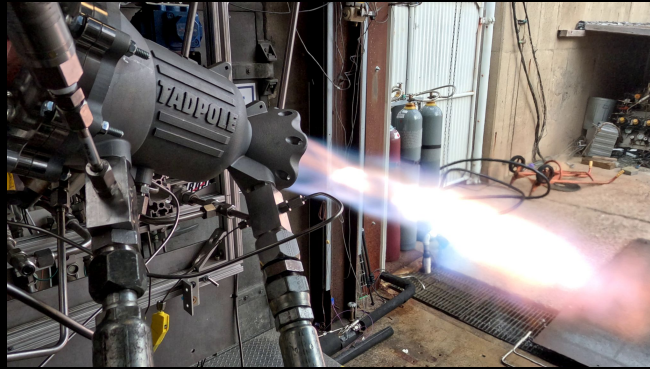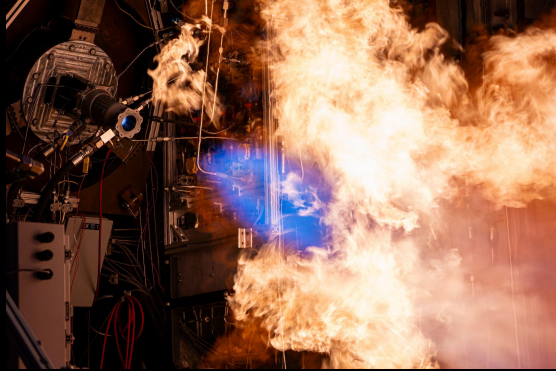# Rocket Engine Throttle Valve Control Software

- Developed C++ firmware for controlling throttle valves on a liquid fueled rocket engine for Purdue Space Program

- Integrated control system with 7 Pressure Transducers and 2 Thermocouples using shared SPI bus

- Communicated with 2 throttle control motors over CAN bus

- Verified code functionality through MATLAB Simulink simulations and hardware in the loop testing

- Explained code design decisions during Test Readiness Review presentations

Robert Nies | robertjnies@gmail.com | (317) 282-9909

FIRST Robotics Competition Robot
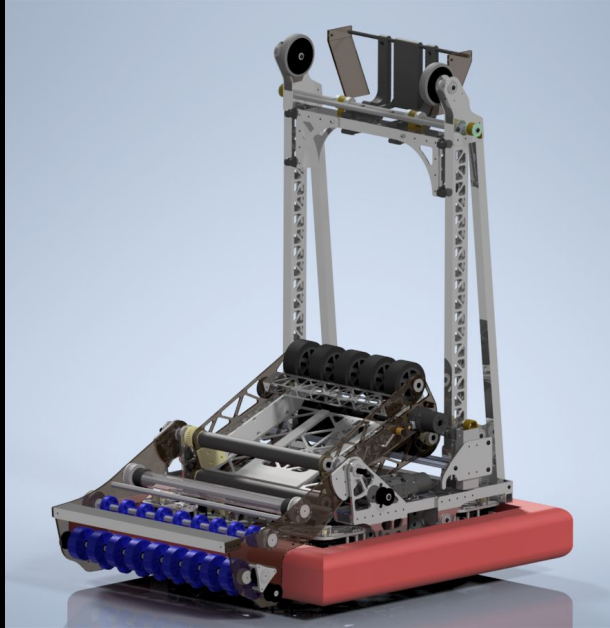
- Lead 70 person team to design, fabricate, and assemble a competition robot in 6 weeks for FRC Team 868

- Tracked project timelines and assembly dependencies to ensure competition readiness

- Coordinated with Programming/Electrical lead on interdependent design decisions

- Won 2 district qualifying competitions

- Competed at the World Championship, won Excellence in Engineering Award

Robert Nies | robertjnies@gmail.com | (317) 282-9909

Electric Bike Tracking and Telemetry System

- Developed E-Bike GPS tracking and telemetry system to protect customers against theft

- Configured PostgreSQL database and Web UI in Google Cloud

- Setup authentication with Google OAuth so customers could securely access location data

- Worked directly with customers to refine user experience and features

- Designed custom PCB to integrate GPS tracker with E-Bike battery

Robert Nies | robertjnies@gmail.com | (317) 282-9909
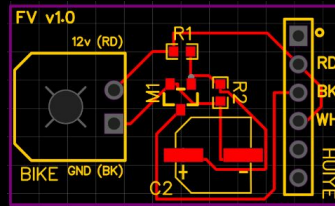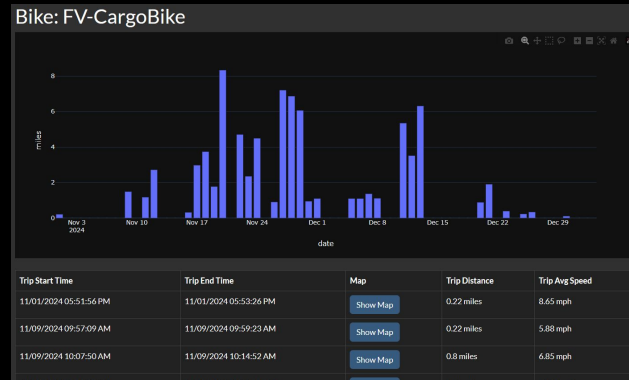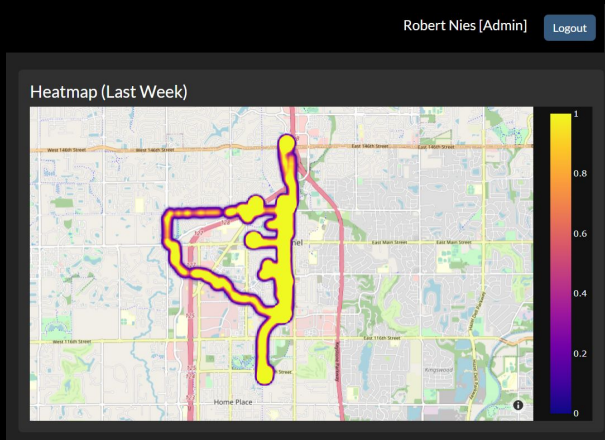
Autonomous Boat with Depth Finder
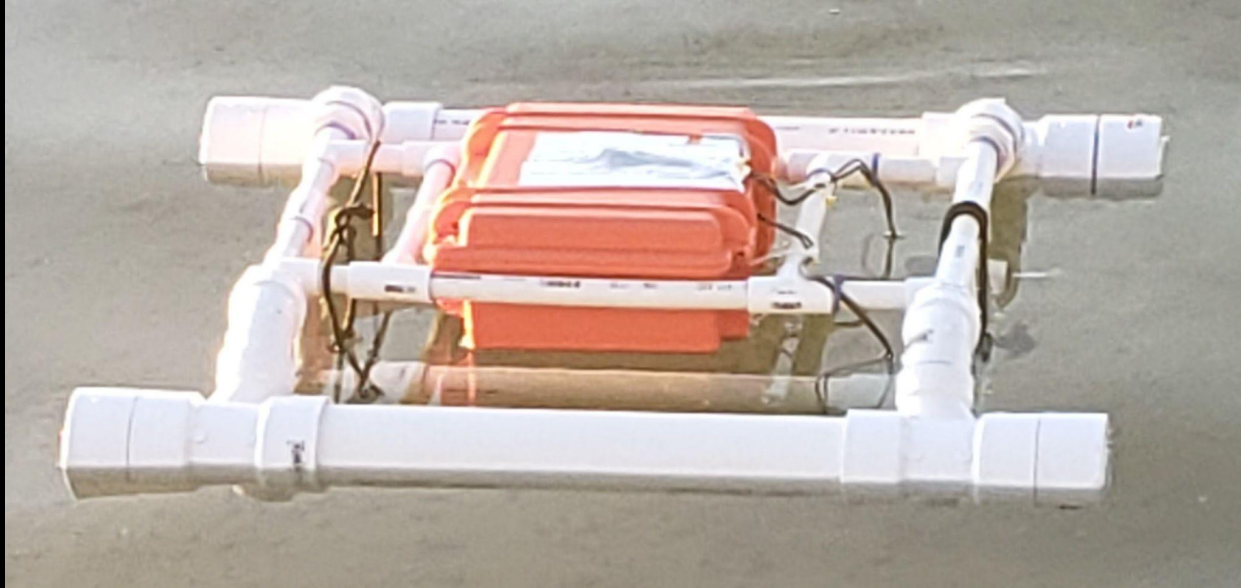
- Designed, built, and programmed autonomous boat for mapping lake depths

- Parsed NMEA messages from GPS for positioning, and combined with IMU data for navigation

- Created web interface to view real-time depth measurements from sonar transducer

- Developed software for direct remote control and fully autonomous path following

Robert Nies | robertjnies@gmail.com | (317) 282-9909

Python UI Library for Rapid Data Visualization
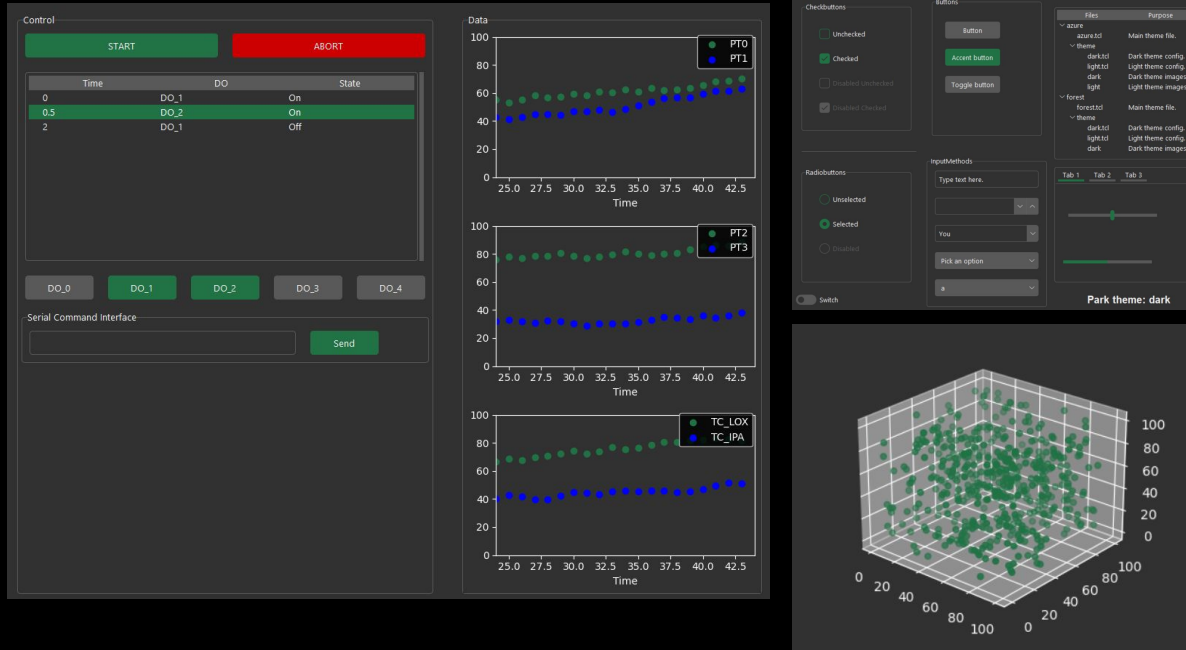
- Developed Open Source python library for creating data visualization and control system dashboards

- Implemented across personal and freelance projects to reduce development time

- Supports Matplotlib for 2D and 3D graphs

- github.com/RobertJN64/TKinter ModernThemes (150 stars / 500 weekly downloads)

Robert Nies | robertjnies@gmail.com | (317) 282-9909