Development of an Autonomous Surface Vehicle

Team 521

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Objective

To **design**, **build**, and **program** an **autonomous surface vehicle** capable of completing tasks in these categories:

- Navigation
- Detection
- Object Avoidance & Delivery
- Station Keeping
- Two-Step Behaviors

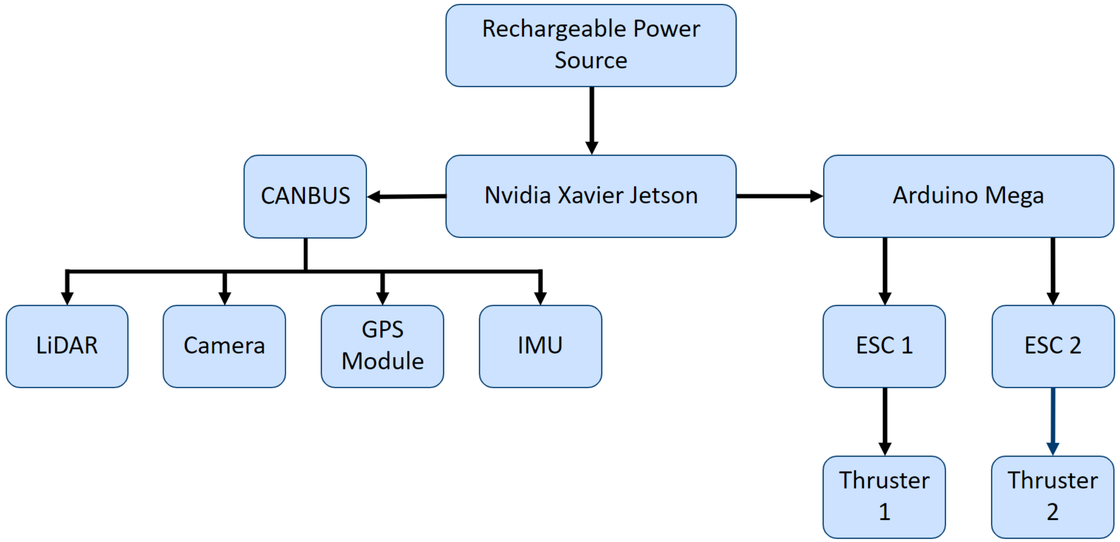
Background

- **Roboboat** is an international student competition to design an ASV that navigates through a challenge course.
- Composed of tasks that mimic real-world challenges in maritime industry.

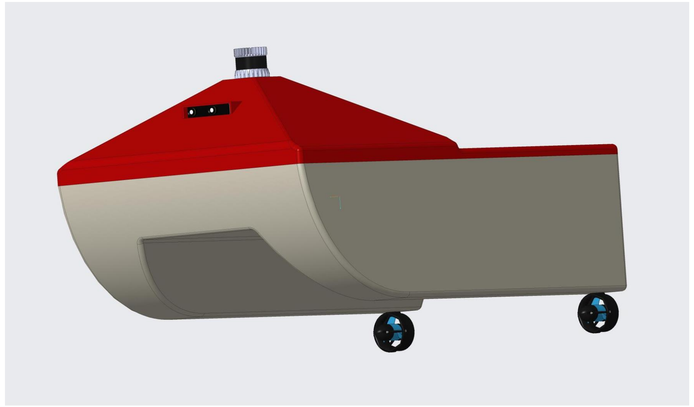
Key Goals

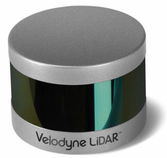
- Reliable Safety System
- Accurate Navigation System
- Modular Code Architecture
- System Designed Around Modular Components

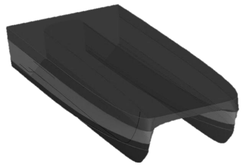
2024 Competition Course Map



Current State of Design







Main Functions

Out of 8 functions generated **Navigation**, **Structure** and **Safety** were the main three selected.

Critical Targets

- Size: ≤ 6 ft x 3ft x 3ft
- Weight: ≤ 140 lbs.
- Autonomous navigation: True
- Kill switch integration: True
- Battery life > 30 min.

Future Work

1. Hull finished and components mounted.
2. Electrical components interfaced.
3. Performance tests and results analyzed.
4. Final video filmed.

Full Evidence Manual