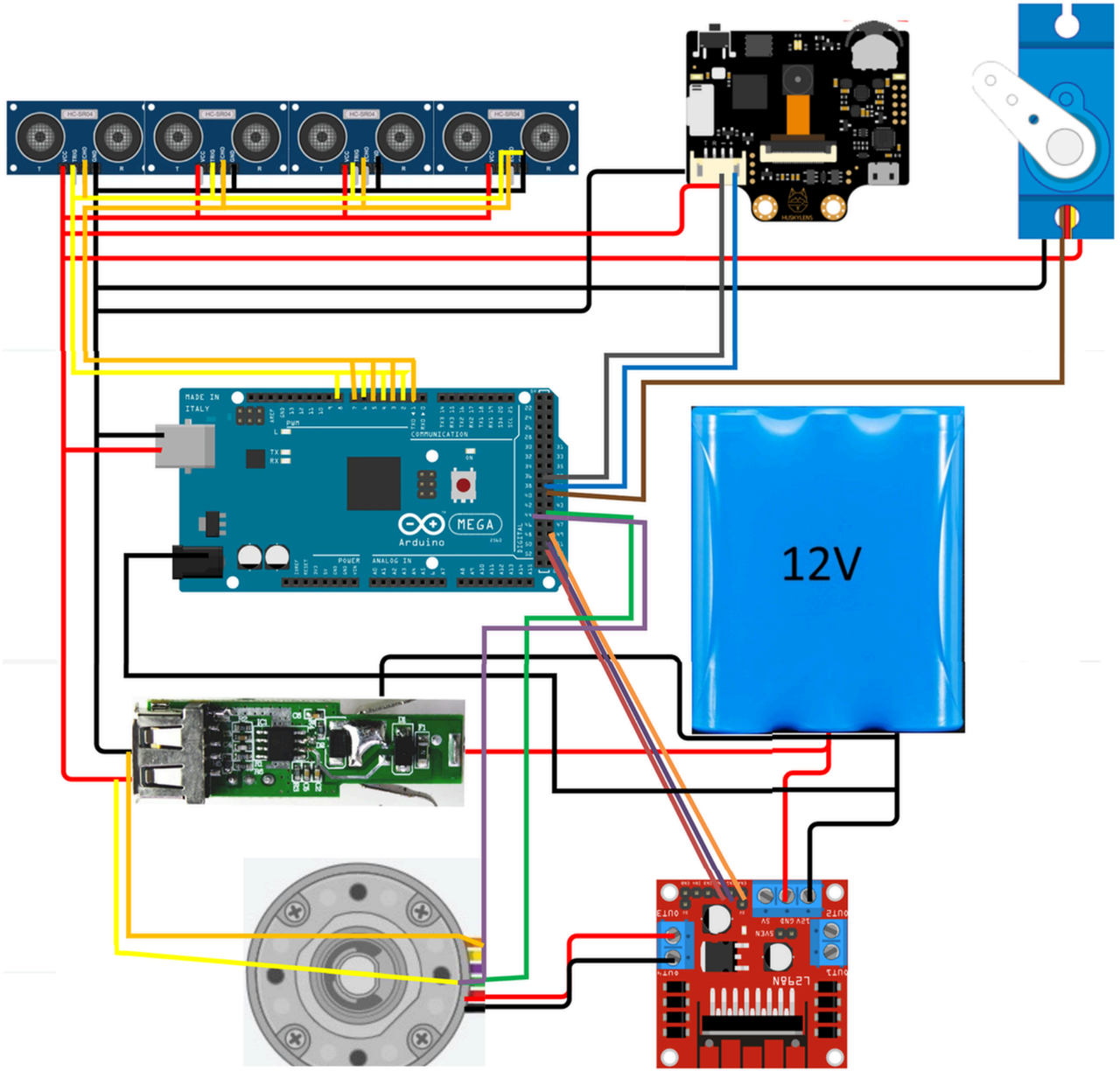
# THE ELECTRONIC PARTS

**This presentation explains how every component for the MARS Vehicle is connected and what every component's job is, The images used in the presentation are just placeholders and are not the actual components used for the Vehicle, except for the diagram.**

MARS TEAM

# COMPONENTS

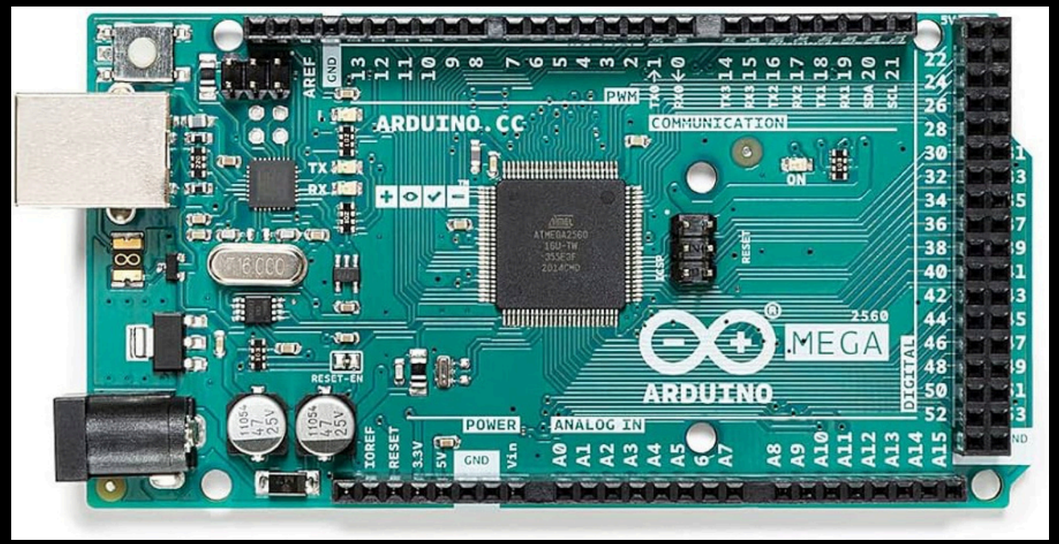
1. Arduino Mega 2560
2. Power Source
3. Ultrasonic Sensors
4. HuskyLens Camera
5. DC Motor
6. L298N Driver Motor
7. Servo Motor
8. USB Car Charger




# THE WIRING DIAGRAM

This diagram shows how every component is connected to the Arduino board, and where the power source is from. (the original image is provided in the github repository)

# The Arduino Mega 2560



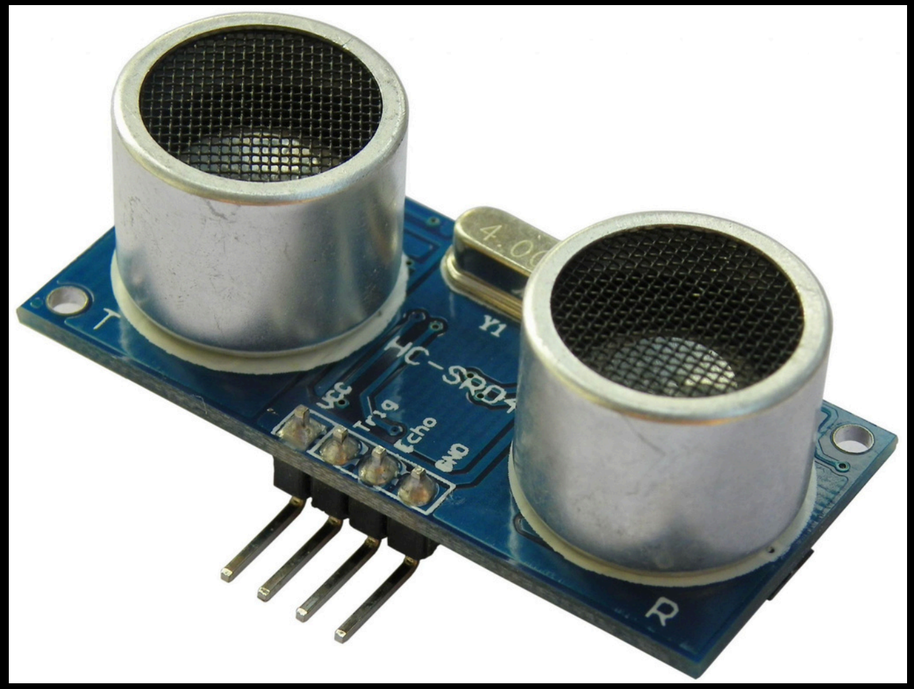

The Arduino Mega is the only microcontroller used for the Vehicle, although not every component is powered by it, every component is connected to it and controlled by it.

The use of any additional microcontrollers was not necessary because of the Vehicle's HuskyLens AI Processing camera, which will be talked about later.

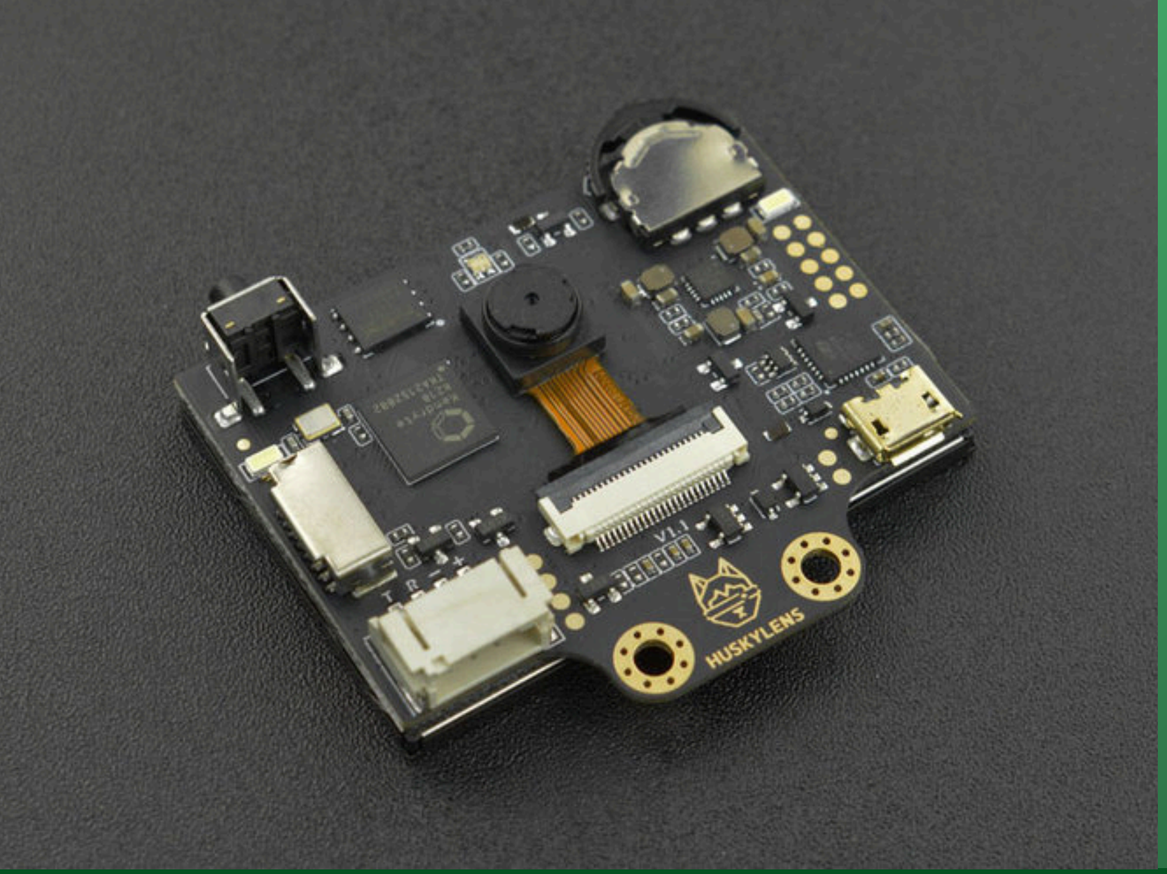
# The Lithium Batteries


The battery consists of 3 Lithium 3.7V batteries which adds up to 12V, powering the driver motor and the DC motor, the battery is also connected to the USB Car Charger for reasons that will be explained later.

# The UltraSonic Sensors




The UltraSonic sensors are the ONLY sensors used for the Vehicle alongside the HuskyLens (which is more helpful for the obstacle challenge), The UltraSonic sensors do more than enough good job on maintaining distance from the border walls which is very helpful in open challenge.




The HuskyLens Camera is used instead of a microcontroller/processor because of its onboard AI processing that already does half the work of a microcontroller/processor.

The HuskyLens camera already does a good job at the obstacle challenge for it has to identify the color of the traffic signs and process all of the readings it gets in real time.

# The HuskyLens Camera

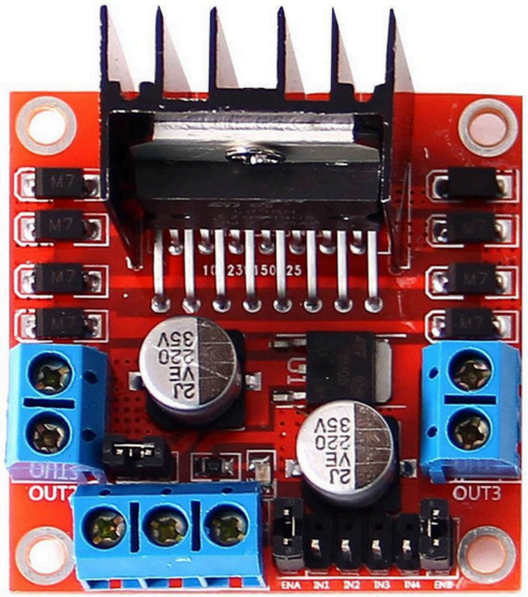
# The DC Motor

The DC Motor is connected to the L298N Motor Driver and is controlled by it, it has new gears on it that were originally installed on a printer, and an encoder which counts the amount of times the motor has turned, the DC Motor is connected to the vehicle's back wheels and controls moves them either forwards or backwards.

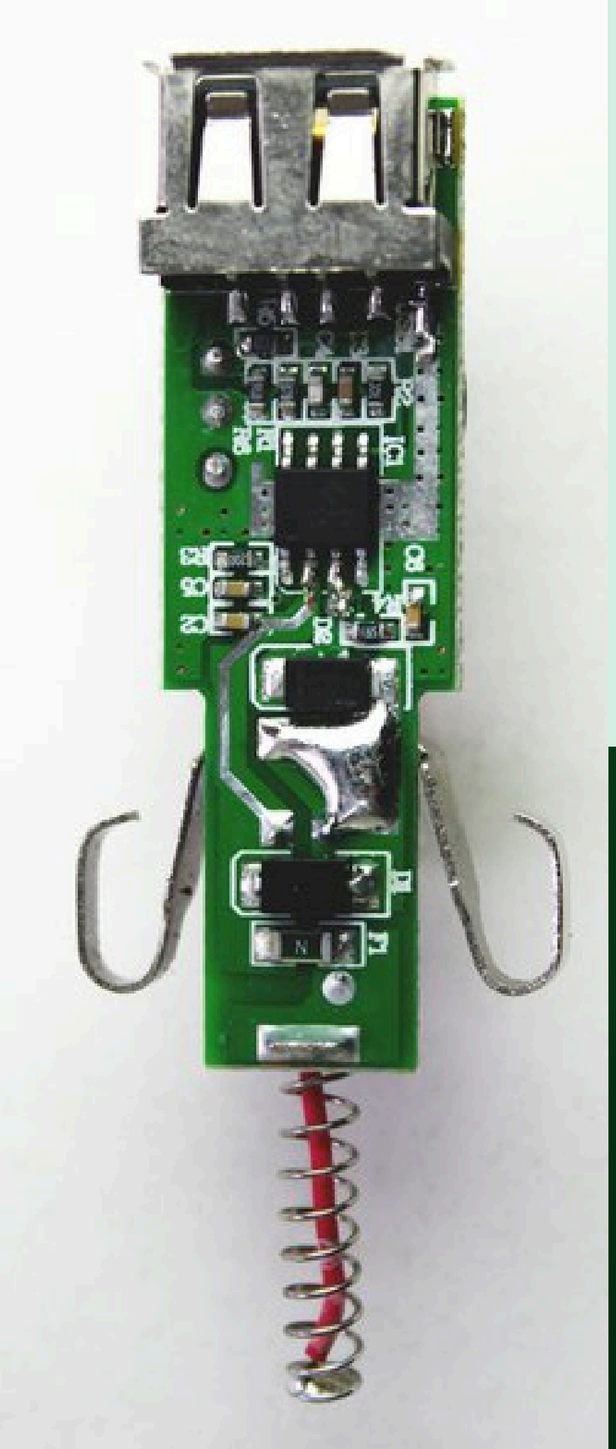
# The Servo Motor


The Servo Motor is responsible for controlling the car’s front wheels by steering them left or right, the Servo Motor is not controlled by any driver motor but instead controlled by the Arduino.

The L298N Motor Driver is responsible for controlling the DC Motor which controls The car’s back wheels, The Motor driver is connected directly to the DC Motor and to the Arduino.




# The L298N Motor Driver



# The USB Car Charger

The USB Car Charger’s purpose is to convert the 12V coming from the Lithuim batteries into 5V which helps prevent the components from failing, The USB Car charger powers all 4 Ultrasonic Sensors, The Servo motor and the HuskyLens camera, A Double USB car charger was used in particular for having 5V and 2A (ampere) which suited the MARS Vehicle.

# CONCLUSIONS

Thank You

Mars team.