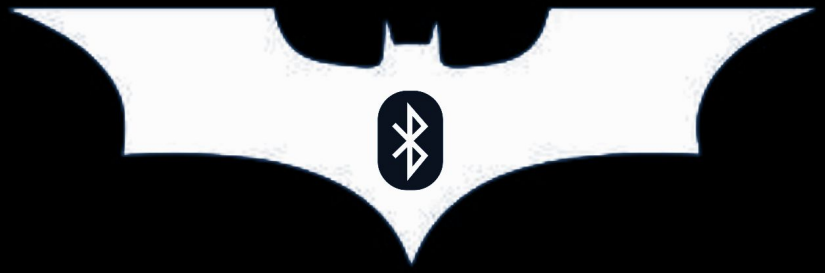
Embedded System Final Project
ECE 4180
Bluetooth Batmobile



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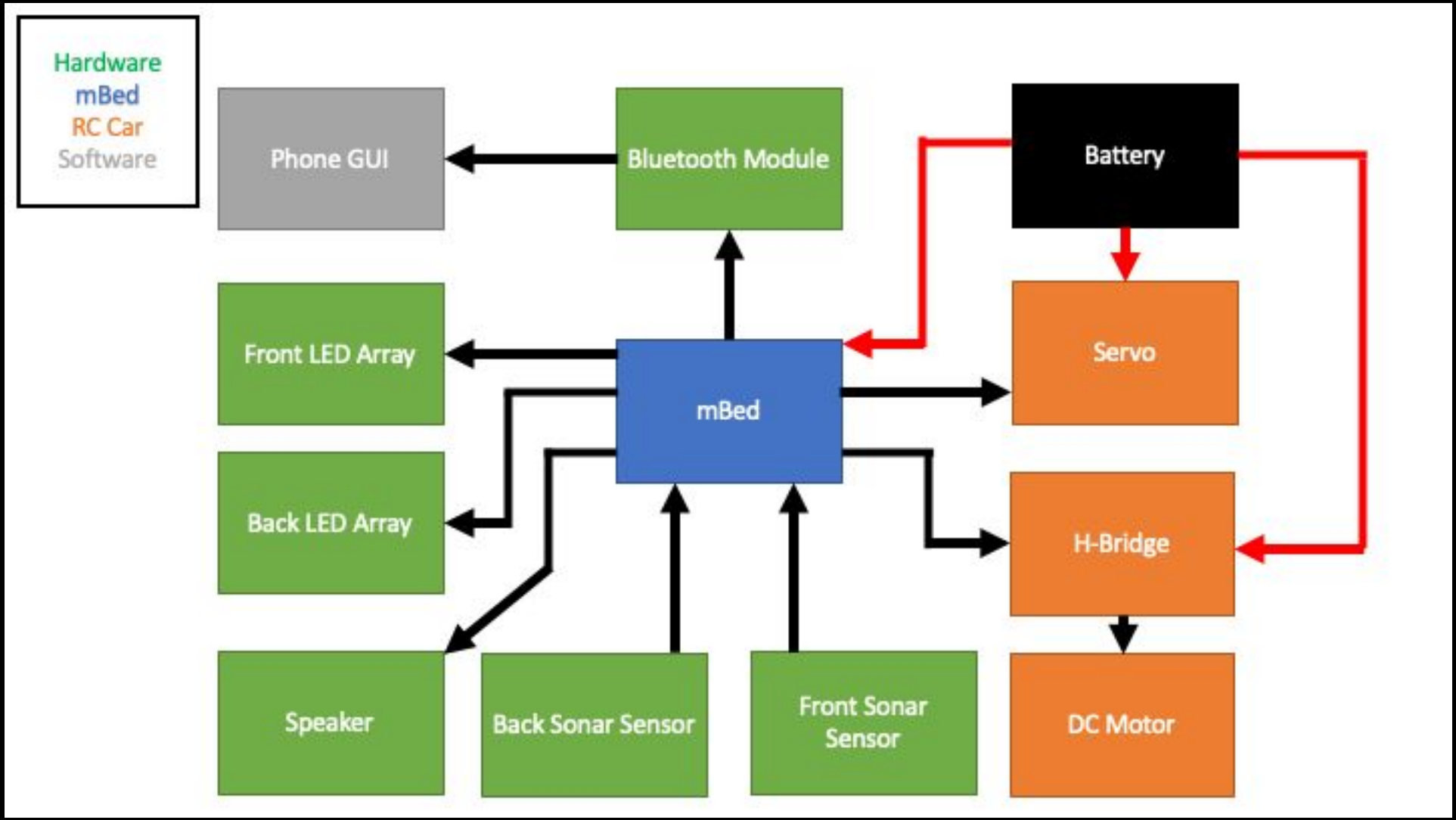
The Bluetooth Batmobile

Retrofit an old RC car with an Mbed Microcontroller

Before…

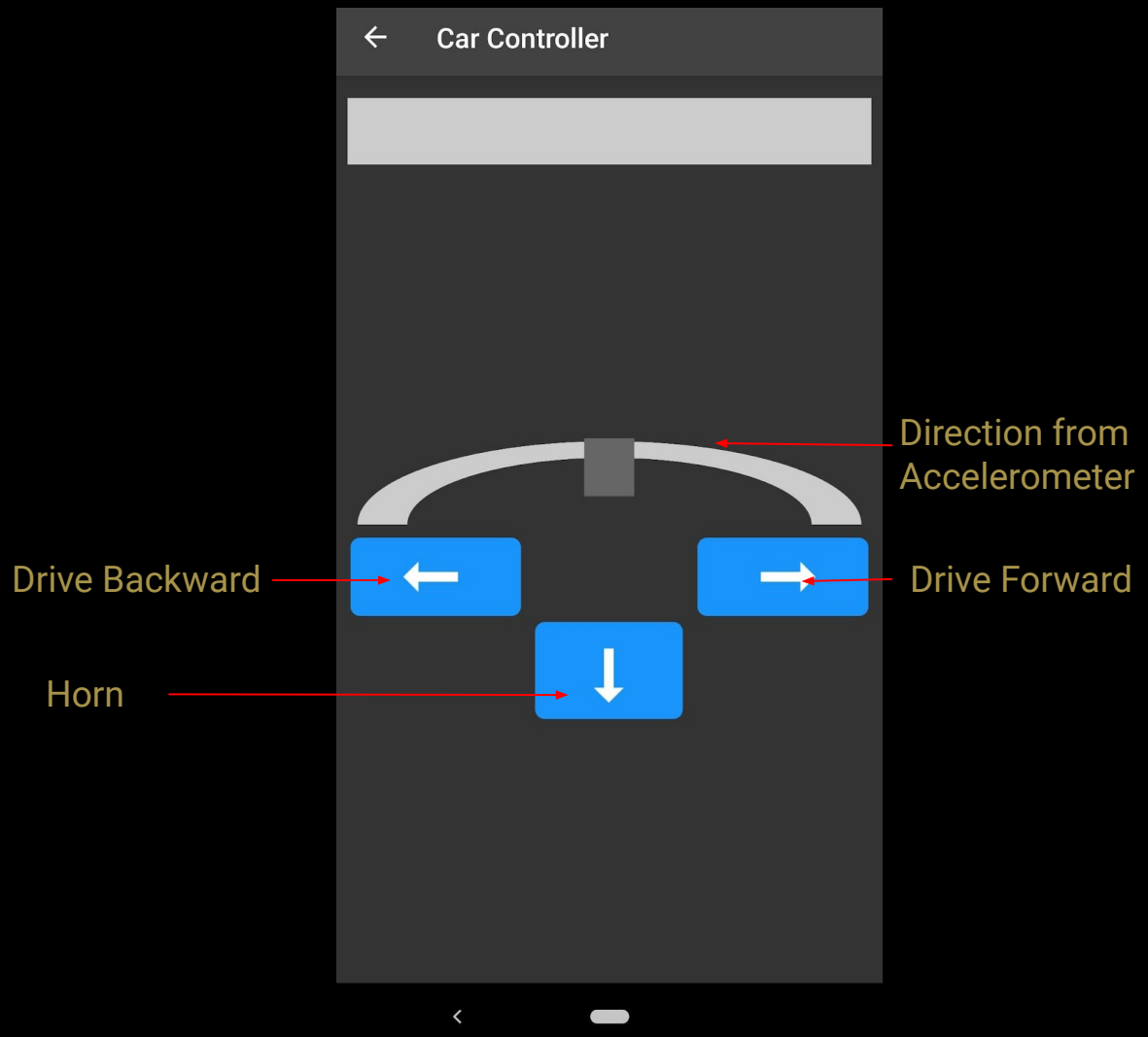
…After

System Diagram

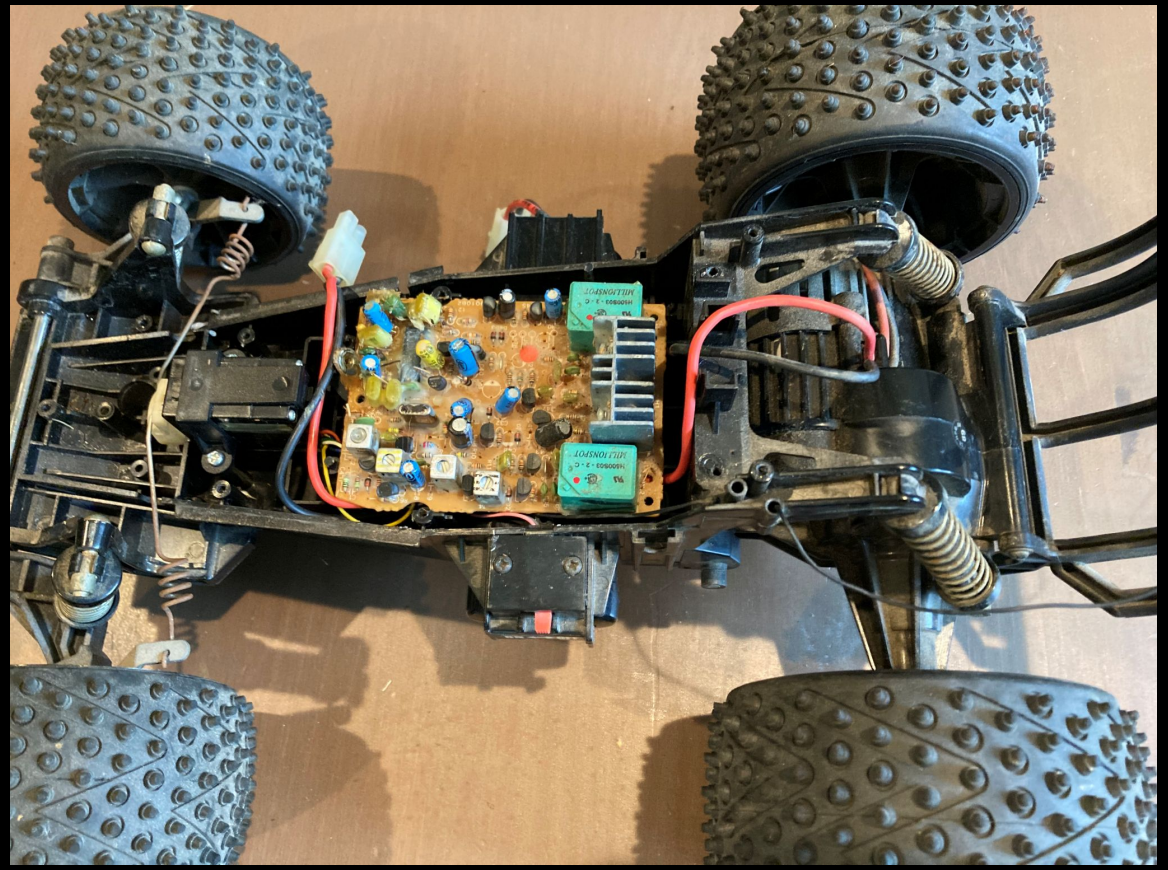


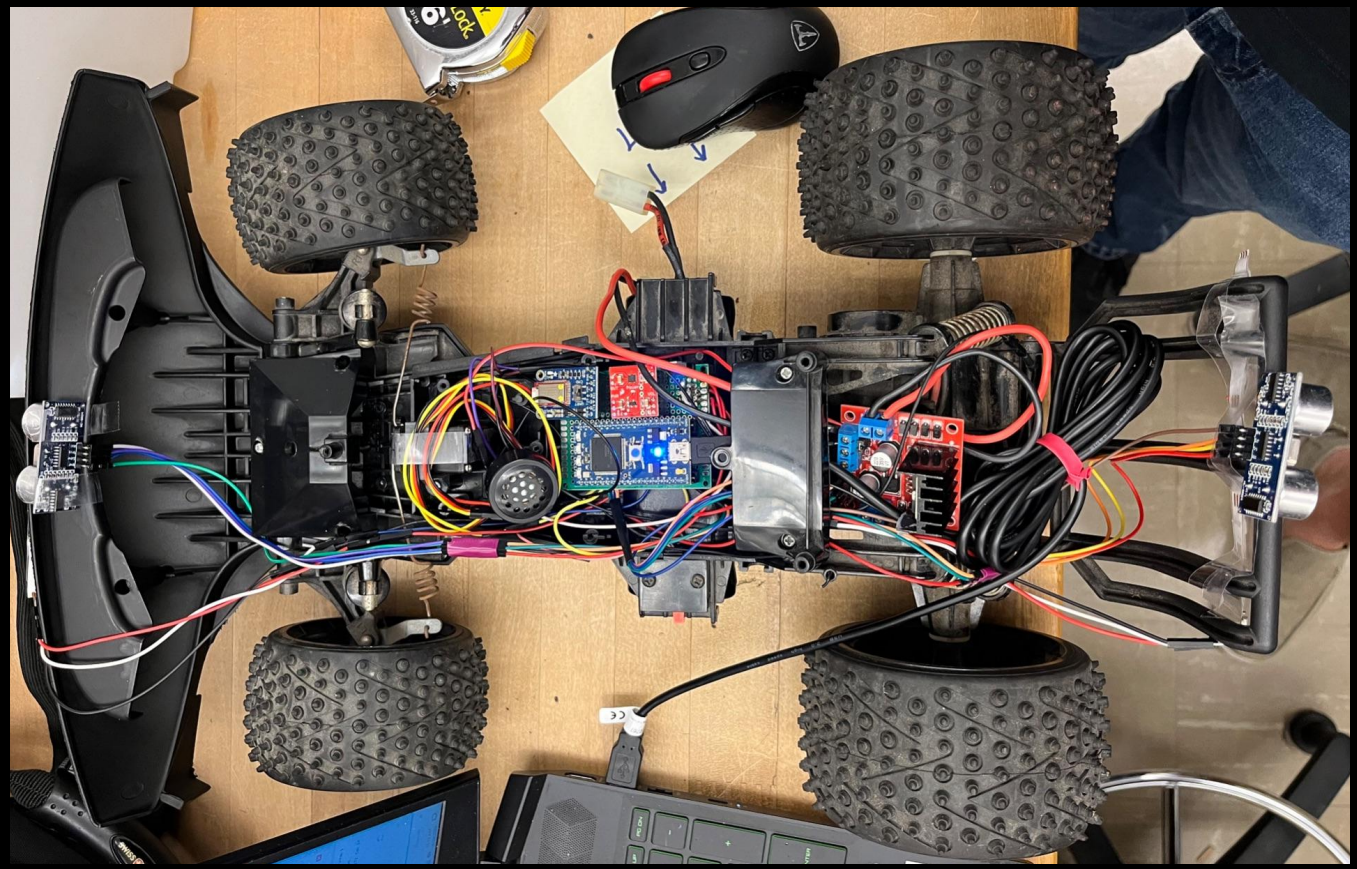
Tasks Completed

- Modify the Adafruit Bluetooth app to create controls for the car
  - Read the phone's accelerometer values to steer the car
- Add an H-Bridge to control the DC Motor
- Add a servo motor to control direction of the car
- Add sonar sensors to detect obstacles in front and behind the vehicle
- Add two LED strips to visualize the detection of the sonar sensors
- Add a speaker and Class D Audio Amp to play a horn sound

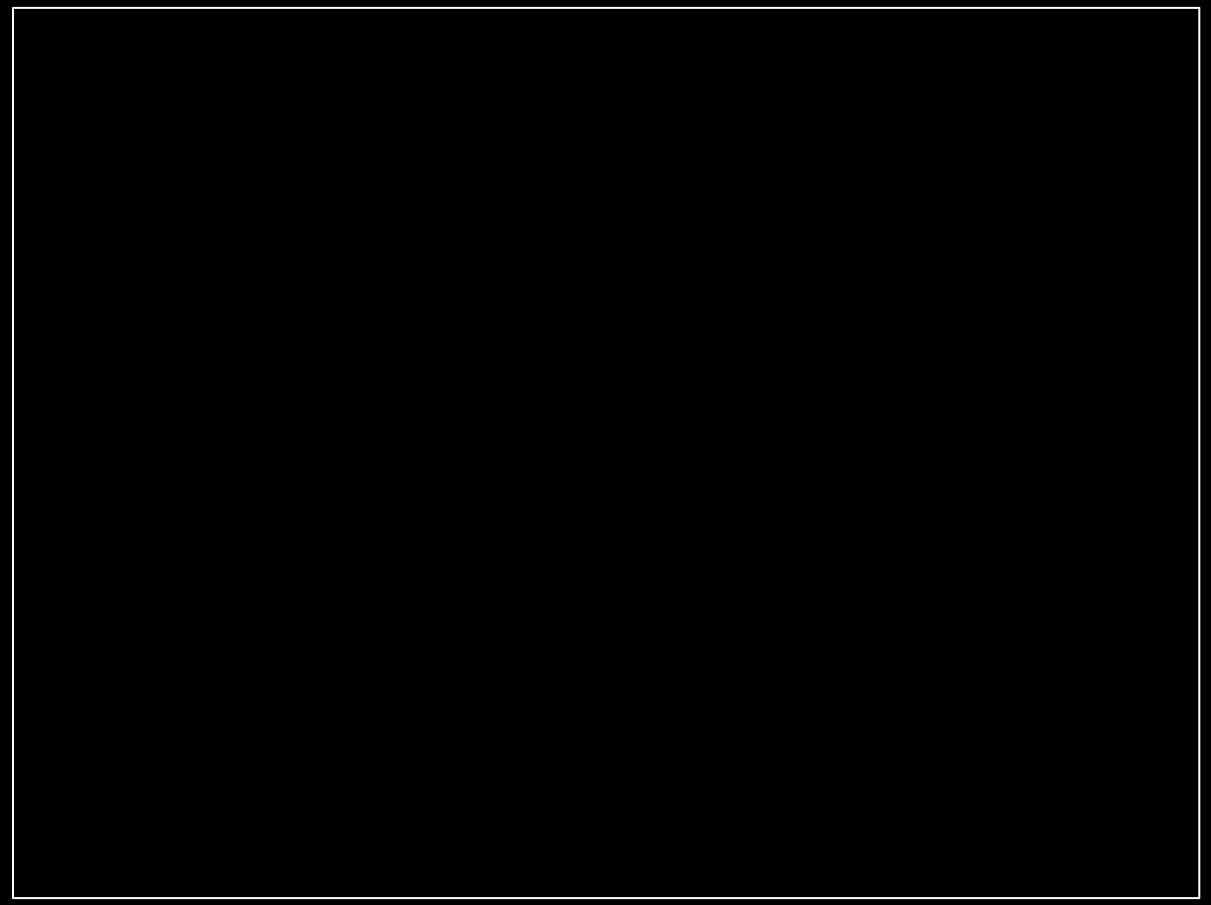


The electronics before and after

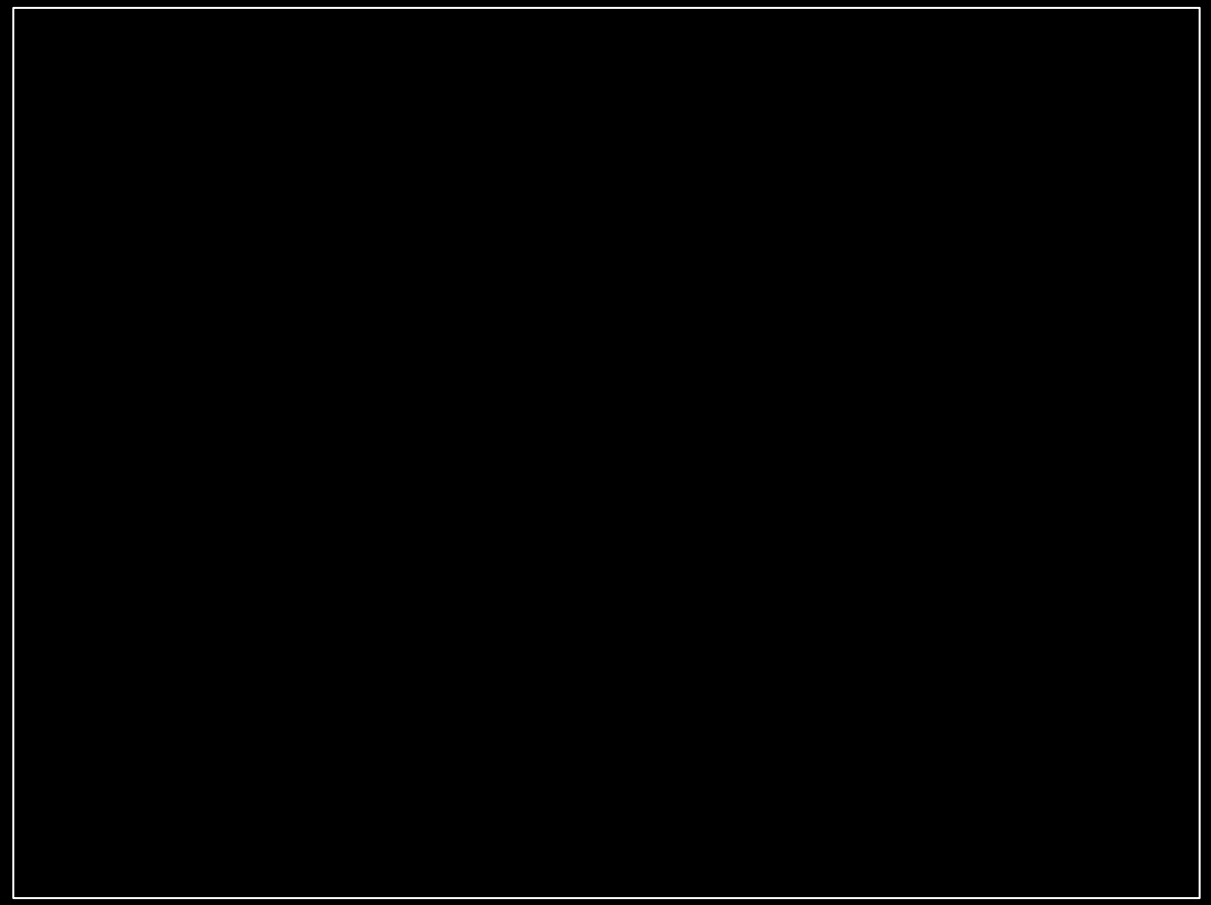




Video Demo



Completed RC Car System Demo



RC Car Driving Demo

Summary and Further Work

- Successfully created a car we can control via Bluetooth
- Current motor driver is insufficient to power the DC motor
  - Use a more powerful H-Bridge
  - Use a more powerful battery
- Use speaker to beep with obstacle detection
- Rocket League
  - Add a solenoid or two to the bottom of the car
    - Makes the car jump in the air
  - Add a turbo mode