

obstacle avoidance robot

The background of the slide is a 3D rendering of a maze. The maze is composed of dark grey walls and light grey paths. A small, blue, stylized human-like figure is standing on one of the paths, facing towards the right. The lighting creates shadows, giving the maze a three-dimensional appearance.

Name : Ahmed Alrashidi
ID: 44151822

Embedded systems (2154)
Dr. Ibrahim Alruba



Robot Car

- the functionality of the robot car . This robot car can avoid obstacles. An ultrasonic sensor is mainly used for this purpose. We can get the distance through this sensor. Also, we can do this by calculating the obstacle distance range. This robot uses Small wood plaque and Wood sticks for the motors, wheels, and chassis. Because I do this design at a low cost. So, all these components are controlled via the Arduino Uno board.

I needed to design the robot

- Arduino Uno board .

- Motor driver board .

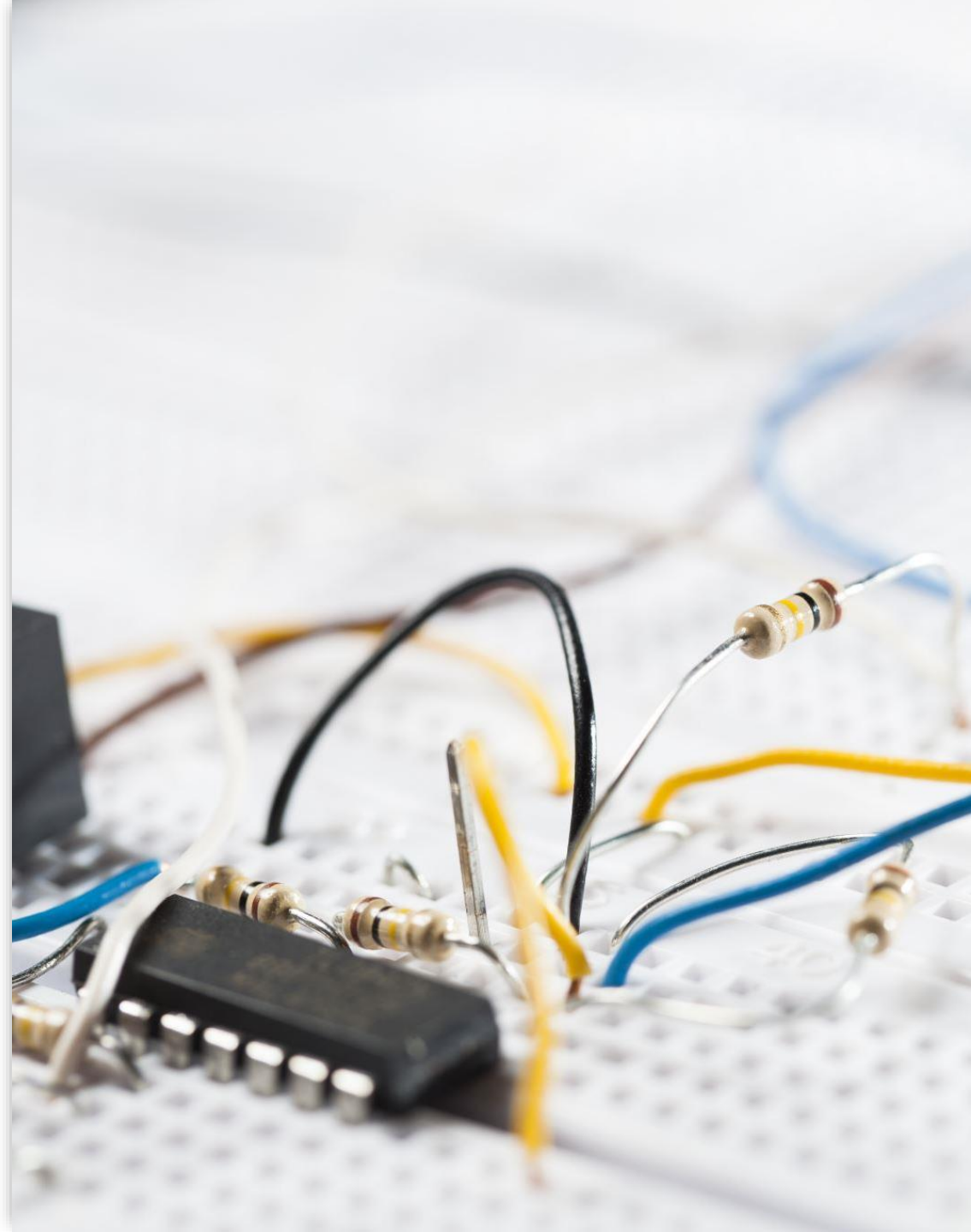
- Ultrasonic sensor .

- Small wood plaque.

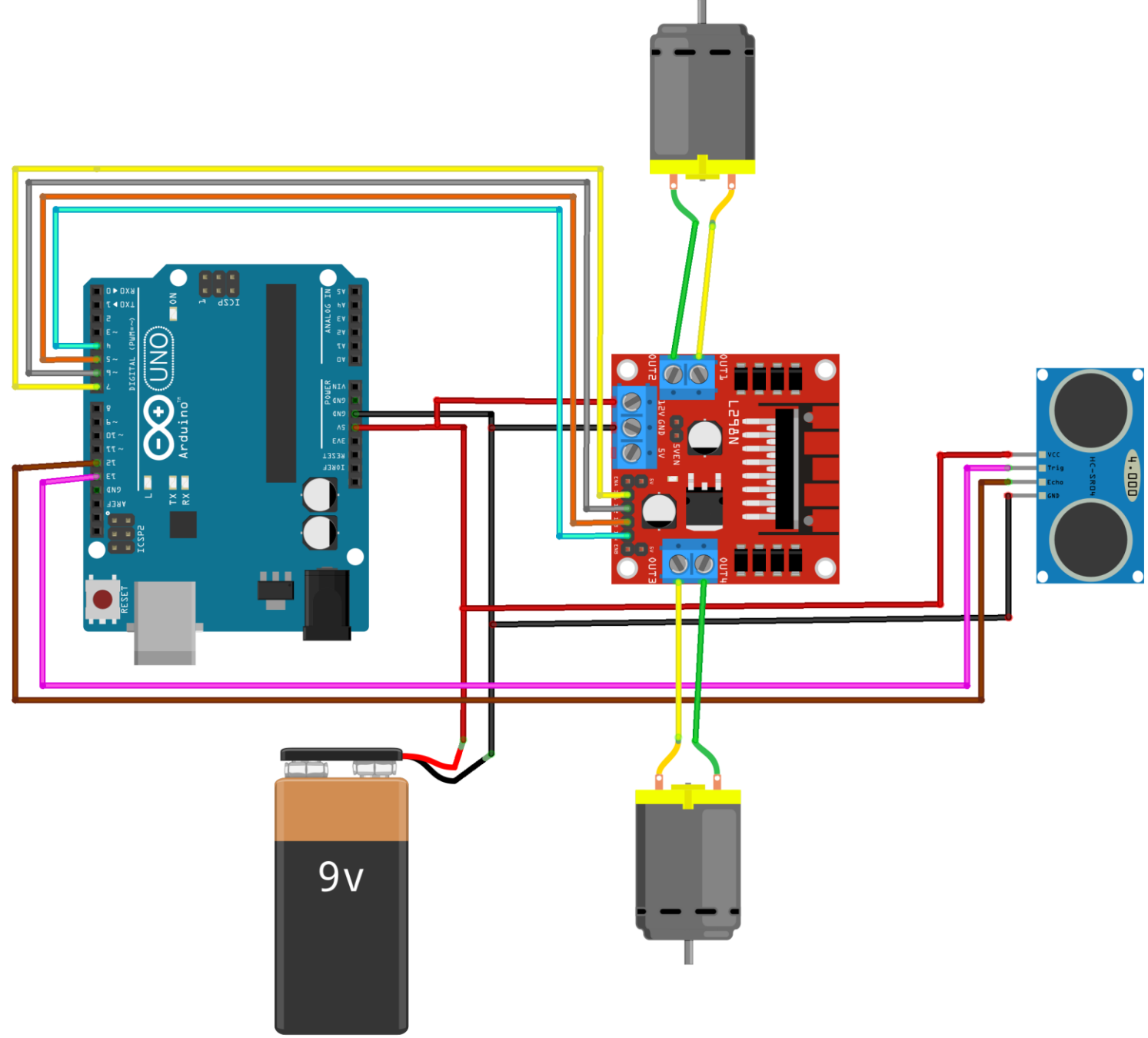
- Wood sticks.

- wires.

- power bank



Circuit Diagram



```
#include <NewPing.h>

int TrigPin=13;
int EchoPin=12;
int MaxDistance=200; // اعلى مسافة 2 متر
int Distance; // متغير حساب المسافة للمقارنه
NewPing sonar(TrigPin, EchoPin,
MaxDistance); // وحساب المسافة تشغيل الحساس

void setup() {
    Serial.begin(9600);
    // L298N توصيل الاسلاك حقت
    // كلها اوتبوت عشان اتحكم في المواطير
    pinMode(7,OUTPUT);
    pinMode(6,OUTPUT);
    pinMode(5,OUTPUT);
    pinMode(4,OUTPUT);
}
```

```
void loop() {
    Distance = sonar.ping_cm(); // قياس المسافة تخزينها في المتغير
    delay(50);
    Serial.println(Distance);
    if(Distance>=30) // اذا المسافة اكبر من 30 كل المواطير تدور مع عقارب
    الساعة
    { // MOTOR1
        digitalWrite(7,LOW);
        digitalWrite(6,HIGH);
        //MOTOR2
        digitalWrite(5,LOW);
        digitalWrite(4,HIGH); }
    if(Distance<30) // اذا المسافة اقل من 30 ماطور يلف عكس ماطور
    { //MOTOR 1
        digitalWrite(7,HIGH);
        digitalWrite(6,LOW);
        // MOTOR2
        digitalWrite(5,LOW);
        digitalWrite(4,HIGH); }}
```