M.KUMARASAMY
COLLEGE OF ENGINEERING
NAAC Accredited Autonomous Institution
Approved by AICTE & Affiliated to Anna University
ISO 9001:2015 & ISO 14001:2015 Certified Institution
Thalavapalayam, Karur – 639 113.

OBSTACLE AVOIDING CAR

A MINOR PROJECT - II REPORT

Submitted by

DINESH.V	**927621BEC050**
GOWSIK.T	**927621BEC053**
KIRTHIKKUMAR.S	**927621BEC0305**
AJAYRAGHAV.R	**927621BEC009**

BACHELOR OF ENGINEERING

in

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

M.KUMARASAMY COLLEGE OF ENGINEERING

(Autonomous)

KARUR – 639 113

APRIL-2023

M.KUMARASAMY COLLEGE OF ENGINEERING, KARUR

BONAFIDE CERTIFICATE

Certified that this **18ECP104L - Minor Project II** report "**OBSTACLE AVOIDING CAR"** the bonafied work of "**DINESH.V (927621BEC050),GOWSIK (927621BEC053), KIRTHIKKUMAR.S (927621BEC305), AJAYRAGHAV.R (927621BEC009)** who carried out the project work under my supervision in the academic year **2022-2023 EVEN.**

SIGNATURE	**SIGNATURE**
Dr.S.PALANIVEL RAJAN, M.E., M.B.A., Ph.D., D.Litt (USA).,	**Ms.S.VASUKI,M.E**
HEAD OF THE DEPARTMENT,	**SUPERVISOR,**
Professor,	ASSISTANT PROFESSOR
Department of Electronics and	Department of Electronics and
Communication Engineering,	Communication Engineering,
M.Kumarasamy College of Engineering,	M.Kumarasamy College of
Thalavapalayam,	Engineering,Thalavapalayam,
Karur-639113.	Karur-639113.

This Minor project-II report has been submitted for the **18ECP104L – Minor Project -II**

Review held at M. Kumarasamy College of Engineering, Karur on _____.

PROJECT COORDINATOR

INSTITUTION VISION AND MISSION

Vision

To emerge as a leader among the top institutions in the field of technical education.

Mission

M1: Produce smart technocrats with empirical knowledge who can surmount the global challenges.

M2: Create a diverse, fully -engaged, learner -centric campus environment to provide quality education to the students.

M3: Maintain mutually beneficial partnerships with our alumni, industry and professional associations

DEPARTMENT VISION, MISSION, PEO, PO AND PSO

Vision

To empower the Electronics and Communication Engineering students with emerging technologies, professionalism, innovative research and social responsibility.

Mission

M1: Attain the academic excellence through innovative teaching learning process, research areas & laboratories and Consultancy projects.

M2: Inculcate the students in problem solving and lifelong learning ability.

M3: Provide entrepreneurial skills and leadership qualities.

M4: Render the technical knowledge and skills of faculty members.

Program Educational Objectives

PEO1: **Core Competence:** Graduates will have a successful career in academia or industry associated with Electronics and Communication Engineering

PEO2: **Professionalism:** Graduates will provide feasible solutions for the challenging problems through comprehensive research and innovation in the allied areas of Electronics and Communication Engineering.

PEO3: **Lifelong Learning:** Graduates will contribute to the social needs through lifelong learning, practicing professional ethics and leadership quality

Program Outcomes

PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes

PSO1: Applying knowledge in various areas, like Electronics, Communications, Signal processing, VLSI, Embedded systems etc., in the design and implementation of Engineering application.

PSO2: Able to solve complex problems in Electronics and Communication Engineering with analytical and managerial skills either independently or in team using latest hardware and software tools to fulfil the industrial expectations.

Abstract	**Matching with POs, PSOs**
Ultrasonic sensor ,Motor drive, Arduino UNO, Motor ,Wheel..	PO1,PO9,PSO1

ACKNOWLEDGEMENT

Our sincere thanks to **Thiru.M.Kumarasamy, Chairman** and **Dr.K.Ramakrishnan, Secretary** of **M.Kumarasamy College of Engineering** for providing extraordinary infrastructure, which helped us to complete this project in time.

It is a great privilege for us to express our gratitude to **Dr.B.S.Murugan., B.Tech., M.Tech., Ph.D., Principal** for providing us right ambiance to carry out this project work.

We would like to thank **Dr.S.Palanivel Rajan, M.E., M.B.A., Ph.D., D.Litt (USA)., Professor and Head**, **Department of Electronics and Communication Engineering** for his unwavering moral support and constant encouragement towards the completion of this project work.

We offer our wholehearted thanks to our Project Supervisor, **Ms.S.VASUKI,M.E**, , **ASSISTANT PROFESSOR** Department of Electronics and Communication Engineering for his precious guidance, tremendous supervision, kind cooperation, valuable suggestions and support rendered in making our project to be successful.

We would like to thank our **Minor Project Co-ordinator**, **Dr.K.KARTHIKEYAN., M.Tech ,Ph.D, Associate Professor**, Department of Electronics and Communication Engineering for his kind cooperation and culminating in the successful completion of this project work. We are glad to thank all the Faculty Members of the Department of Electronics and Communication Engineering for extending a warm helping hand and valuable suggestions throughout the project. Words are boundless to thank our Parents and Friends for their motivation to complete this project successfully.

ABSTRACT

Obstacle detection and avoidance can be considered as the central issue in designing mobile car. This technology provides the robots with senses which it can use to traverse in unfamiliar environments without damaging itself. In this paper an Obstacle Avoiding car is designed which can detect obstacles in its path and around them without making any collision. The integration of three ultrasonic distance sensors provides higher accuracy in detecting surrounding obstacles. Depending on the input signal received, the micro-controller redirects the robot to move in an alternate direction by actuating the motors which are interfaced to it through a motor driver. This implementation was done using an ultrasonic wave sensor, which measures distance by sending pulses. Also, the movement of the servo motor (for sensor movement) and the DC motors (for wheel movement) are controlled by the motor driver shield in order to enable the obstacle avoidance function. The commands are sent to the Arduino microcontroller chip which serves as the main control of the robot car, as it controls the sensor and car movement. The implemented robot car was able to successfully detect and avoid obstacles within the line of sight of the Ultrasonic sensor used.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

s

LIST OF ABBREVIATIONS

ACRONYM		ABBREVIATION
IDE	-	Integrated Development Environment
UNO	-	United national organization

CHAPTER 1

INTRODUCTION

An obstacle avoiding car is an intelligent device, which can automatically sense and overcome obstacle on its path. Obstacle avoiding is a car discipline with the objective of moving vehicles on the basics of the sensorial information. The use of these methods front of the classic methods(path planning)is a natural alternative when the scenario when the dynamic with the unpredictable behaviour. The case which surrounding do not remain invariable, and thus the sensory information is used to detect the changes adapting moving. Robotic field and design something which will made human life simpler in day today life aspect. Thus we are supporting this case. An obstacle avoiding car which can automatically sense and overcome obstacle on its path. A self driving vehicle is capable its surrounding and steering without taking input from human effort. On the basics of observed data the vehicle mimic human nature to avoid obstacle. This include surrounding environment, detecting obstacle, lane planning and vehicle control execution. Finally, it is instructed to the vehicle to modify the vehicle speed including direction to avoid obstacles. In this method while driving a self-driving vehicle recognizes the varying environment through sensors and adjusts the vehicle position based on varying environment.

CHAPTER 2

LITERATURE REVIEW

We reviewed different obstacle car mechanisms that have been built by a lot of students and other practitioners that are in exisitance. For on autonomous mobile car performing a navigation-based task in a vague environment to detect and avoid the encountered obstacle is an important issue and a key function for the car safety as well as for the task countinity. Obstacle detection and avoidance in a real world environment that appears so easy to humans is a rather difficult task for autonomous mobile and its still a well-researched topic in robotics. In many previous works, a wide range of sensors and have been proposed. Good reference related to the development sensor system and proposed detection and avoidance algorithms can be found. Based on these developed sensor systems, various approaches related to this work can be grouped. The objective of their work to investigate the suitability of using near the water-air boundary for which the study of promising result. Furthermore, the logical variables are introduced into the obstacle avoidance constraint, which have realized the constraint form is automatically changed to satisfy different obstacle avoidance requirements in different distance intervals between the space car and the obstacle.

CHAPTER 3
PROJECT METHODOLOGY

Obstacle avoiding car senses obstacle in the path, avoid it resumes its running . There are some very popular methods for robot navigation like wall-following ,edge, detection line following and many more. A more general and commonly method for obstacle avoidance is based on edge detection. Through the ultrasonic sensor mounted on the front . By self-balancing car is based on the principle of inverted pendulum, which is a four wheel vehicle balances itself up in the vertical position with reference to the ground. Its consist both hardware and software implementation Typically mounted on a stable stand, pick and place car are position to reach different areas to perform work. They use advanced vision system t identify, grasp and move objects from one places to another places. The design and implement a car that is able to move round an unknown environment without running into obstacle in its path. The car should have the capacity to detect obstacles in its path based on a predetermined threshold distance . Mount ultrasonic senor are connect servo motor to the motor shield. Attach servo motor at front of the car and placed sensor holder on it. Then the battery is connected to a leg of the button. Connect a cable to the legs of the button. This cable is for motor shield.

3.1.COMPONETNS

3.1.1. ARDUINO UNO

Arduino UNO is a very valuable addition in electronics that consists of a USB interface, 14 digital I/O pins(of which 6 Pins are used for PWM), 6 analog pins and an Atmega328 microcontroller. Arduino IDE (Integrated Development Environment), which is free to download from Arduino Official Site. It includes everything required to hold up the microcontroller; simply attach it to a PC with the

help of a USB cable and give the supply to get started with a AC-to-DC adapter or battery. This Arduino additionally includes of I/O, power, and additionally device boards that are designed particularly for e-textiles. These are even wash and wear. Its works on windows eight while not having to change our security . It is entirely flat on the constant to the USB or FIDI chip and have tendency to use conjointly its flat on the rear . The Arduino UNO is analogous to the UNO's huge brother. It includes immeasurable digital I/O pins (from that, 1-4-pins is used as PWM O/P), 6-analog inputs, a push button, an influence jack, a USB affiliation and a push button. It includes everything needed to carry up the microcontroller, merely attach it to a computer with the assistance of a USB cable and provides the provision to induce started with AN AC to DC adapter or battery.

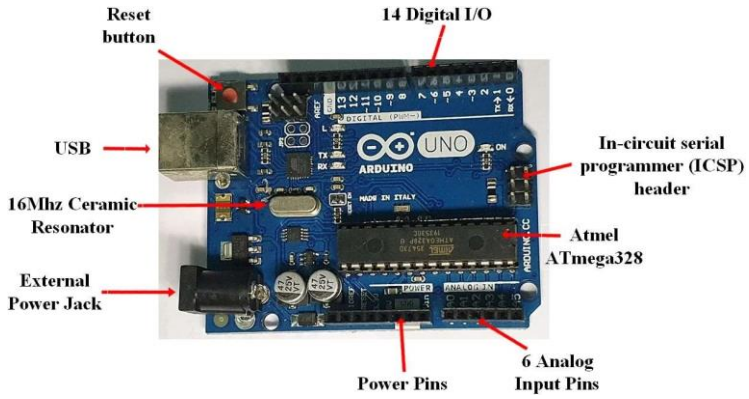

Fig. 3.1:ARDUINO UNO

Pin	Function
Vin	Voltage from External power jack
5V	5V output from on-board Voltage regulator chip
3.3V	3.3V output from on-board Voltage regulator chip

Gnd	3 pins for ground
IOREF	Tied to 5V, tells Arduino shields voltage level from which Arduino board operates
Reset	From RESET pin on MCU, tied to VCC through 10K resistor, pull to GND to reset

Table No.3.1

3.1.2 ULTRASONIC SENSOR

The ultrasonic sensor is used for obstacle detection. The ultrasonic sensor transmits the ultrasonic waves from its sensor head and again receives the ultrasonic waves reflected from an object. There are many applications use ultrasonic sensors like instruction alarm systems, automatic door openers, etc. The ultrasonic sensor is very compact and has a very high performance. The ultrasonic sensor emits the short and high-frequency signal. These propagate in the air at the velocity of sound. If they hit any object, then they reflect an echo signal to the sensor. The ultrasonic sensor consists of a multivibrator, fixed to the base. The multivibrator is a combination of a resonator and a vibrator. The resonator delivers ultrasonic wave generated by the vibration. The ultrasonic sensor consists of two parts; the emitter which produces a 40 kHz sound wave and the detector detects a 40 kHz sound wave and sends an electrical signal back to the microcontroller. When an electrical pulse of high voltage is applied to the ultrasonic transducer it vibrates across a specific spectrum of frequencies and generates a burst of sound waves. Whenever any obstacle comes ahead of the ultrasonic sensor the sound waves will reflect in the form of echo and generates an electric pulse. It calculates the time taken between sending sound waves and receiving the echo. The ultrasonic receiver shall detect signal from the ultrasonic transmitter while the transmit waves hit on the object. The combination of these two

sensors will allow the robot to detect the object in its path. The ultrasonic sensor is attached in front of the robot and that sensor will also help the robot navigate through the hall of any building.

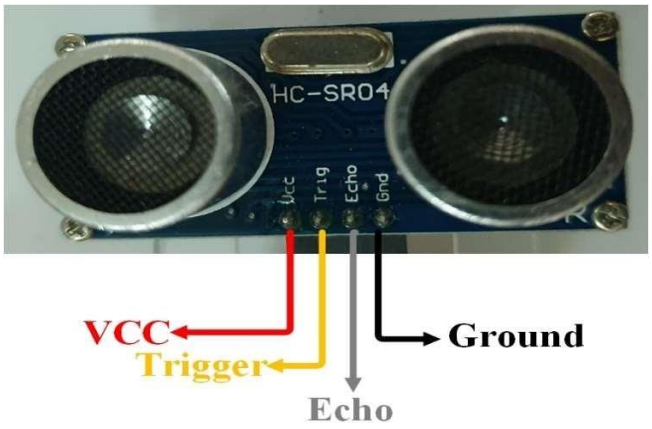

Fig.3.2:ultrasonic sensor

Pin Number	Pin Name	Description
1	VCC	The is used to power the sensor with 5V
2	Trigger	This is an Input pin which has to be kept highfor 10us to initialize measurement by sending Ultrasound wave.
3	Echo	This is an output pin which goes high for aperiod of time equal to the time taken for the Ultrasonic wave to return back to the sensor.
4	Ground	This pin is connected to the ground of the System

TABLE NO.3.2

3.1.3 MICROSERVO MOTOR

A servo motor is an electrical device that pushes or rotates objects with high precision. If there is need for an object to be rotated as a specific angle or distance, A servo motor consists of a motor that uses servo mechanism. The two types of servo motors are the DC servo motors (DC powered) and the AC servo motor (AC powered) where the difference between them is the input power. A very high torque can be obtained from a small and lightweight servo motor which allows these servo motors to be used in applications like robots, toy cars, etc. The main reason why a servo motor is used is because of its high angle precision, i.e. after rotating, it will stop and wait for the next instruction to happen unlike a normal electric motor which rotates as long as it is being supplied power and stops rotating when power supply is turned off. A servo motor includes motors (DC and AC), a potentiometer, gear assembly, and a controlling circuit. Servo motors are controlled by Pulse width Modulation (PWM) which is provided by the control wires. There is a minimum pulse, a maximum pulse and a repetition rate. A servo motor can turn 90 degrees to either direction from its neutral position. The servo motor expects a pulse every 20ms which determines how far the motor will turn. In the figure 4-11 below, a 1.5ms pulse will make the motor turn 90 degrees. If the pulse is shorter than 1.5ms, the shaft moves to 0 degrees and if it is longer than 1.5ms, the shaft will turn to 180 degrees. Pulse with modulation simply means that the angle of rotation is dependent on the duration of pulse applied to the control PIN.

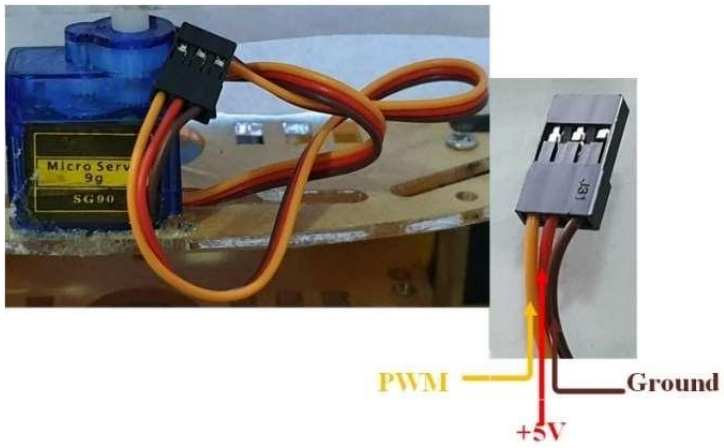

Fig 3.3 Micro servo Motor

3.1.5 JUMPER WIRES

Jumper wire (also known as jumper wire, jumper cable, DuPont wire, or DuPont cable – named after a manufacturer) is an electrical wire or group of electrical wires in a cable with a connector 9 or pin at each end (or sometimes without them simply "tinned") that is normally used to interconnect the components of a breadboard or other prototype or test circuit, internally or with other equipment or components, without soldering.

Fig.3.4 Jumper Wires

3.1.6.ARDUINO DATA PORT CABLE

An Arduino serial port cable is used to burn the programming instructions in the Arduino board from computer.

Fig 3.5 Arduino cable

CHAPTER 4
WORKING METHOD

The robot uses the Ultrasonic sensor to measure the distance in front of it then it moves. As the distance reduces, the robot interprets it as the presence of an obstacle. As soon as the robot detects the obstacle,it stops and moves back a few cm then looks left and right before moving to a free path.

CHAPTER 5

BLOCK DIAGRAM

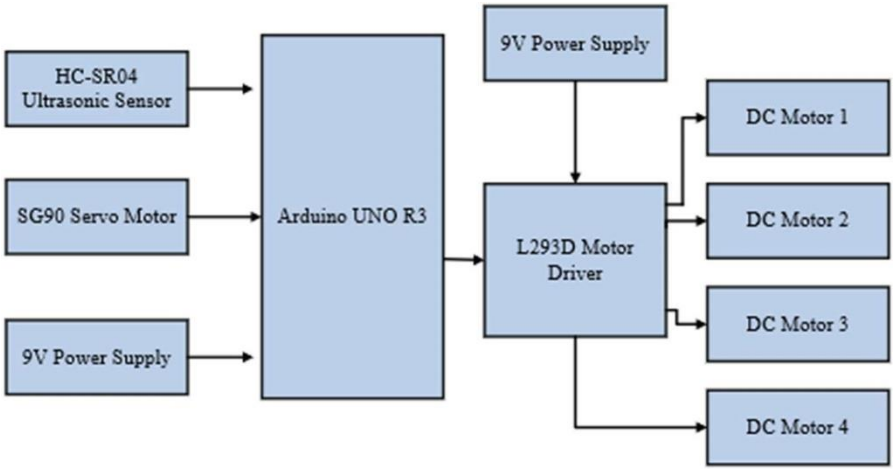

Fig 5.1 Block diagram

3.5.1.Constructing the car

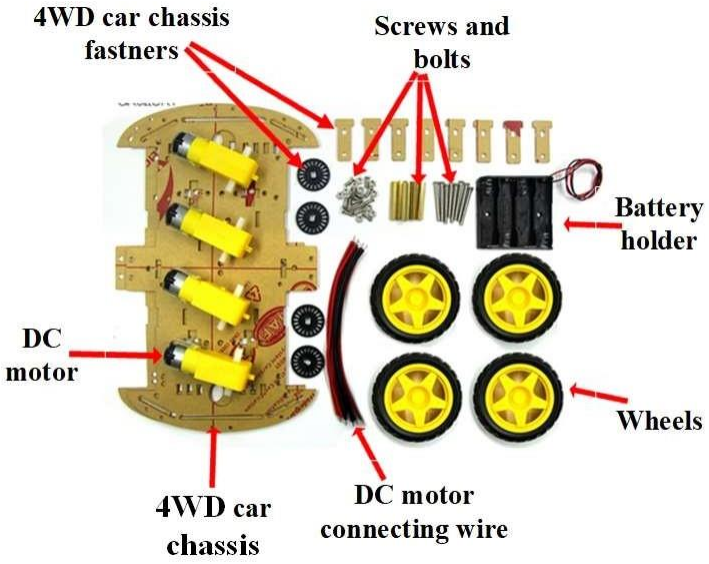

Fig 5.2 Components

Step 1. Connect the motor and wheels to the chassis by soldering the thick red and black wires tothe positive and negative terminals of the motors then attach them to the chassis

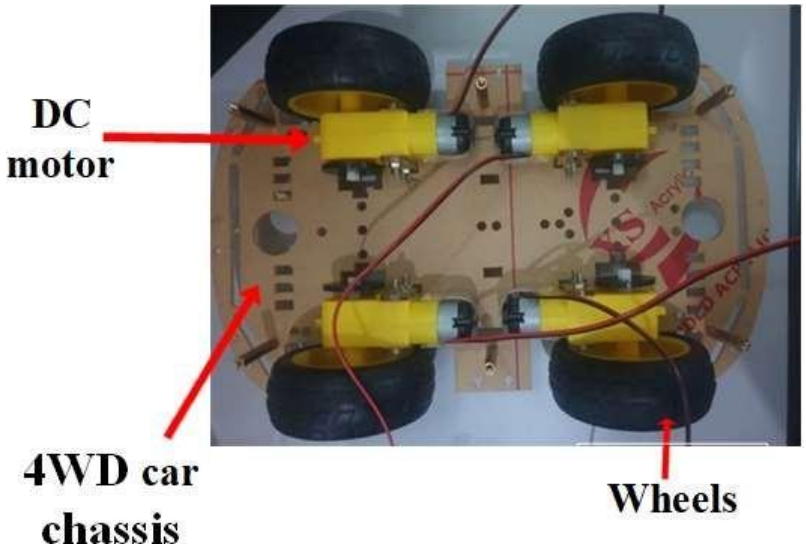

Fig 5.3 Wheels and Motors

Step 2. Attach the switch, battery clip, SG90 Servo Motor and Arduino UNO to the chassis. Afterthis, mount the L293D Motor Driver shield on the Arduino UNO R3 and the HC-SR04 to the Servo motor.

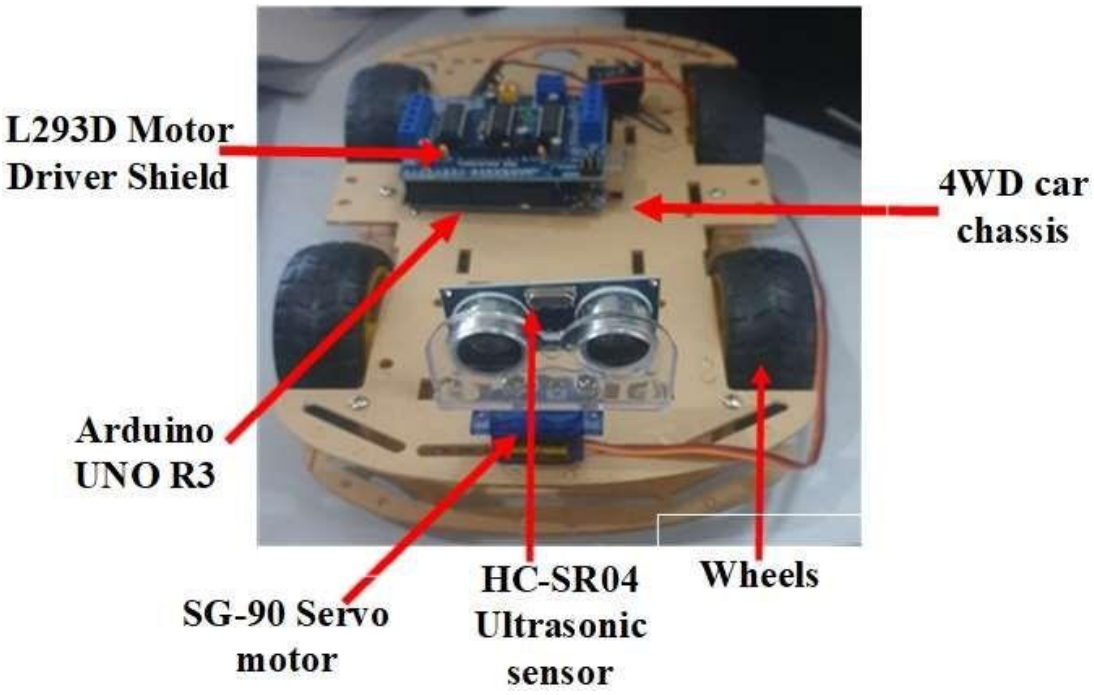

Fig 5.4 Components attached

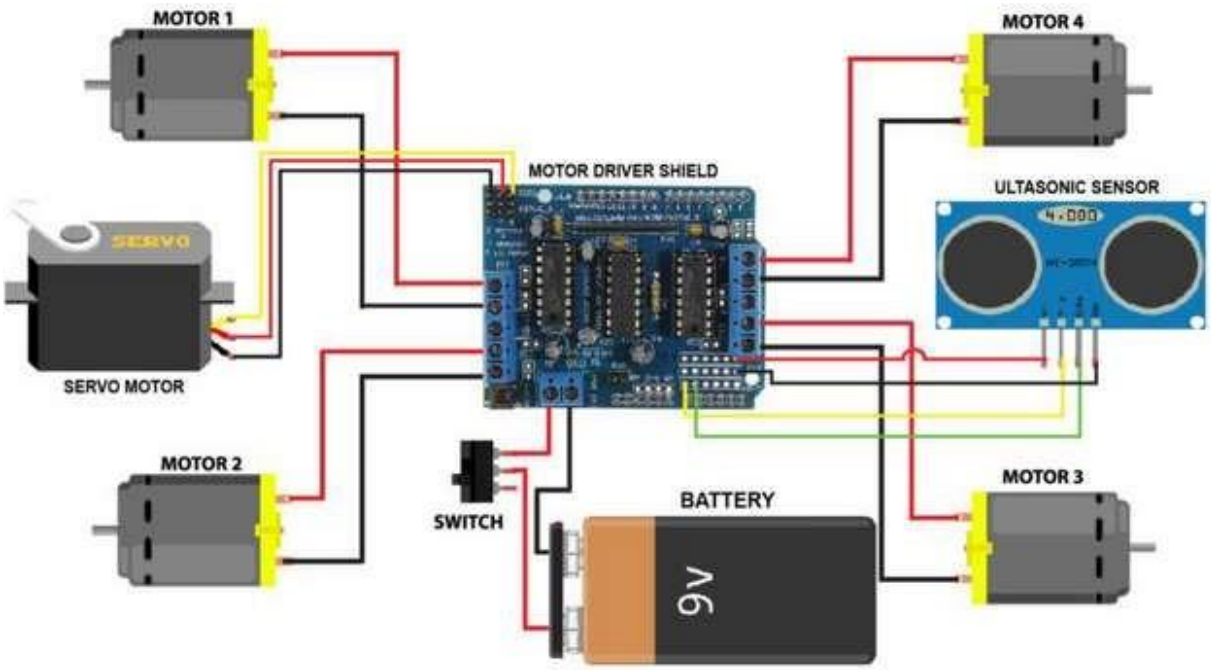

Fig 5.5 Layout

FLOW CHAT

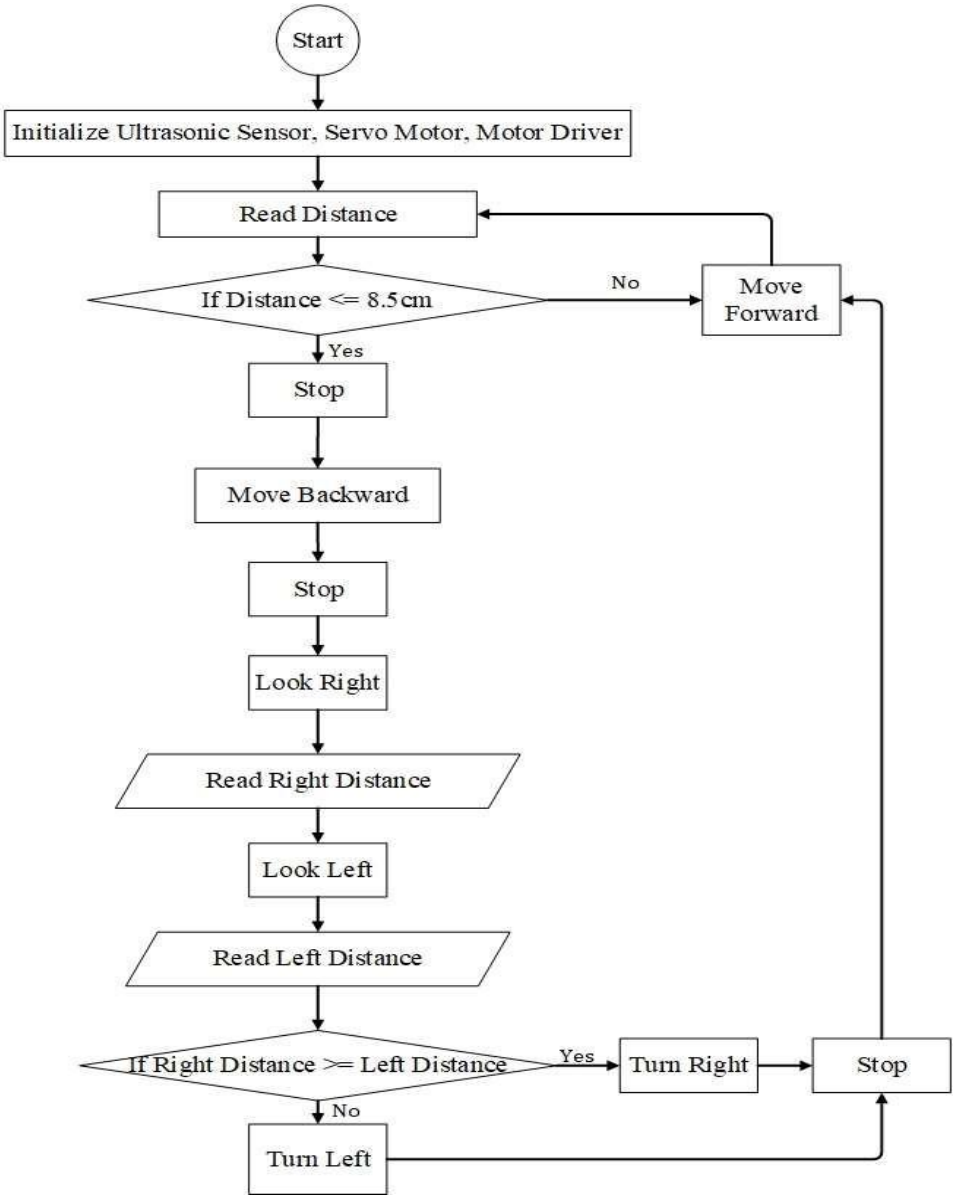

Fig .5.6 Flow chart

PROGRAM CODE

```
#include <Servo.h>          //Servo motor library. This is standard library
#include <NewPing.h>        //Ultrasonic sensor function library. You must install
this
 //our L298N control pins
 const int LeftMotorForward = 8;
 const int LeftMotorBackward = 9;
 const int RightMotorForward = 10;
 const int RightMotorBackward = 11;
 //sensor pins
 #define trig_pin A1 //analog input 1
 #define echo_pin A0 //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(7); //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);}
```

CHAPTER 6

RESULT AND DISCUSSION

The outcome of this thesis is a simple, Arduino-controlled robot car which moves around detecting obstacles in its way and avoiding them. During operation of the robot, the ultrasonic sensor sends out an ultrasound wave to the front position (90 degrees), right position (36 degrees), and left position (144 degrees). When the wave strikes an obstacle, it bounces back and the distance is storedfor the front, right, and left position. After this, the microcontroller compares the values based on itsalgorithm and determines whether to move forward or change path. Tests carried out on the final hardware revealed the limitations of the detection algorithm. The limitations were related to cases of some obstacles not being detected and this was as a result of thesensor not being able to measure obstacles outside the measuring range of the sensor. When an object is in the way of the car and this object is not within the line of sight of the sensor, it will not be detected thereby leading to collision. To avoid this, the testing was further carried out in an enclosed area where the wall is the only obstacle and the car was able to move freely without collision.

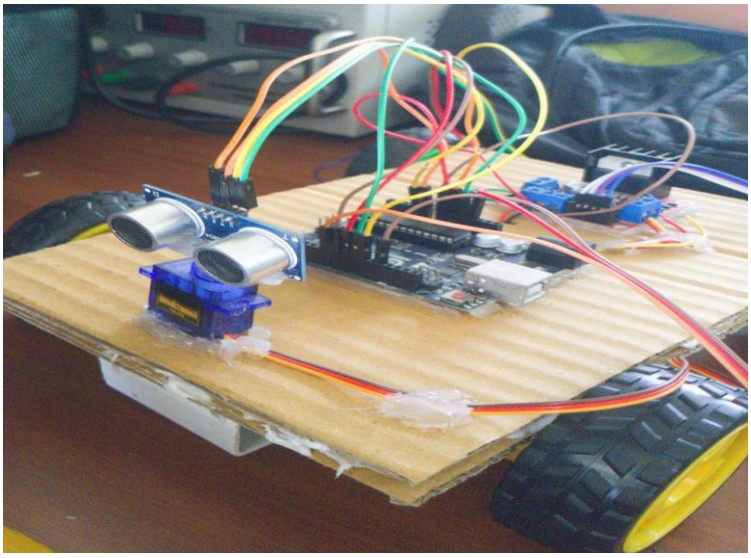

Fig 7.1 Result

CHAPTER 7
CONCLUSION

Today we are in a world of robotics and we use different types of robots daily in our life.This “Obstacle Avoidance Robot Car” project is proved using the Ultrasonic sensor for detecting objects, Motor Driver Shield for driving the DC motors, DC motors for movement of the wheels of the robot with the help of the Arduino Microcontroller. The factors which affect the accuracy of the designed robot include the environment the robot was tested and the number of present obstacles in the test space. These factors mainly affected the sensor which means that the accuracy of the robot isdependent on the sensor.

REFERENCES

[1] Crisp, J. (2004). Introduction to Microprocessors and Microcontrollers. Oxford: Newnes.

[2] Hall, D. (2005). Microprocessors and Interfacing. New york: Tata McGraw Hill Education Private Limited.

[3] Adam, A. (2019). Robotics. Retrieved from https://www.britannica.com/technology/robotics.

[4] Arduino L293D Motor Driver Shield Tutorial. (2019). Retrieved from https://create.arduino.cc/projecthub/electropeak/arduino-l293d-motor-driver-shield-tutorial-c1ac9b

[5] Ultrasonic Sensor HC-SR04 and Arduino Tutorial.(2015). Retrieved from https://howtomechatronics.com/tutorials/arduino/ultrasonic-sensor-hc-sr04/

Proceedings of the

DST-SERB Sponsored Second International Conference on Signal Processing and Communication Systems

(ICSPCS 2023)

MARCH 07TH, 2023

ORGANIZED BY,

Research and Development Cell,

Department of Electronics and Communication Engineering,

M.KUMARASAMY COLLEGE OF ENGINEERING,

THALAVAPALAYAM, KARUR - 639113, TAMILNADU, INDIA

www.mkce.ac.in

PAPER ID: I211

OBSTACLE AVOIDING CAR

V.Dinesh, Dept.of ECE
M.Kumarasamy college of engineering
thalavapalayam,karur
639113
dineshpandu05@gmail.com

T.Gowsik, Dept.of ECE
M.Kumarasamy college of engineering
thalavapalayam,karur
639113
gowsiktamilarasu4@gmail.com

R.Ajayraghav, Dept.of ECE
M.Kumarasamy college of engineering
thalavapalayam,karur
639113
ajayrathika2004@gmail.com

S.Kirthikkumar, Dept.of ECE
M.Kumarasamy college of engineering
thalavapalayam,karur
639113
kirthikksivakumar@gmail.com

Ms.S.Vasuki,M.E
Assistant professor,Dept.of ECE
M.Kumarasamy college of engineering
thalavapalayam,karur
639113
vasuki.ece@mkce.ac.in

Abstract— Obstacle detection and avoidance can be considered as the central issue in designing mobile car. This technology provides the robots with senses which it can use to traverse in unfamiliar environments without damaging itself. In this paper an Obstacle Avoiding car is designed which can detect obstacles in its path and around them without making any collision. The integration of three ultrasonic distance sensors provides higher accuracy in detecting surrounding obstacles. Depending on the input signal received, the micro-controller redirects the robot to move in an alternate direction by actuating the motors which are interfaced to it through a motor driver. This implementation was done using an ultrasonic wave sensor, which measures distance by sending pulses. Also, the movement of the servo motor (for sensor movement) and the DC motors (for wheel movement) are controlled by the motor driver shield in order to enable the obstacle avoidance function. The commands are sent to the Arduino microcontroller chip which serves as the main control of the robot car, as it controls the sensor and car movement. The implemented robot car was able to successfully detect and avoid obstacles within the line of sight of the Ultrasonic sensor used.

Keywords—Ultrasonic sensor ,Motor drive, Arduino UNO, Motor ,Wheel…….