



### robotx



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2	Let us

dit your name to "Name | Team Name" E.g., Aamir | University of RobotX

- Let us know in the chat:
- $\fbox$  Are you planning to use an UAV in the competition?

# ROBOTX TEAM TIME #2

### AGENDA

09:00-09:05]	Welcome
09:05-09:20]	Timeline + Deliverables Overview
09:20-09:30]	Logistics Update
09:30-09:45]	Tasks Update
09:45-10:00]	Questions?









# Timeline

Date / Deadline	Event
November 1, 2023 – March 18, 2024	Registration
September 23, 2024	<ul> <li>Event Submissions Deadline</li> <li>Team Information</li> <li>Background Checks</li> <li>On-Site Requirements (Shipping Plan)</li> <li>Merchandise Order</li> <li>Award Information</li> </ul>
September 30, 2024	<ul> <li>Design Documentation Deadline</li> <li>Technical Design Report</li> <li>Team Video</li> <li>Website</li> <li>Community &amp; Outreach (optional)</li> </ul>
November 3-10, 2024	2024 Maritime RobotX Challenge





# **Pre-Competition Deliverables**



#### (1) Team Website

• Test it! Consider the user experience maneuvering your site and finding the required information.



**TIP:** Think about how easy your submission is to judge, from the judges' perspective.



Submit in registration portal: robonation.smapply.org/acc/l/





# **Pre-Competition Deliverables**



#### (1) Team Website

• Test it! Consider the user experience maneuvering your site and finding the required information.



#### (2) Technical Design Report

- 6-page limit (not including appendices)
- Includes abstract, acknowledgements, references, competition strategy, design strategy, and testing strategy.
- $\circ~$  Describe design principles and competition priorities.
- Get detailed! Review the requirements thoroughly and don't forget to outline your strategy and testing in detail.





Submit in registration portal: robonation.smapply.org/acc/l/





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#### (3) Team Introduction Video

- Conducted in English or English Subtitles
- Maximum 3 minutes
- Hosted on team's YouTube Channel or Team Website
- Be creative! Share your competition approach while sharing your team's personality.





Submit in registration portal: robonation.smapply.org/acc/l/







#### Introduction

 The MathWorks Simulation Award recognizes teams demonstrating innovative and effective use of MATLAB or Simulink in designing their boats for the RobotX competition. This award highlights teams that address system design challenges in simulation using MathWorks tools.

#### **Deliverable Requirements**

- o 5-minute video showcasing how MATLAB or Simulink was used to solve a problem faced.
- Video includes:
  - $\circ~$  A brief introduction of the team and boat
  - $\circ~$  A description of the problem or challenge that the team faced
  - $\,\circ\,$  A demonstration of the solution or design using MATLAB or Simulink
  - $\,\circ\,$  A summary of achievements and lessons learned from using MATLAB and Simulink

#### **Scoring Rubric**



Evaluation on the (1) introduction, (2) innovation, (3) test and verification, and
 (4) presentation and reflection on MathWorks tools.



Submit in registration portal:

robonation.smapply.org/acc/l/

# Logistics Update Cheri Koch

## **Preliminary Schedule**

Sunday 3 November	Monday 4 November	Tuesday 5 November	Wednesday 6 November	Thursday 7 November	Friday 8 November	Saturday 9 November	Sunday 10 November	
	0730 Team Meeting							
Team Check-In Mandatory Orientation Pilot Flight Tests	0800-1700 Auto	0800-1700 Autonomy Challenge Practice & Qualifying Safety Inspections Presentations & Assessments			0800-1700 Autonomy Challenge Semi-Finals Day 2	0800-1100 Third Chance / Finalist Practice Runs		
				Dayı		1200-1600 Autonomy Challenge Finals	900-1700 Team Pack-up	
	1800 Team Meeting							
	1900 Venue Closes							
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# Accommodations

# **Options**

### 1. Local Hotel

- $\circ\,$  Conference hotel to be selected soon
- $\,\circ\,$  Rates range from \$150 \$200 per night for quad occupancy

### 2. Airbnb or VRBO –

- Whole house or apartment
- o Sleeps 6 8
- Rates range from \$165 \$515 per night (plus fees & cleaning surcharge)





# Shipping 101

### How to Start - Get Help!

- RoboNation Freight Forwarder (selected soon)
- RoboNation Cheri Koch <u>ckoch@robonation.org</u>

### **RoboNation Responsibilities**

- Shipping Stipend for selected teams
  - More information coming this month!
- Transportation from port of entry to competition
- All transfers and storage during RobotX event
- Transportation back to port of entry
- Ends when shipment leaves Sarasota <u>or</u> one week after competition ends







# Shipping 101 (cont.)

### **Team Responsibilities**

- Planning begin preparing a shipping plan NOW!
- Crate Inspection / Determination Shipping Worthiness for all Crates / Boxes
- Develop a packing plan (packing list, weights, packing materials)
- Batteries, Batteries, Batteries Dangerous Goods
- Determine Importation Customs Type CARNET or Temporary Import Bond
- Inbound and Outbound Shipping Air vs. Ocean
- Prepare to complete all shipping paperwork Bills of lading, customs power of attorney, packing lists, safety data sheets, hazardous material forms, etc.



# YOU GOT THIS!



## Getting In & Out of Water

• Beaching

• Deploying







# Task Update Aamir Qaiyumi

### **Task Overview**





### **USV** Demonstration

### Mandatory Activity

The inspection and demonstration must be successfully completed as prerequisites for entry to the practice courses.

#### 1 Static Safety Inspection

- · USV must meet all safety requirements:
  - · Buoyancy pods
  - · Emergency stop system
  - $\cdot$  Tow points and tow line
  - · Lift points are clearly marked
  - · Safety requirements for
  - propellers (and propeller guard)
  - · All systems are properly secured

#### Dynamic Navigation Demonstration

 USV must autonomously maintain positive control, detect channel markers, and successfully navigate through two sets of gates.



### **UAV** Demonstration

### Mandatory Activity

The inspection and demonstration must be successfully completed as prerequisites for entry to the practice courses.

#### 1 Static Safety Inspection

- · UAV must meet all safety requirements:
  - · Propellers
  - · Motor mounts
  - General airframe & wiring integrity
  - · Battery security
  - · Battery capacity checks
  - Range test(s)
  - · Integrations tests with
  - autonomous systems

#### 2 Pilot Safety Check

 Autonomous flight control disconnected to enable manual flight control mode to demonstrate the pilot's ability to take control of the drone/aircraft and land it safely.

#### **Subject To Change** Inspection details will be refined in accordance with host nation requirements.

## **UAV Demonstration**

### **Pilot Safety Check**

The following maneuvers are required as part of the **Pilot Safety Check**.



### Situational Awareness & Reporting Task 1

- •The AMS transmits a heartbeat message to the Technical Director (TD) Network.
- •During Semis/Finals runs, The AMS transmits specific messages reporting various activity and data collected throughout the run.
- •All messages are required to follow the format outlined in the Team Handbook.



### **Entrance and Exit Gates**

### Task 2

- •The AMS detects the active beacon and navigates through the corresponding gate. Only one beacon on each course will be activated at any time.
- •During Semis/Finals runs, AMS enters the course through the active gate before proceeding to other tasks and exits through the active gate at the end of the run.



### Follow the Path

### Task 3

- •The AMS navigates through the pathway. Teams will be instructed to use pathway to either exit or return to harbor, considering the expression, "red right returning." The AMS must avoid all obstacle buoys in pathway.
  - Exit harbor: red buoys on port (left) side during navigation
  - . Return to harbor: red buoys on starboard (right) side during navigation



## Wildlife Encounter

### Task 4

Hyperspectral Imaging

RoboNation is working to acquire the hyperspectral paint for this task. There is an alternative task approach on the next page.

•The AMS detects and scans each spectral signature, signaling the USV to circle each marine creature as specified. For example:

- •Circle the python in clockwise direction.
- •Circle the manatee in anti-clockwise direction.
- •Circle the iguana in any direction.



**Graphic Display:** Additional points available for developing graphic display.

### Heartbeat Message:

Additional points available for reporting AMS activity.

## Wildlife Encounter

### Task 4

No Hyperspectral Imaging

As a backup plan for not acquiring the hyperspectral paint for this task, this is an alternative approach to this task.

•The AMS must detect and scan each colored buoy, signaling the USV to circle each marine creature as specified. For example:

- •Circle the python (red buoy) in clockwise direction.
- •Circle the manatee (blue buoy) in anti-clockwise direction.
- •Circle the iguana (green buoy) in any direction.



**Graphic Display:** Additional points available for developing graphic display.

### Heartbeat Message:

Additional points available for reporting AMS activity.

### Scan the Code

### Task 5

- •The AMS observes the three-light sequence display and reports the RGB colors observed in the sequence they appeared.
- •This light sequence informs the AMS of the correct information to complete other tasks in the Semi-Finals and Finals Rounds.



### **Dock and Deliver**

### Task 6

- •The AMS detects different colored panels (red, green, or blue) and docks in the corresponding bay.
- •Each panel has a colored square and two square holes. Once the AMS has found the designated color and docked, the system flings racquetballs into either of the two holes.





## **UAV Replenishment**

Task 7

Subject to Change: Finalizing with sponsor on image on helipad.

- •This task is designed to be accomplished by a UAV.
- •The UAV launches from the USV, locates a floating helipad, and collects a small colored tin (red, green, or blue).
- •The UAV delivers the tin to the circular target area on another floating helipad, then returns to the UAV.
- •This task will be available on land for practice.



### UAV Search and Report Task 8

Subject to Change: Finalizing with sponsor on image on helipad.

•The UAV launches from designated start point (or directly from USV), conducts a search of a field marked by four orange markers, detects and determines the location of two distinct objects.

•This task will also be available on water as an official Semis/Finals task.













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## **Get Started**

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## **Get Started Now!**

- Secure Shipping Plans
   Secure Travel Plans
- Competition Strategy
- □ System Design + Testing
- Design Documentation





# **Coming This Month!**

- Team Handbook
- Finalized task specifications
- Preliminary scoring
- □ *Tentative* Freight Forwarder
- Tentative Event Hotel

# Get Started

# Next Meeting

11 September



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## **Stay Connected**



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# **RobotX 2024** Discord



### **JOIN TODAY!**

- •Scan the QR Code
- •Select the RobotX24 role
- Turn on notifications





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## **Get Started**



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# **QUESTIONS**?





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 university-competitions@robonation.org