SlowRider Project

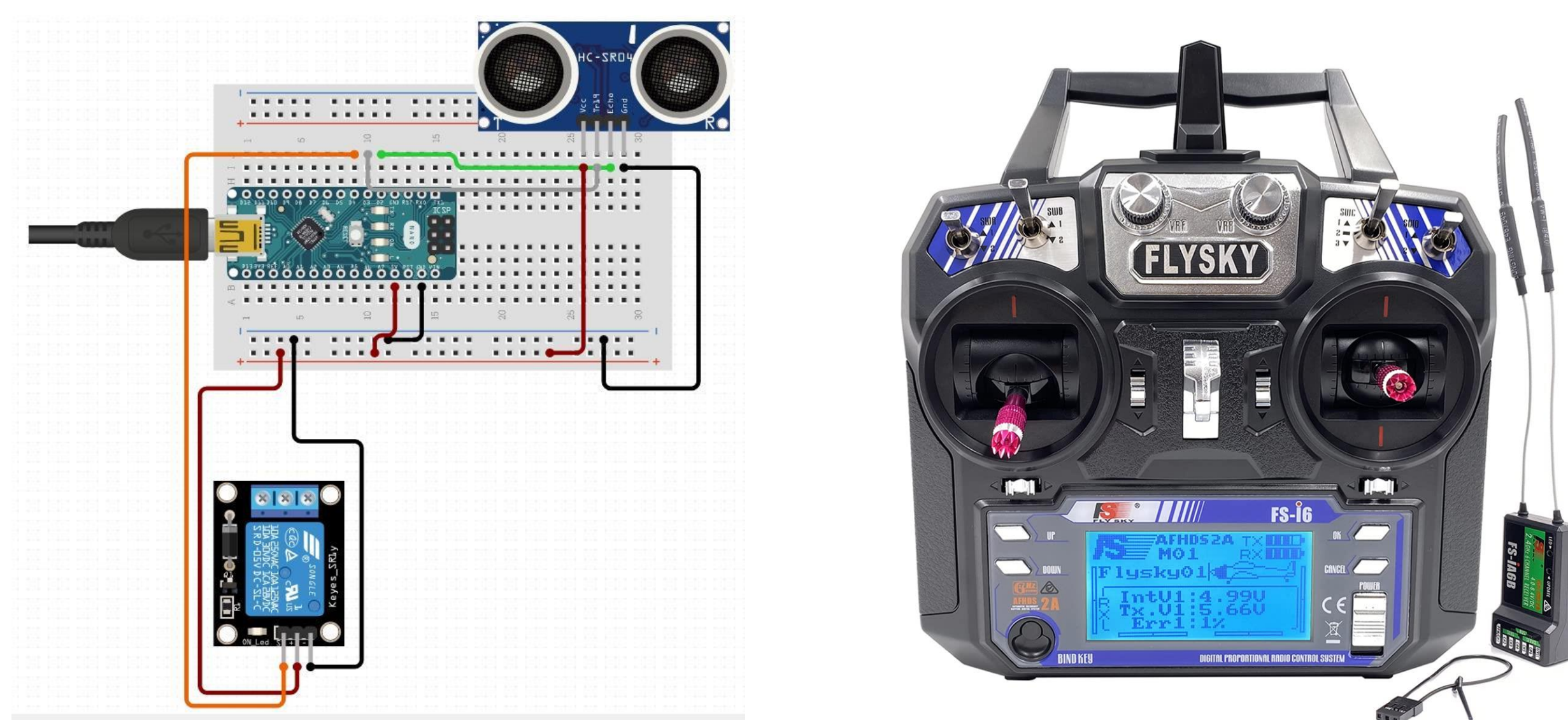Felipe Romero   Damyant Kaur   Daniel Vaca Corona

Background

The purpose of the project is to not only create a piece of art but also function as a real lowrider car. We equipped the car with parts from a donor car and created our own frame and code to add additional functionality.
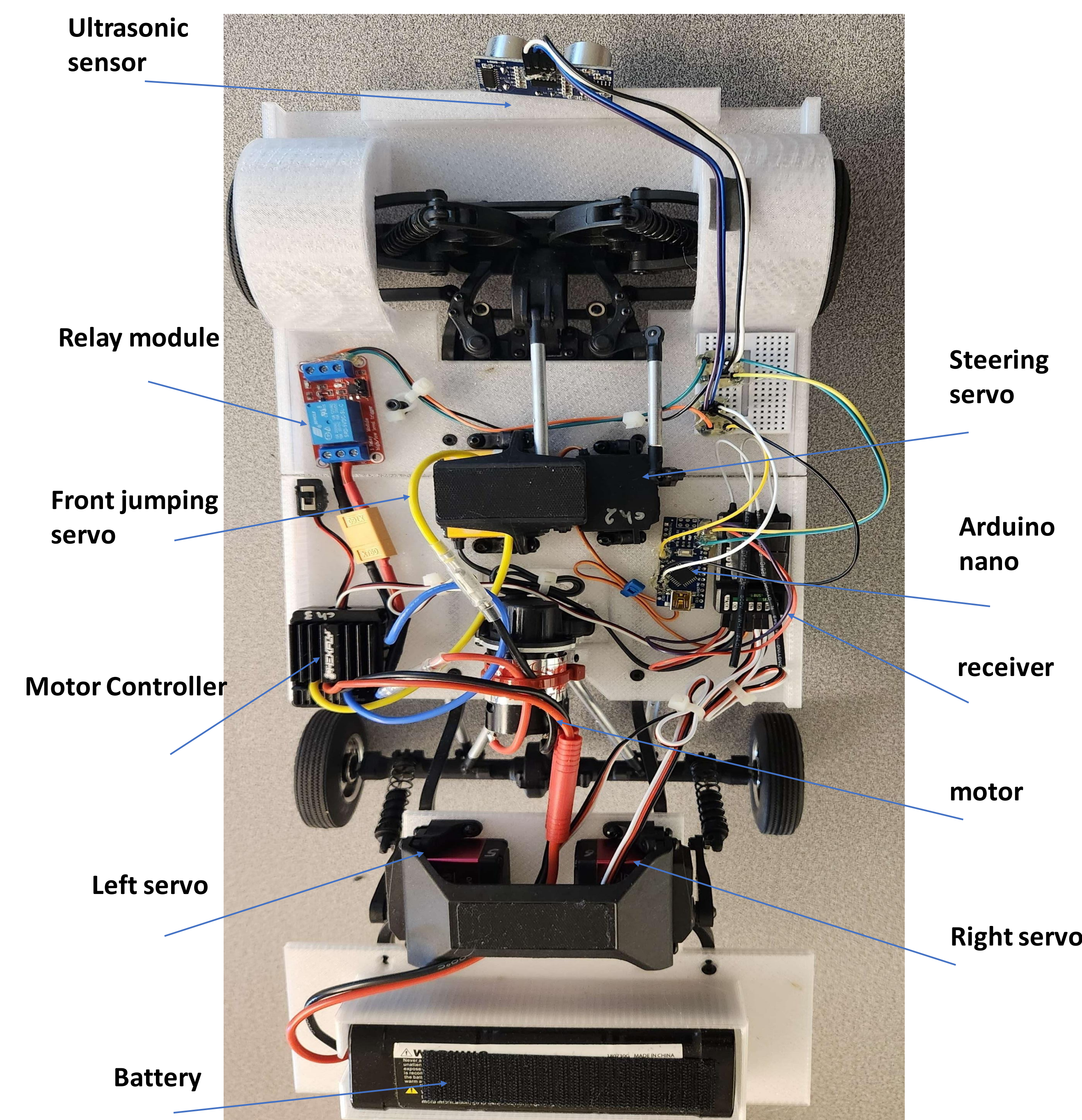

Mechanism

The car is equipped with an ultrasonic range finder that works with the Arduino nano. It will sense the distance from the front of the car to an object and will disconnect power going to the motor using a relay module for added safety.

Car Structure

The car consists of an Arduino nano, a motor, 4 servos, an ultrasonic range finder, a relay module, a transmitter and a receiver. Using the controller, we have programmed the car to steer accelerate, jump and stop when it approaches a certain distance.

Front of Car

- Ultrasonic sensor
- Relay module
- Front jumping servo
- Motor Controller
- Left servo
- Battery
- Steering servo
- Arduino nano
- receiver
- motor
- Right servo

Parts List

-1 steering servo
-1 Reef hopping servo
-2 Rear lifting servos
-Motor controller

-Arduino Nano
-Ultrasonic range finder
-Relay module
-3800mah Rechargeable Battery

Design Details

- The original design consisted of using an Arduino mega to be the brain and power of the servos/motor. The Arduino doesn't supply enough power to move the motors at the speed needed. The motors are now powered through the receiver and the Arduino nano makes the ultrasonic sensor and relay module work.

- PETG Filament material was used for the 3d printed frame. Several prints were necessary to create the final design through trial and error.

- We are using an ultrasonic range finder which works with an Arduino nano to see if there are any obstacles within 19 inches. If there is an obstacle within the set distance, it sends a signal to the relay module and tells it to turn off the motor and hold for 3 seconds, then to keep the motor on for 7 seconds so the car can reverse.

- Standby time and usage time will vary depending on how heavily the motors are used. Est. Range: 35min-1hr.

Conclusion

Due to the limitations based on time and the design of the car we weren't able add a second ultrasonic range finder in the back because with the adjustable suspension the sensor would malfunction and turn the car off when it shouldn't. A further modification we plan to add to the car is a standalone speaker with a Bluetooth receiver within the car. Which connects to your phone via Bluetooth so the car will double as a speaker.