17th annual

RoboBoat 2024

February 5-11, 2024 | Nathan Benderson Park | Sarasota, Florida

TeamTime

Thursday, October 26, 2023 | 12:00 Noon Eastern Time

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GET STARTED

1. Edit your name to "Name | Team Name"
2. Let us know in the chat:

   Rookie or Returning Team?

AGENDA

[12:00-12:10]	Welcome & Introductions
[12:10-12:20]	Competition Overview
[12:20-12:35]	Autonomy Challenge Overview
[12:35-12:45]	Event Details
[12:45-13:00]	Questions?

Team Handbook Version 1 Released

REC

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Julianna Smith
Program Manager

Laverne Imori
Community Engagement Coordinator

Lindsey Groark
Program Director

Cheri Koch
Senior Events Manager

Bill Porter
Technical Director

Jovanni Conway
Technical Manager

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SARASOTA, FLORIDA

FEBRUARY 2024

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Eligibility

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All teams must build an ASV to compete; only one vehicle in the competition.

Teams must be comprised of:

- 75% or more full-time students
- 25% or less alumni

Most team members must be college or high school students. Teams may also include middle school students. Interdisciplinary teams are encouraged.

Minimum of three (3) team members.

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Competition Structure

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Autonomy Challenge

Build an ASV to showcase autonomous performance.

Design Documentation

Prepare documentation showcasing ASV design and competition strategy.

Design Documentation

- *Team Website*
- *Technical Design Report*
- *Team Intro Video*
- *Design Presentation*
- *System Assessment*

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Task Overview

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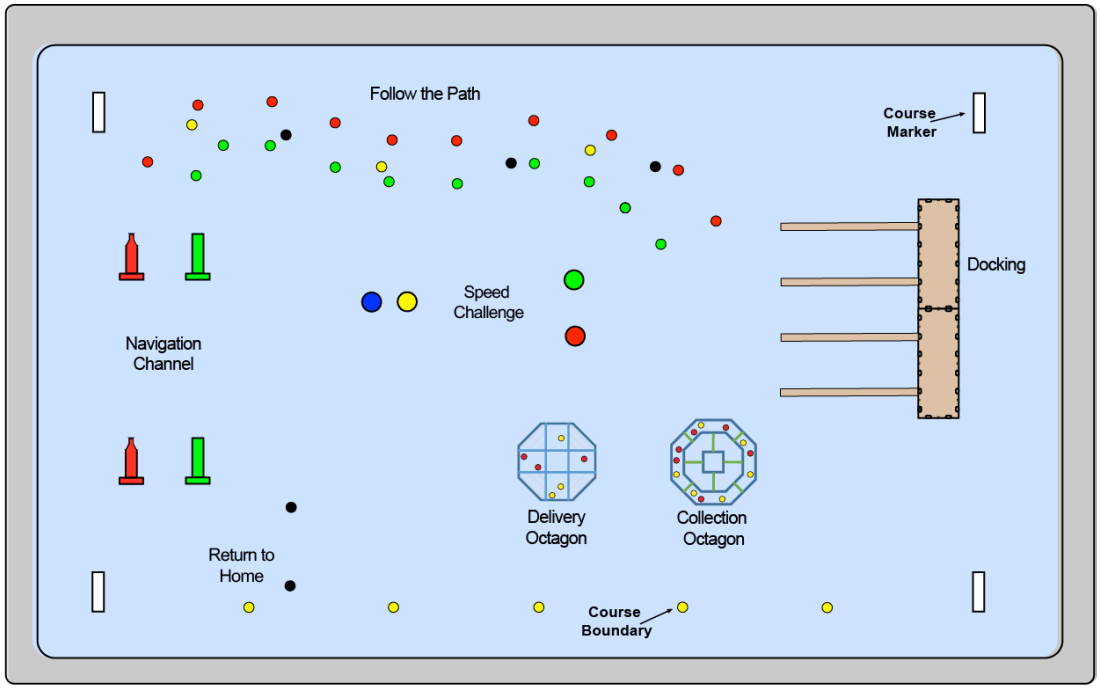

Navigation

Object Avoidance

Station Keeping

Detection

Object Delivery

Two-step Behaviors

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Task Overview

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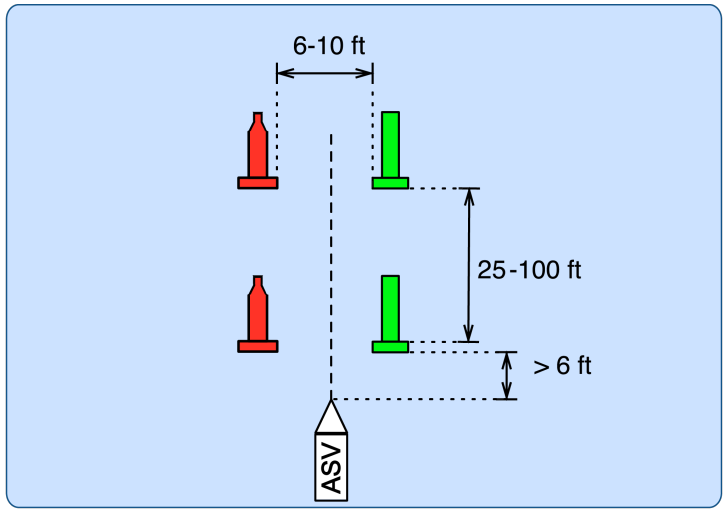
Task 1: Navigation Channel

- Mandatory before attempting other tasks
- ASV passes through two sets of gates
  - Gate: pair of red and green buoys
  - ASV starts autonomous navigation at a minimum of 6 ft before the set of gates



Task 1 – Navigation Channel	Performance Measures	Potential Points
	ASV navigates through both gates	0,200

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Task Overview

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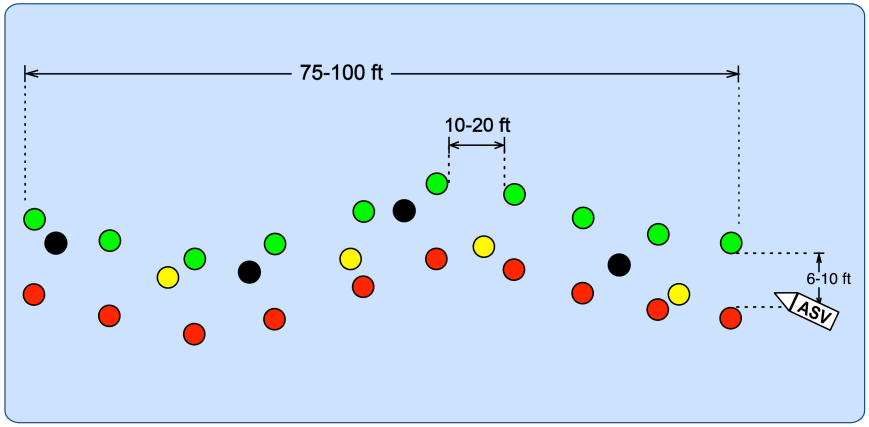
Task 2: Follow the Path

- ASV passes through a pathway between multiple sets of gates and avoids intermittent yellow and black buoys
  - Gate: pair of red and green buoys
- ASV counts duck sightings (yellow buoys) and exits pathway. ASV circles in place for the number of duck sightings collected during task.



	Performance Measures		Potential Points
Task 2 – Follow the Path	ASV maneuvers through gates (G), without striking buoys (S) (maximum buoy strikes: 5)	25*G – 25*S	0-250
	ASV maneuvers through gates, in one sequence	25*G	0-250
	ASV exits pathway and circles in place, equivalent to number of yellow buoys in task		0,50

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Task Overview

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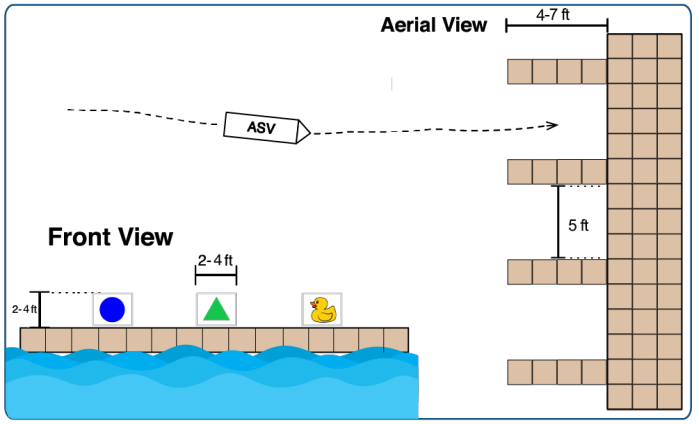
Task 3: Docking

- ASV detects and enters the docking bay corresponding to the color of the day
- Docking bays could have banners with any of the following:
  - Shapes – circle, triangle, square, plus sign
  - Colors – blue, green, red
  - One docking bay will have an image of a duck for Task 4



	Performance Measures	Potential Points
Task 3 – Docking	ASV enters any docking bay (points awarded once)	0,50
	ASV enters correct docking bay on first attempt	0,150
	ASV remains in dock for 30 seconds	0,150
	ASV style points 50 for entering in any direction, other than forward 50 per turn in place, while remaining in dock (max: 2)	0-150

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Task Overview

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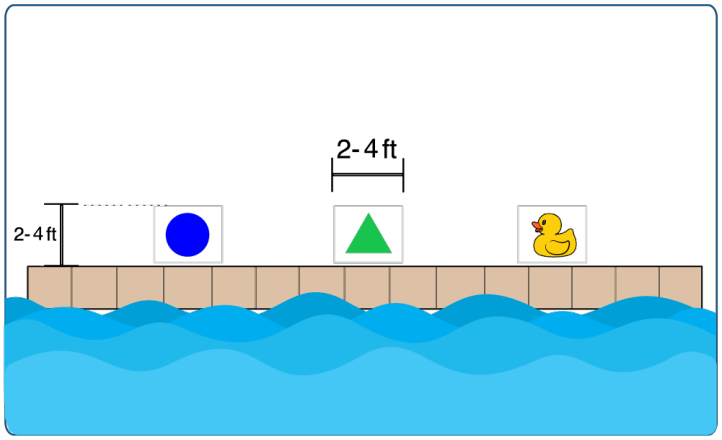
Duck Wash Located on Docking Task

Task 4: Duck Wash

- ASV detects the docking bay with the duck banner
- ASV delivers water on the duck banner
  - ASV may pump water from environment versus storing it on board the vehicle.
  - ASV may make contact with dock.



	Performance Measures	Potential Points
Task 4 – Duck Wash	ASV shoots water near task platform	0,100
	ASV delivers water on duck banner	0,150
	ASV delivers steady stream of water on duck banner for 5 seconds continuously	0,300

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Task Overview

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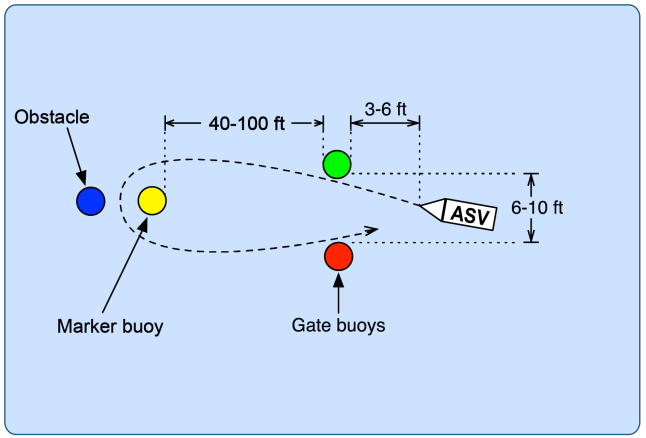
Task 5: Speed Challenge

- ASV enters the gate buoys, maneuvers around the marker buoy and exits through the same gate buoys, as quickly as possible.
  - The blue obstacle buoy may be positioned anywhere within this task.



- The timer starts when the bow (front) crosses the gate buoys and stops when the bow (front) crosses the gate buoys.

	Performance Measures		Potential Points
Task 5 – Speed Challenge	ASV navigates through gate, without touching any buoy		0,50
	ASV circles yellow buoy, without touching any buoy		0,100
	ASV circles blue buoy, without touching any buoy		0,50
	ASV exits through gate, without touching buoy		0,100
	Task completion time (T)	250-T	0-250

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Task Overview

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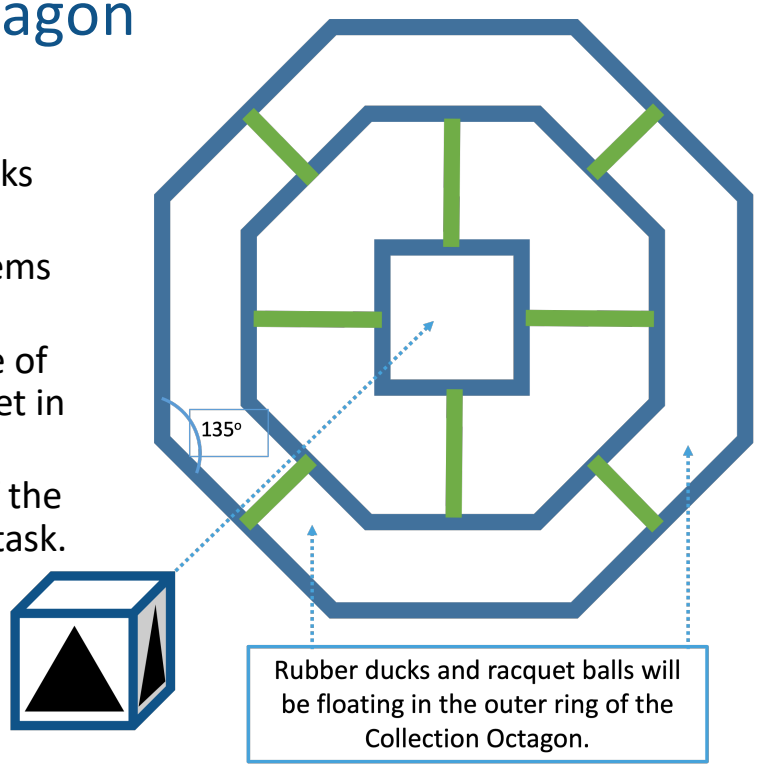
Task 6: Collection Octagon

- ASV collects items in octagon.
  - Items include: floating rubber ducks and red racquetballs.
  - ASV then delivers the collected items to the Delivery Octagon (Task 7).
- Collection area floats on the surface of the water and is approximately 6 feet in diameter.
- 3-dimensional cube in the center of the octagon aids the ASV to detect the task.
  - Panels are black triangles.



	Performance Measures		Potential Points
Task 6 – Collection Octagon	ASV makes contact with item from collection octagon		0,50
	ASV collects items (i) from collection octagon	50*i	0,50,100,150
	ASV collects ducks (d) from collection octagon	50*d	0,50,100,150

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Task Overview

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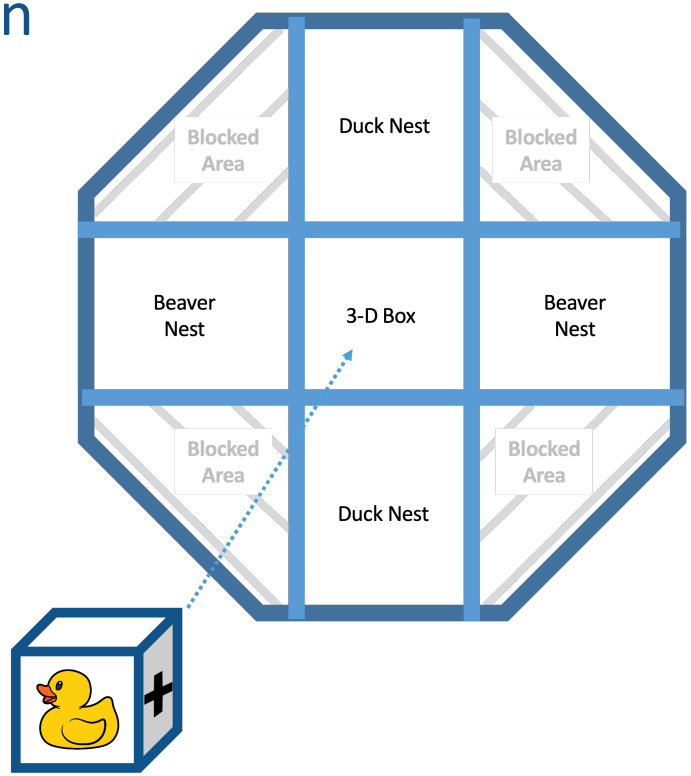
Task 7: Delivery Octagon

- ASV delivers collected items from Task 6 to “nests” in octagon.
- Collection area floats on the surface of the water and is less than 6 feet in diameter.
- 3-dimensional cube in the center of the octagon aids the ASV to detect the task and identify the nests.
  - Panels are black plus signs and duck images to identify the different nests.



Task 7 – Delivery Octagon	Performance Measures		Potential Points
	ASV delivers items (i) to any nest	50*i	No limit
	ASV delivers items (i) to correct nest	50*i	

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Task Overview

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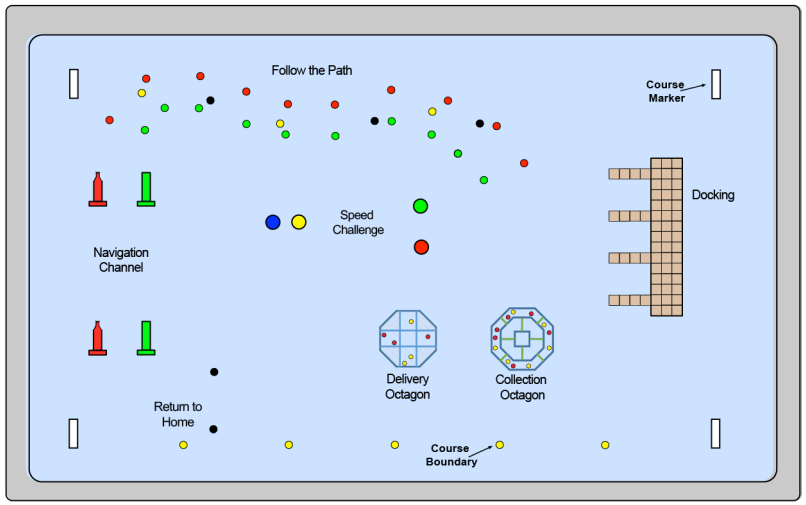
Task 8: Return to Home

- ASV returns to start of course in autonomous mode, maneuvering through a pair of black buoys positioned near the start of the course.



Task 8 – Return to Home	Performance Measures		Potential Points
	Return to home after attempting tasks (#t)	100*#t	0-700
	Bonus for attempting all tasks and returning to home		0,100

Time Bonus: "The First Duck Gets the Worm:
Multiplier applied to overall points earned, based on the number of seconds remaining on the timeslot clock.

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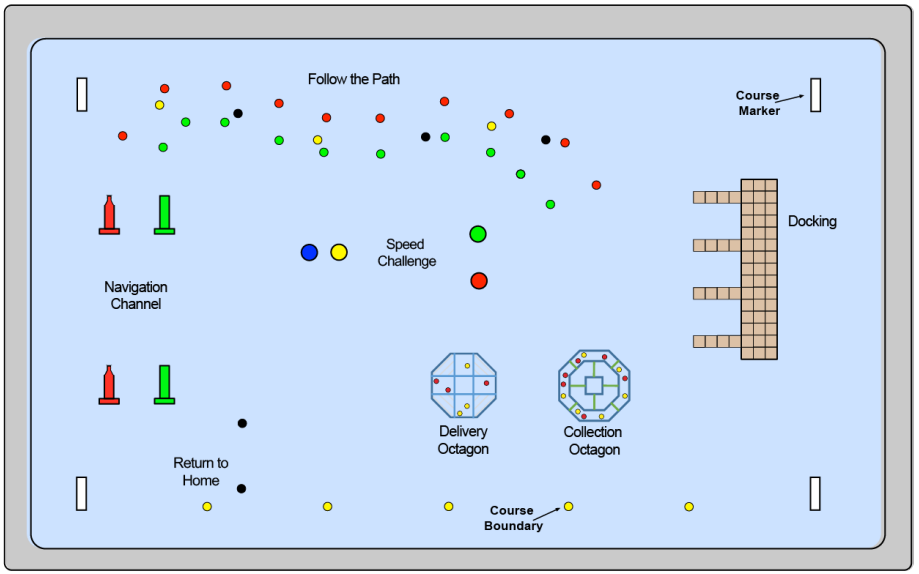
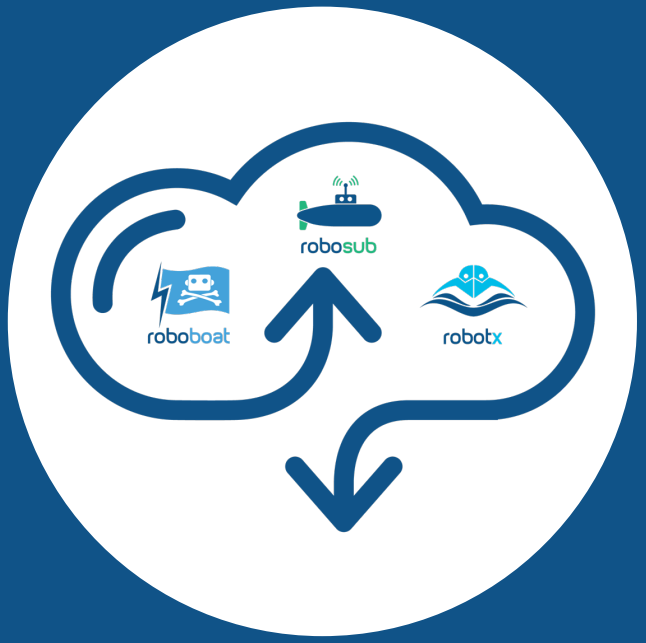
QUESTIONS?





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Data Sharing

roboboat.org/data-sharing

What is Data Sharing?

- Centralized Repository
- Community Driven
- Competition focused
  - Vision
  - Acoustics
  - Mechanical Designs
  - Electrical Designs

DATA FOR ALL TEAMS

LARGE DOMAIN OF DATASETS

BETTER PLATFORM FOR NEW TEAMS

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Venue Layout

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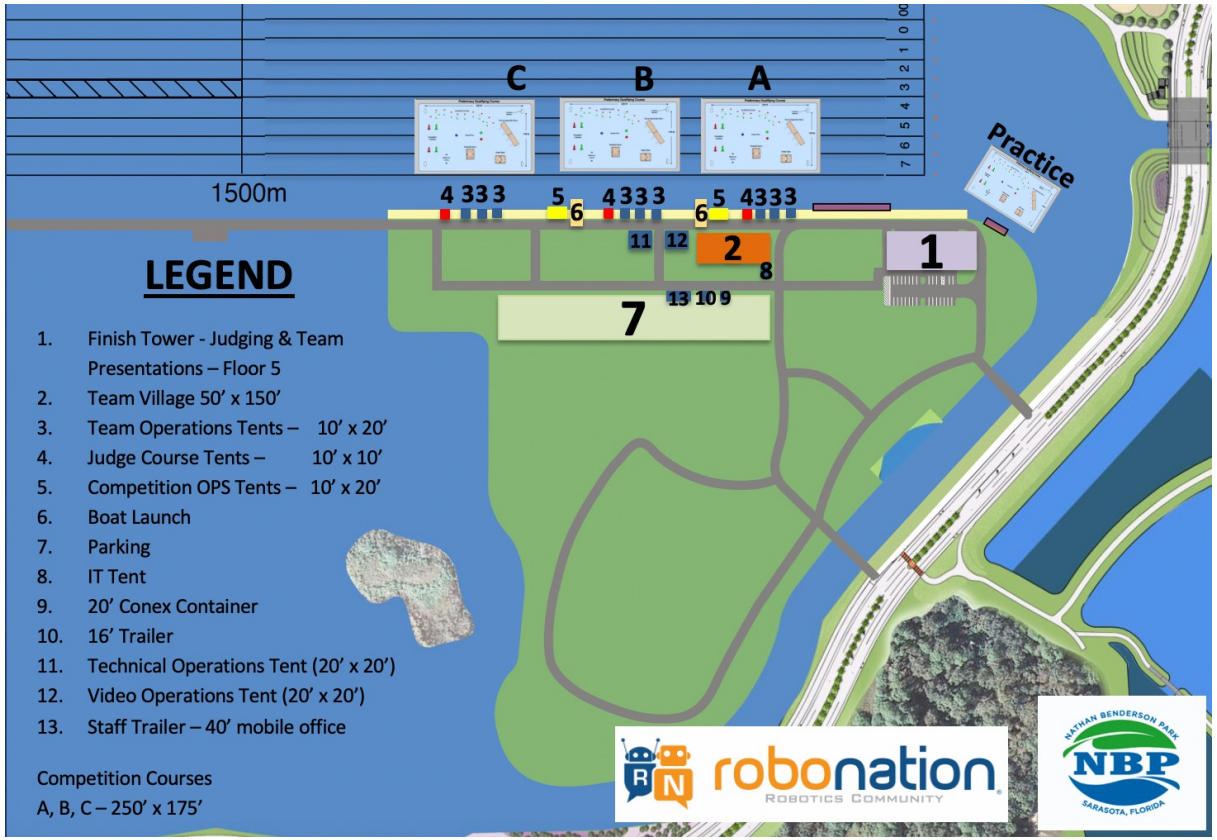

Overall Schedule

DEC 2023

Pre-Competition Submission Deadlines

JAN 2024

Pre-Competition Evaluation (Online Judges)

FEB 5 MON	FEB 6 TUE	FEB 7 WED	FEB 8 THU	FEB 9 FRI	FEB 10 SAT	FEB 11 SUN
	7:45 am Daily Team Meeting *(mandatory)*					
	8:00 am – 5:30 pm Practice & Qualifications					
1:30 pm Team Orientation *(mandatory)*		**9:00 am – 5:00 pm** Design Presentations / System Assessment			**Time TBD** Finals Rounds	
2:30 pm Safety Inspections	**2:00 pm** Judges' Training					
5:30 pm – 6:00 pm Daily Team Meeting *(mandatory)*						
						7:30 pm Awards
10:00 pm – 2:00 am Overnight Pool Testing (@ Hotel)						

How to Get Started:

- ❑ Team Handbook
- ❑ Registration
- ❑ ASV Design Process
- ❑ TeamTime Meetings

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Stay Updated

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ALL THINGS ROBOBOAT

For all the latest information and updates all week, visit the RoboBoat website!

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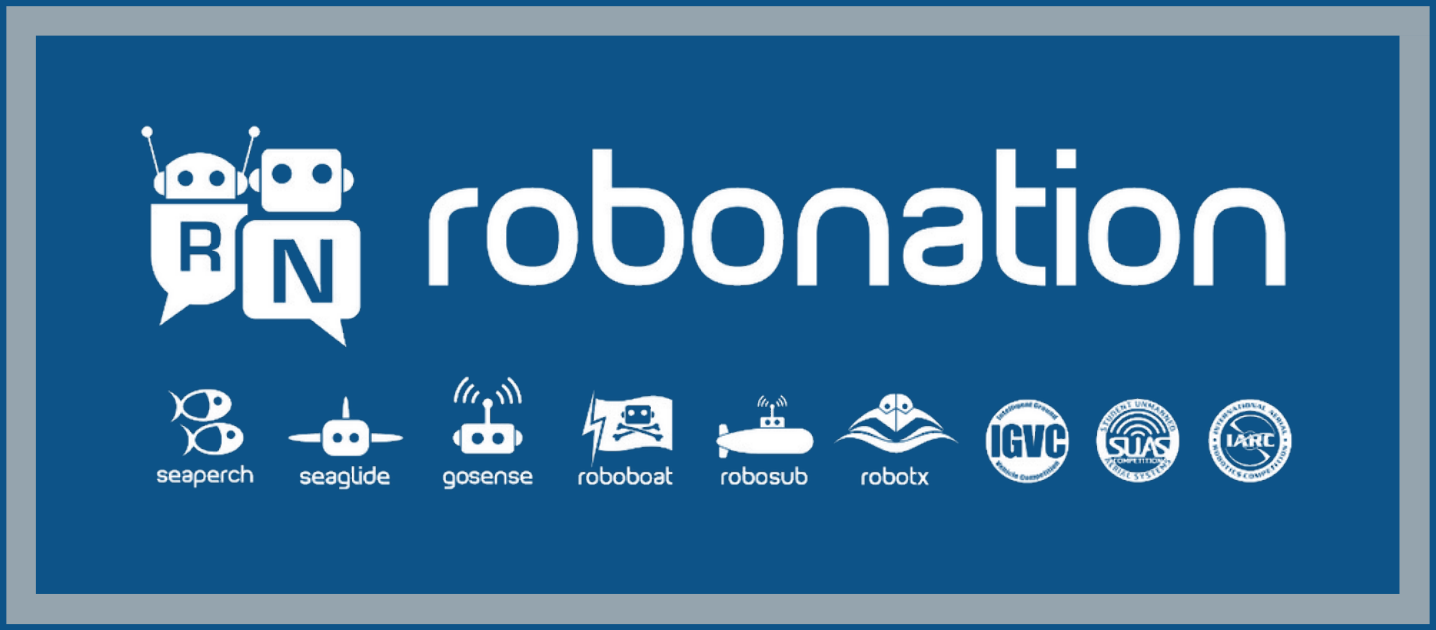
HAPPY HALLOWEEN!



RoboNation is a 501c3 nonprofit organization whose mission is to provide a pathway of hands-on educational experiences that empower students to find innovative solutions to global challenges. Working together with the industry, research and educators, we have grown to include over nine student competitions and programs and engage more than 250,000 students per year.

For more information contact autonomy@robonation.org