Autonomous LPV Competition

Sponsor: Naval Surface Warfare Center (NSWC) Crane

Budget: $4000

Description:
This challenge will directly relate to one of the naval efforts in low profile vessels (LPVs). The participating universities, will receive a blue print of the boat build, a bill of material, instruction manual, a sensor package to be used on the boat to make it fully autonomous, and a financial stipend.

A brief overview this challenge: During the course of this competition, teams will be required to have their fully autonomous LPV navigate a buoy course on the water and stay within the bounds of the buoys without colliding with any of the buoys. Teams will also be required after the successful completion of the course to navigate to a certain color and sized buoy at the end of the course to demonstrate the ability to detect and classify objects. Once the LPV navigates autonomously to the correct object at the end of the course, it will need to deploy a sensor at the buoy, demonstrate that the LPV is receiving information from the deployed sensor and the communication link between the two is working successfully (but it is not a physical tether), and finally navigate to the exit point.

Note: This is the continued project from last academic two years, with additional features and improvement implementations and designs.

Project requirements:

1. At least one mission will be autonomously navigated using GPS waypoints.
2. At least one mission will be attempted using image recognition with machine learning.

Students: 3-4 ECE Students

Faculty advisors: Guoping Wang, Bin Chen

Budgets: $4000
Notes:

1. Students must commit to participating in the competition scheduled for April 16–18, 2026.

2. One or two students should have hands-on experience with DIY projects and be familiar with using power tools.

AIMM Crane Homepage: https://www.trine.edu/innovation-one/aimm/index.aspx