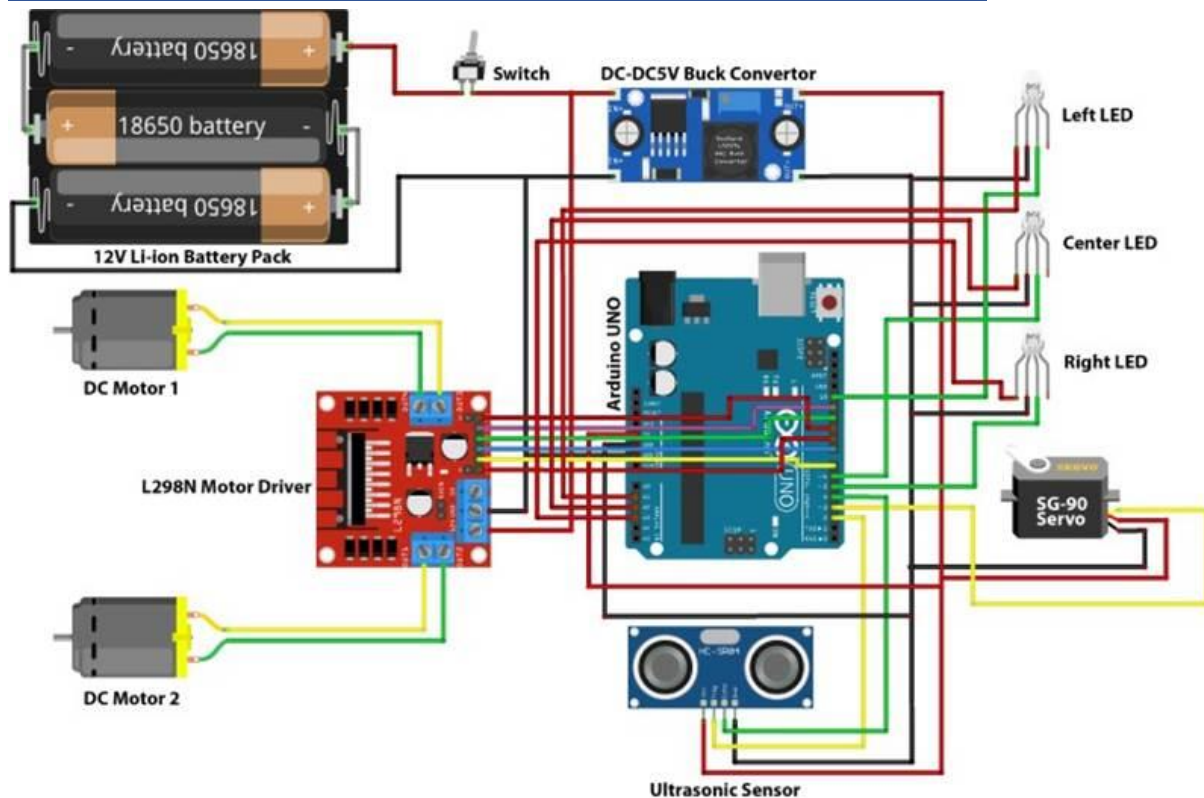


Circuit Diagram for The Obstacle Avoiding Car.



Components Needed for Obstacle Avoiding Car Project:

- Arduino Uno
- MG 90 metal gear Servo motors (1x)
- HC-SR04 Ultrasonic Sensor
- RGB Led(3x)
- L298N motor driver
- 2WD Arduino car kit Laser cut Chassis
- 12V Li-ion battery
- Lm2596 DC-DC buck convertor
- Switch
- Jumper wires
- Breadboard or PCB (Printed Circuit Board)

- Screws, nuts, spacers

Arduino Obstacle Avoiding Car Wiring Connection

Build the arduino based obstacle avoiding robot car is pretty simple, to make things easy to understand, in the following paragraphs we have explained how each component is connected to arduino nano. You can also follow the circuit diagram for better understanding.

Servo Motor Connection with Arduino

To connect the servo motor to the Arduino, simply attach the signal wire to any PWM control pin, connect the power wire to the 5V output from a DC-DC converter, and link the ground wire to one of the Arduino's ground pins.

Connecting Arduino Car to Ultrasonic Sensor

Connect the sensor to the Arduino like this: VCC to 5V, GND to GND, TRIG to a digital pin 2, and ECHO to another digital pin 4 of. This setup allows the Arduino to interact with the sensor, further we will also be writing an arduino car ultrasonic sensor code to enable our robot to read the distance of object ahead of it and control the wheels accordingly. More details on that can be found in the code section,

RGB LEDs Connection with Arduino

Connect all the RGB LEDs' ground (cathode) to a ground rail on the breadboard. Then, link each RGB LED's red terminal to an analog pin on the Arduino(A1,A2&A3) and the green terminal to a digital pin on the Arduino(5,6&13).This configuration allows the Arduino to control the RGB LEDs.

L298N Motor Driver Connection with Arduino

Arduino's GND to breadboard GND rail, Arduino's Vin to breadboard positive rail, LM2596 5V out to positive rail, LM2596 GND out to GND rail. For DC motor 1 L298N IN1 and IN2 to Arduino pins 7 and 8. For DC motor 2 L298N IN3 and IN4 to Arduino pins 12 and 11. Enable PWM motor control by connecting L298N ENA to Arduino PWM pin 9 and ENB to PWM pin 10, enabling independent control of two DC motors using Arduino.

Working of Obstacle Avoiding Car

The central component that makes the **Arduino obstacle avoiding car** work is the **HC-SR04 Ultrasonic sensor**. This sensor relies on sound waves to figure out how far away objects are in front of it. It's a handy sensor used in many

projects that need to quickly and affordably measure distances. It's small and can be put anywhere on the car's body.

There are six main parts to this project an **Arduino obstacle avoiding 2WD kit** an **Arduino Uno**, the **Ultrasonic Sensor**, **DC motors**, a **Servo motor**, and an **L293D motor driver**. When you connect power to the **Arduino**, the Servo motor starts turning and checking the distance in three directions **left**, **right**, and **front**. Whichever direction has the most space, the car moves in that direction.

As soon as the car gets close to an **obstacle**, there's a set distance programmed into the Arduino. If the obstacle is closer than this distance, the ultrasonic sensor tells the Arduino. Once the Arduino gets this signal, it tells the motor driver to stop the motors from turning. Then, the servo motor starts checking distances again in all three directions. Based on what it finds, it signals the motor driver to turn the car either **left** or **right**, and the car turns accordingly. After that, the car goes forward again until it encounters another obstacle. This whole process keeps happening until you turn off the power.

Additionally, I've added three **RGB LEDs** on the underside of the car to indicate its movement. When the car **stops**, all the LEDs **turn red**. When it moves **forward**, they all **turn green**. If the car takes a right turn, the right-side LED glows green while the other two stay red, and the same goes for a left turn.

In this project, we successfully designed and built an **obstacle avoiding car using Arduino project** that can navigate its environment autonomously and Solve the Maze. The car utilizes an HC-SR04 ultrasonic sensor for distance measurement, a servo motor for scanning the surroundings, and an L298N motor driver for controlling four geared motors.