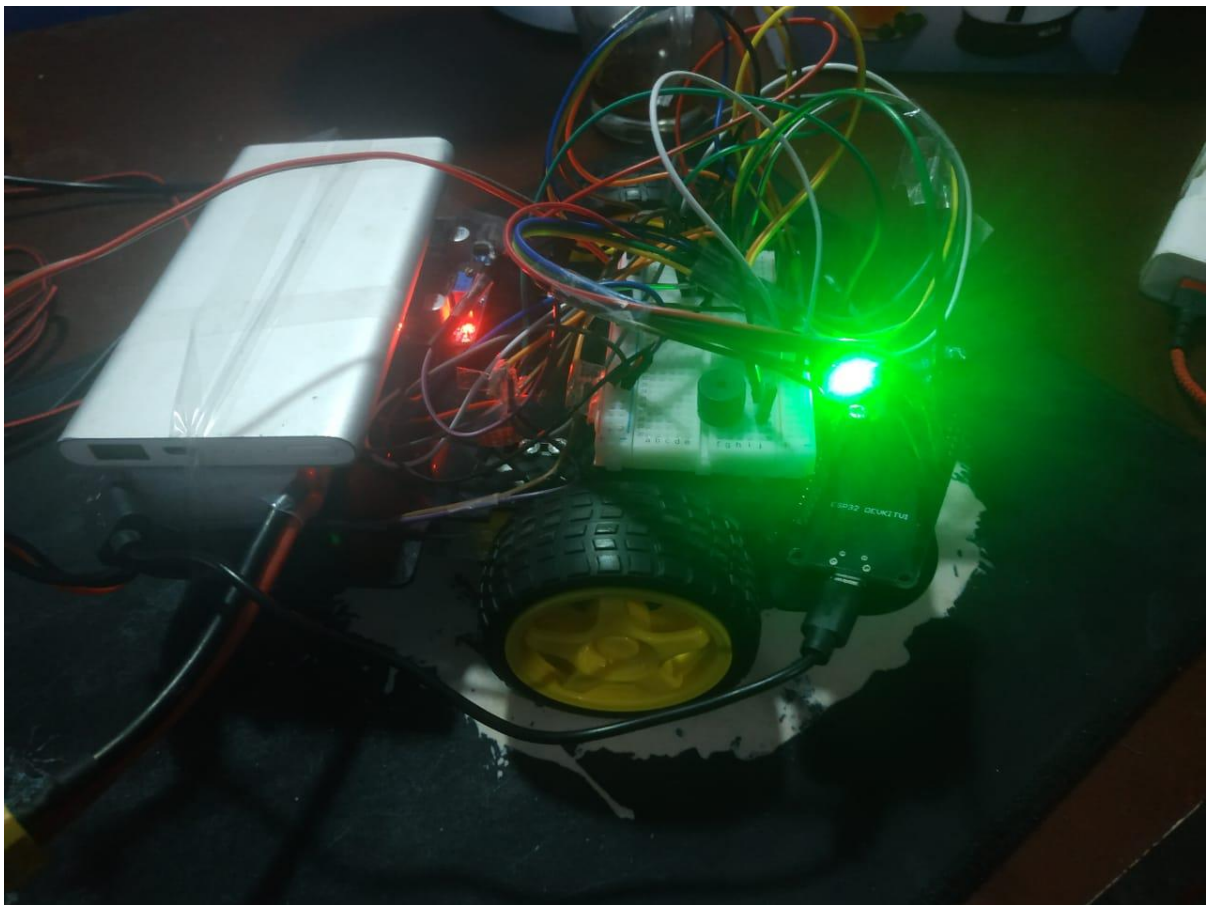


Obstacle Avoiding Robot With IR Sensor



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1. Abstract & Aim

Our hardware project is An obstacle avoiding robot which is a tiny example for our modern cars which will be all working with sensors and cameras for auto pilot systems for more comofort so we tried to constract a small model of it using ESP32 and IR sensor and some important components .

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2. Electrical description :

2.1. Used components :

1. Esp32 kit
2. L293d Ic
3. Buck converter
4. Dc motors , plastic wheels and cluster wheel
5. Lithium ion battery
6. IR (infra red) sensor
7. Buzzer
8. Bread board
9. Jumpers

-
- | | |
|---------------------|---|
| 1. Esp : | main micro controller |
| 2. L293d : | motor driver |
| 3. Buck converter : | to transform batteries voltage
into 5 volt |
| 4. IR sensor | detect obstacles |
-

L293D Pinout

PIN # 1: Enable 1,2	↔	↔	PIN # 16 : Vcc1
PIN # 2: Input1	↔	↔	PIN # 15 : Input4
PIN # 3: Output1	↔	↔	PIN # 14 : Output4
PIN # 4: GND	↔	↔	PIN # 13 : GND
PIN # 5: GND	↔	↔	PIN # 12 : GND
PIN # 6: Output2	↔	↔	PIN # 11 : Output3
PIN # 7: Input2	↔	↔	PIN # 10 : Input3
PIN # 8: Vcc2	↔	↔	PIN # 9: Enable 3,4

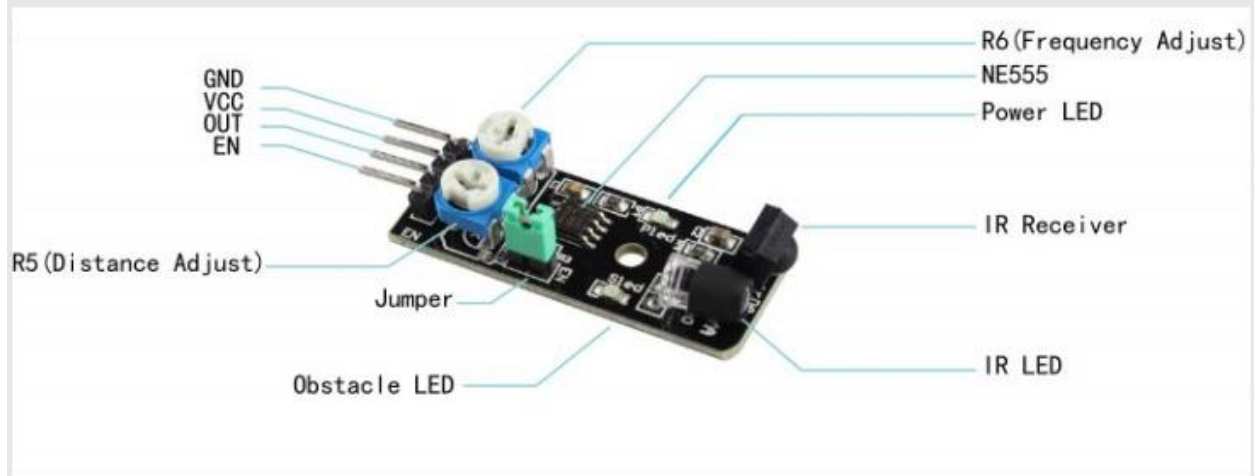
L293D Animation



L293D IC

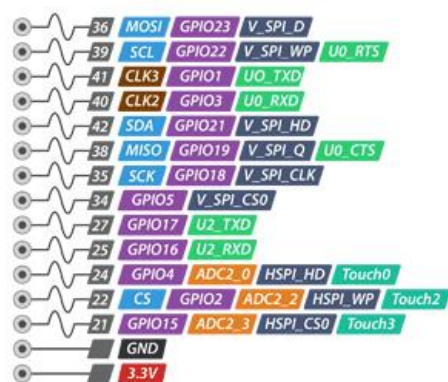
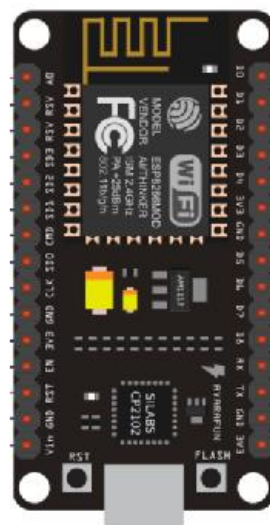
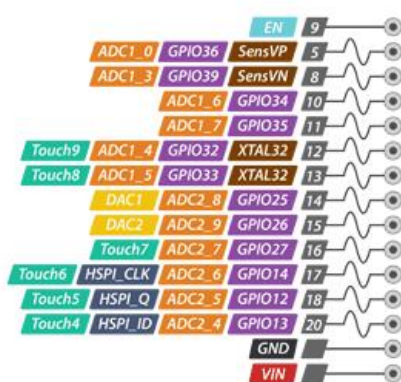
www.TheEngineeringProjects.com

HOW IT WORKS ?





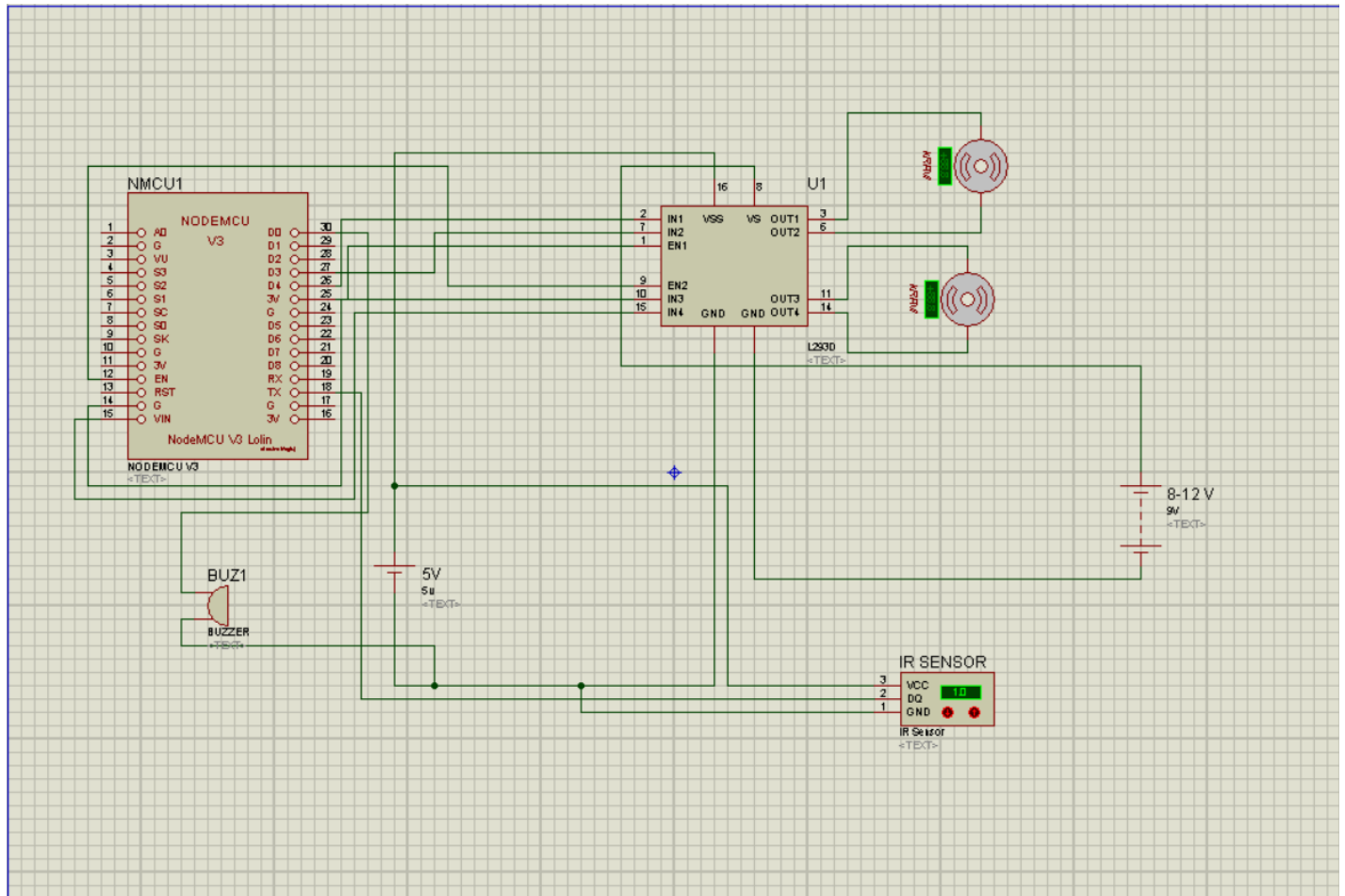
voltage adjustment
clockwise boost
counterclockwise buck



ESP32 Dev. Board Pinout



SCHEM OF CIRCUIT :



2.3.PROCEDURE TO USE :

- 1.CONNECT THE BATTERY (TURN THE SWITCH ON)
- 2.LEAVE IT ON THE GROUND
3. IT WILL AVOID THE Walls crashing when its sensor see any of them
4. algorithm is to stop play alarm get back slightly turn right then check if there is any other Obstacle , if not continue walking ahead

3.mechanical description :

- 1.We used a custom CNC chassis of plastic material
2. plastic wheels
- 3.cluster wheel

4. budget :

Component	Price
IR sensor	25 LE
L293d IC	18 LE
Esp32 kit	200 LE
Small size bread board	20 LE
Buck converter	35 LE
Plastic wheels	Borrowed
battery	//
Power bank	//
Dc motors	//
Buzzer	5 LE

5.challenge faced team :

1. Coding the esp32 using Arduino IDE and understanding the difference between esp32 and Arduino
 2. Servo motor has broken down and we had to change the algorithm
 3. Power issue of the sensors : sensors wasn't able to take a 5volt power from any thing but for external arduino uno and not the 5 volt regulator which we used and we solved this problem using the buck converter
 4. Debugging code to take appropriate decisions
-

References :

- 1.Wiley.Exploring.Arduino.Jul.2013
 2. <https://diyi0t.com/infrared-sensor-tutorial-for-arduino-and-esp8266/>
 - 3.youtube tutorials
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