AUTOMATIC OBSTACLES AVOIDER ROBOT

Components:

1. Arduino UNO Board
2. L298N H- Bridge module
3. HC-SR04 Sensor (Ultrasonic sensor)
4. MG-995 Servo (Servo motor)
5. BO-Motors (DC motor x2)
6. 2 x wheel and one caster wheel
7. Small Breadboard
8. Chassis
9. Required Jumper cables
10. 9V battery
11. DC jack for Arduino UNO

PIN CONFIGURATION

SERVO MOTOR CONNECTION	ARDUINO BOARD
CONTROL PIN	10
VCC	5V
GND	GROUND

L298N MOTOR CONNECTION	ARDUINO BOARD
IN 1 for left	6
IN 2 for left	7
IN3 for right	4
IN4 for right	5
GND	GROUND
L298N MOTOR CONNECTION	**9V BATTERY**
VCC	POSITIVE
GND	NEGATIVE

Output1 -Left motor

Output2 -Left motor

Output3 -Right motor

Output4 -Right motor

→

FOR L298N WITH

BO MOTORS

ULTRASONIC SENSOR CONNECTION	ARDUINO BOARD
VCC	5V
TRIGGER	A1
ECHO	A2
GND	GROUND

Code of this Project

```
#include <Servo.h>          //Servo motor library. This is standard library
#include <NewPing.h>        //Ultrasonic sensor function library. You must install this library

//our L298N control pins
const int LeftMotorForward = 7;
const int LeftMotorBackward = 6;
const int RightMotorForward = 4;
const int RightMotorBackward = 5;

//sensor pins
#define trig_pin A1 //analog input 1
#define echo_pin A2 //analog input 2

#define maximum_distance 200
boolean goesForward = false;
int distance = 100;

NewPing sonar(trig_pin, echo_pin, maximum_distance); //sensor function
Servo servo_motor; //our servo name


void setup(){

  pinMode(RightMotorForward, OUTPUT);
  pinMode(LeftMotorForward, OUTPUT);
  pinMode(LeftMotorBackward, OUTPUT);
  pinMode(RightMotorBackward, OUTPUT);

  servo_motor.attach(10); //our servo pin

  servo_motor.write(115);
  delay(2000);
  distance = readPing();
  delay(100);
  distance = readPing();
  delay(100);
  distance = readPing();
  delay(100);
  distance = readPing();
  delay(100);
}

void loop(){

  int distanceRight = 0;
  int distanceLeft = 0;
  delay(50);

  if (distance <= 20){
    moveStop();
    delay(300);
    moveBackward();
    delay(400);
    moveStop();
    delay(300);
    distanceRight = lookRight();
    delay(300);
    distanceLeft = lookLeft();
    delay(300);

    if (distance >= distanceLeft){
      turnRight();
      moveStop();
    }
    else{
      turnLeft();
      moveStop();
    }
  }
  else{
    moveForward();
  }
```

```
    distance = readPing();
}

int lookRight(){
  servo_motor.write(50);
  delay(500);
  int distance = readPing();
  delay(100);
  servo_motor.write(115);
  return distance;
}

int lookLeft(){
  servo_motor.write(170);
  delay(500);
  int distance = readPing();
  delay(100);
  servo_motor.write(115);
  return distance;
  delay(100);
}

int readPing(){
  delay(70);
  int cm = sonar.ping_cm();
  if (cm==0){
    cm=250;
  }
  return cm;
}

void moveStop(){

  digitalWrite(RightMotorForward, LOW);
  digitalWrite(LeftMotorForward, LOW);
  digitalWrite(RightMotorBackward, LOW);
  digitalWrite(LeftMotorBackward, LOW);
}

void moveForward(){

  if(!goesForward){

    goesForward=true;

    digitalWrite(LeftMotorForward, HIGH);
    digitalWrite(RightMotorForward, HIGH);

    digitalWrite(LeftMotorBackward, LOW);
    digitalWrite(RightMotorBackward, LOW);
  }
}

void moveBackward(){

  goesForward=false;

  digitalWrite(LeftMotorBackward, HIGH);
  digitalWrite(RightMotorBackward, HIGH);

  digitalWrite(LeftMotorForward, LOW);
  digitalWrite(RightMotorForward, LOW);

}

void turnRight(){

  digitalWrite(LeftMotorForward, HIGH);
  digitalWrite(RightMotorBackward, HIGH);

  digitalWrite(LeftMotorBackward, LOW);
  digitalWrite(RightMotorForward, LOW);

  delay(500);

  digitalWrite(LeftMotorForward, HIGH);
  digitalWrite(RightMotorForward, HIGH);

  digitalWrite(LeftMotorBackward, LOW);
  digitalWrite(RightMotorBackward, LOW);


```

```

}

void turnLeft(){

  digitalWrite(LeftMotorBackward, HIGH);
  digitalWrite(RightMotorForward, HIGH);

  digitalWrite(LeftMotorForward, LOW);
  digitalWrite(RightMotorBackward, LOW);

  delay(500);

  digitalWrite(LeftMotorForward, HIGH);
  digitalWrite(RightMotorForward, HIGH);

  digitalWrite(LeftMotorBackward, LOW);
  digitalWrite(RightMotorBackward, LOW);
}
```