NEW MATERIALS

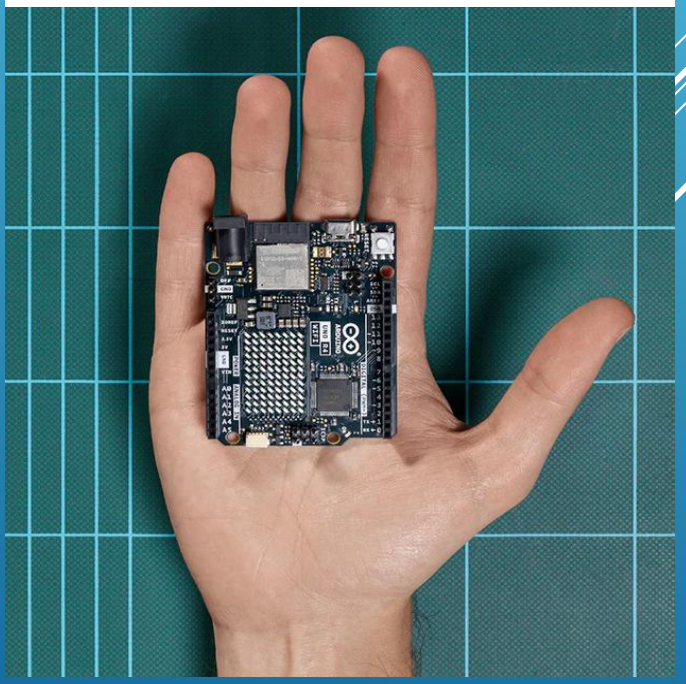
In these presentation, you will see the materials that we are going to use for the car.

MICROCONTROLLER:

The microcontroller that we used is the Arduino R4 WIFI. The Arduino UNO R4 WIFI is an upgraded version of the Arduino UNO, featuring Wi-Fi and Bluetooth connectivity (in this case, due to the competition the Wi-Fi and Bluetooth connectivity is disable). It's built around the Renesas RA4M1 microcontroller, which is a 32-bit ARM Cortex-M4 running at 48 MHz, offering significantly more power than the previous 8-bit ATmega328P in the UNO R3.

Important features:

- - Hardware Compatibility: Maintains the same form factor, pinout, and 5V operating voltage as the UNO R3.
- - Comes with expanded memory and a faster clock speed than Arduino R3
- - Supports up to 24V input, making possible the connection of different motors, LED strips, and many more.
- - Offers additional pins for power control.

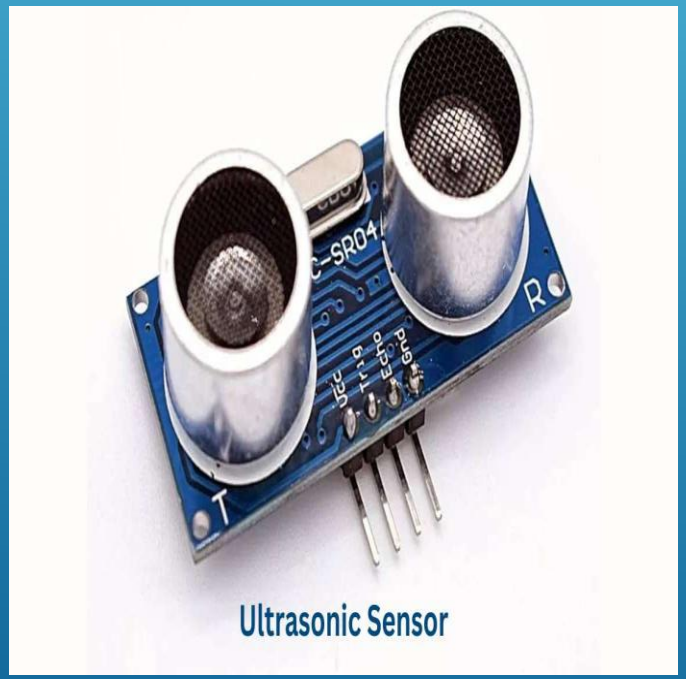


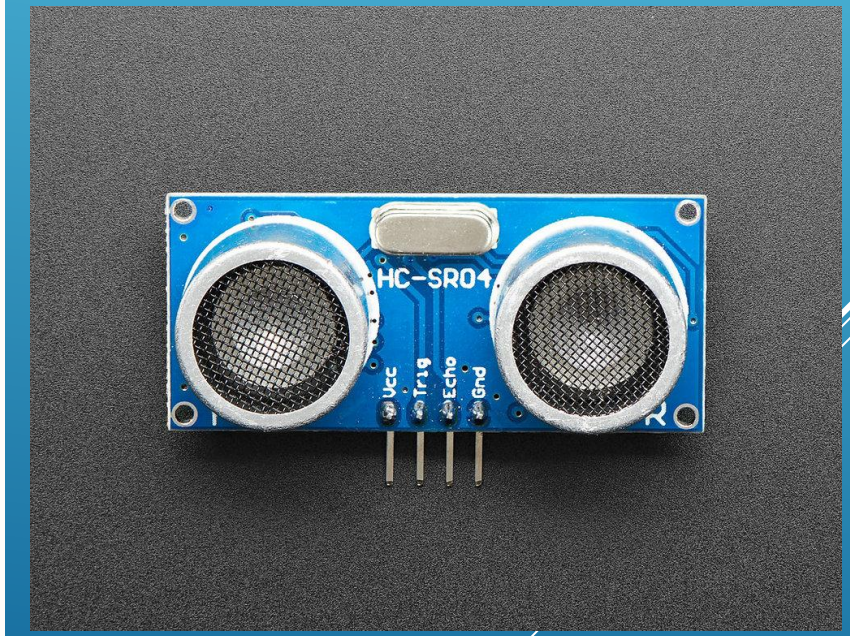
PIXY CAM:

For this car, we used the original Pixy Cam. The Pixy Cam is a compact, self-contained vision sensor designed to learn objects by their colors. It processes images and quickly outputs data such as the object's signature, x/y coordinates, width, and height so you get only the information you need in real time.

ULTRASONIC SENSORS:

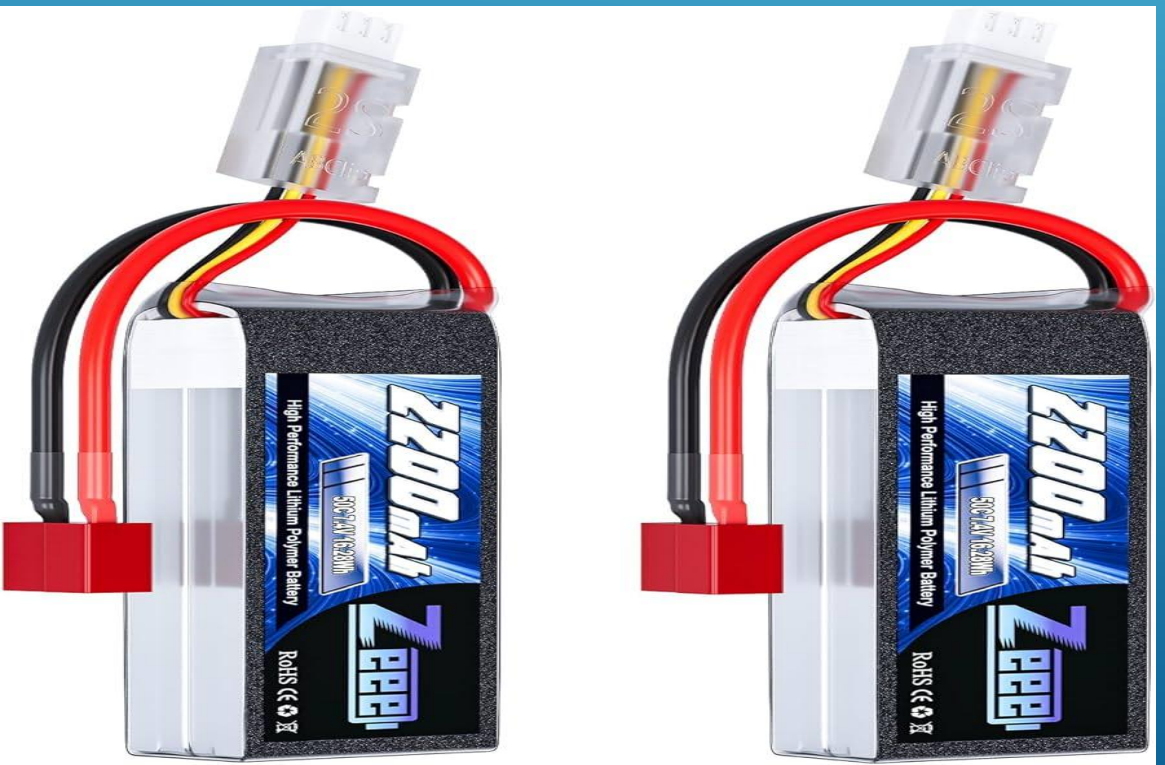
We used the HC-SR04 an ultrasonic distance sensor that uses sonar to measure the distance between itself and an object. It can measure between 2cm to 400 cm, and it operates 40 kHz. We have 2 ultrasonic sensors in the sides.

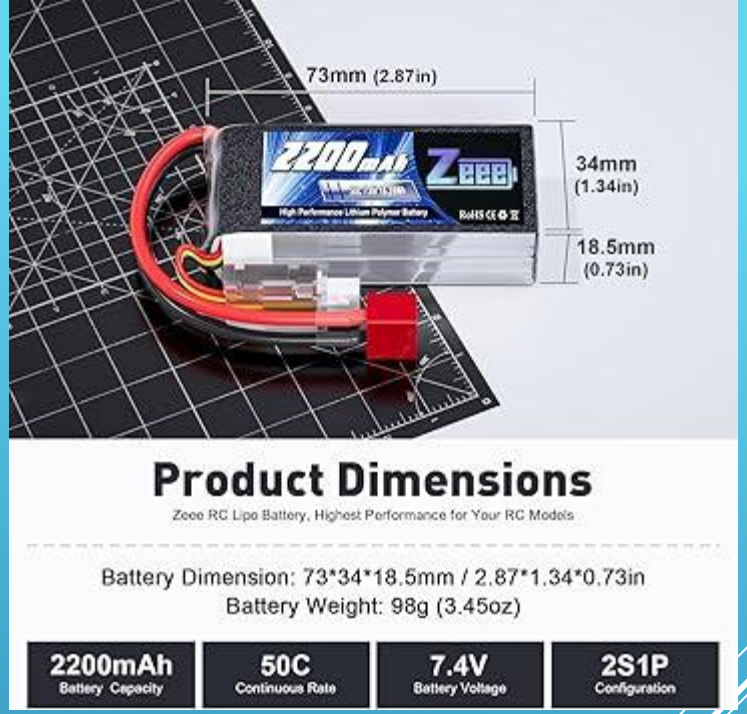




BATTERY

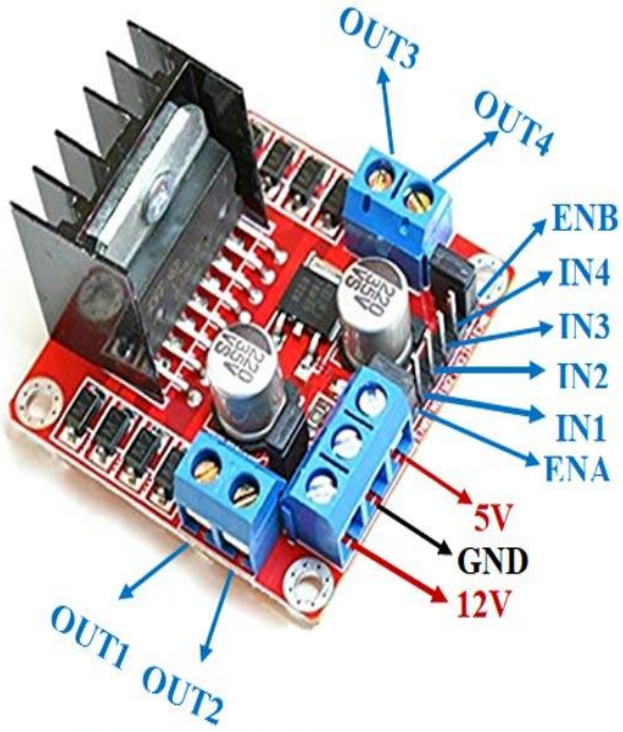
We used the Zeee battery Shorty of 2200 mAh, of 2 Lithium polymer ,from Zeee, and it weight 98 g.

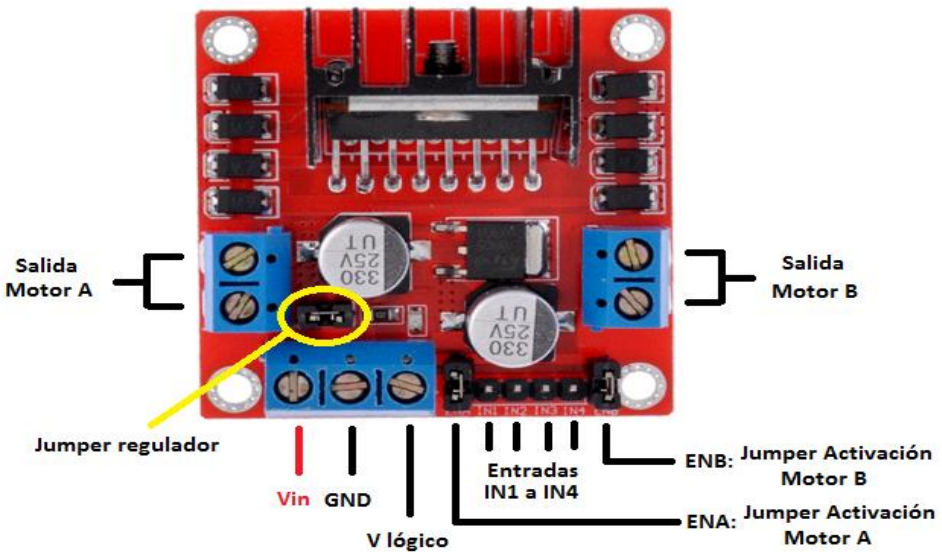


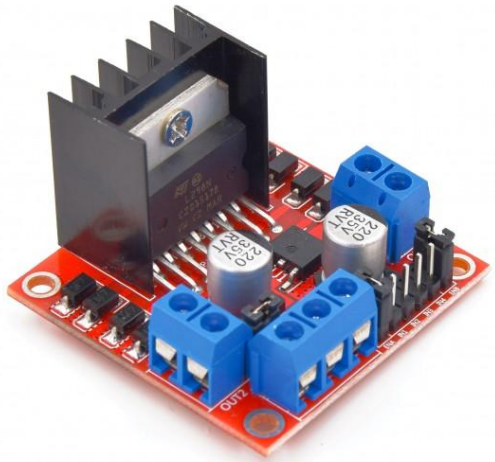


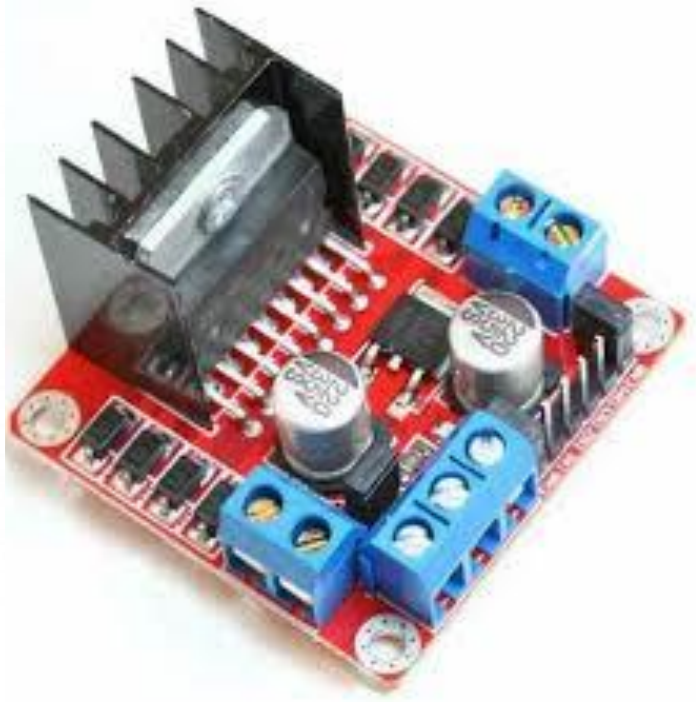
H-BRIDGE

For the car, we use the L298N that is a dual H-bridge motor driver module designed to control the speed and direction of DC and stepper motors. It operates within a voltage range of 5V to 35V. We connect the L298 N to the Arduino, so the Arduino can control the motor and the L298N powers the servomotor that is in our case.



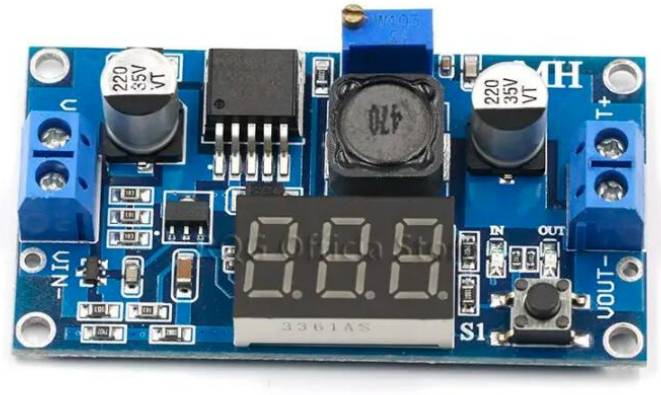


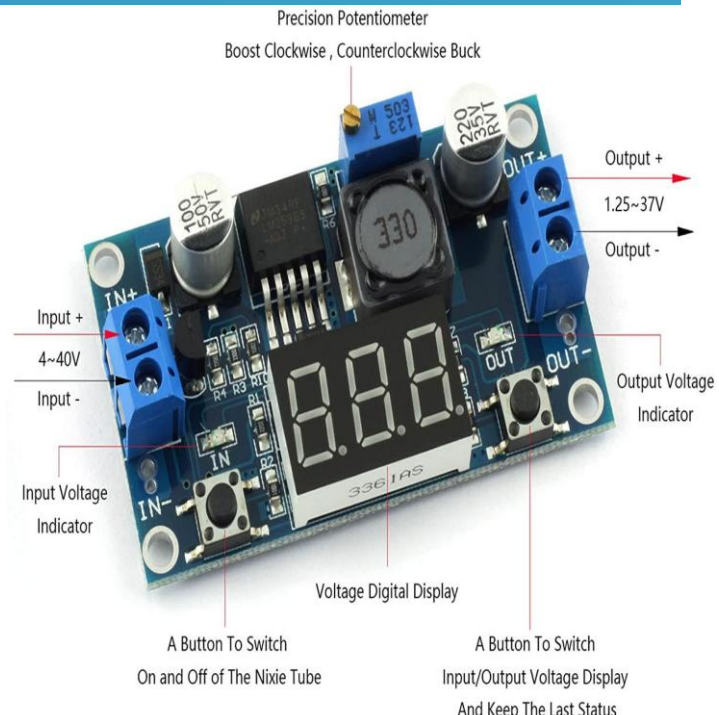


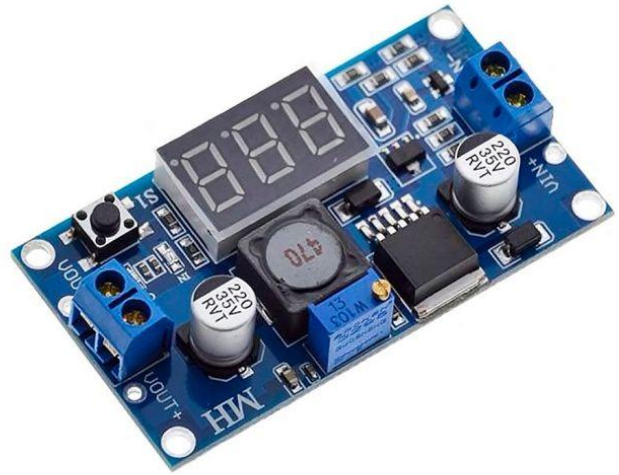


VOLTAGE REGULATOR

For the car, we use the LM2596 that is a voltage regulator that efficiently converts a higher input voltage to a lower, stable output voltage. Operates with a fixed switching frequency of around 150 kHz, which helps minimize the size of the external filter components. We use the voltage regulator to power the Arduino R4 and the motor that makes the strength so the car moves.







ACKERMAN STEERING WHEEL

An Ackermann steering wheel is a physical steering mechanism designed based on Ackermann geometry with the idea that during a turn the inner wheel should turn sharper than the outer wheel so both wheels follow smooth path.

With a servo motor, the Ackerman Steering wheel, help the car moves and change direction.

MOTORS

The car has 2 motor, a DC gear Motor and a servo motor. DC gear motor is a motor with an integrated gearbox. This gearbox help to control and regulate the speed the motor does.

The servo motor is a motor that changes the direction of the car.