AIMM ICC

EST. 2023

ARTIFICIAL INTELLIGENCE
MARITIME MANEUVER
INDIANA COLLEGIATE CHALLENGE

Course Challenge Details

Course Map

Google Earth Map
https://earth.google.com/web/@41.70238808,-85.02280627,293.6035483a,204.59469572d,35y,0h,0t,0r/data=CgRCAggBMikKJwolCiExYVFIa2VsOUJBcGVjdWp2eWxSQ0puWkNXV2lOMm1POTYgAToDCgEwSggI3czxvwYQAQ

A team's score will be totaled for the BEST COMBINED SCORE for all challenges completed within the allotted time.

1 hour will be provided to each team to attempt to complete as many challenges as possible. Team's will not be penalized for prior team's delaying the beginning of their attempted challenge run. Judges will have the determination of "stopping the clock" during a run that will not penalize a team.

Teams are permitted to return to the dock to modify their device or code during the competition run for no penalty.

Completion of Challenge #1 is required to record a score to competition

If 20 minutes is attempted to complete a Challenge #1 without success, teams are permitted to continue to other tasks for an exhibition run. This exhibition run will not result in a competition score but allow teams to attempt the other challenges.

Any remote-control intervention to complete challenge tasks will result in a deduction of points.

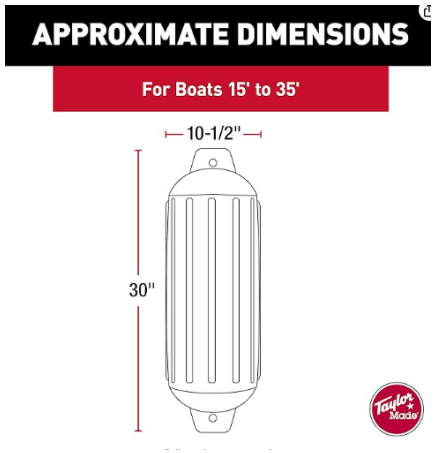
GPS Agnostic:
If a team can perform any task without use of GPS or external control intervention. They will receive additional points per task

IR/RADER Navigation:
If a team can perform a task using only IR cameras and/or radar to navigate they will receive a bonus

Buoy Markers

*Color Defined by Challenge

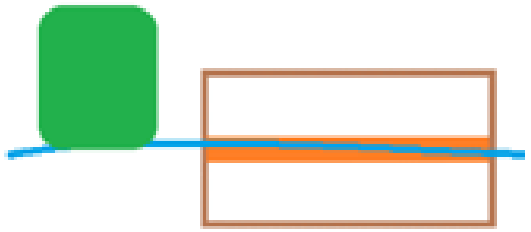
Taylor Made Products Super Gard Inflatable Vinyl Boat Fender



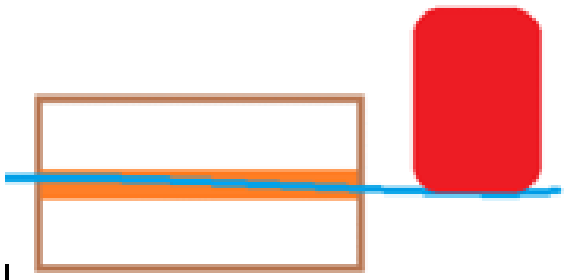
https://www.amazon.com/Inflatable-Double-Molded-Football-Inflation-Atlantic/dp/B000MJMQ74/ref=sr_1_25?crid=1GXGSM4SDCGK7&keywords=taylormade%2Bboat%2Bbumpers&qid=1698668009&sprefix=taylormade%2Bboat%2Bbumper%2Caps%2C84&sr=8-25&th=1&psc=1

Basic BUOY Navigation Rules:

GREEN BUOYS should be navigated to on the RIGHT side of the buoy.



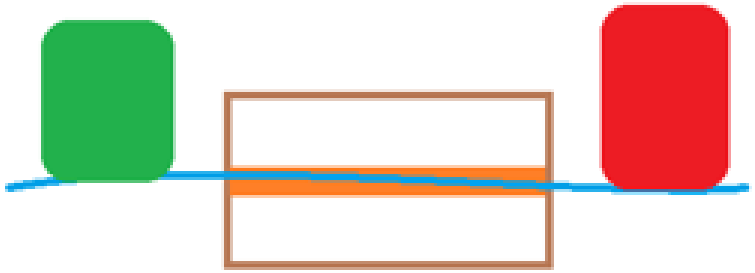
RED BUOYS should be navigated to on the LEFT side of the buoy.



CHALLENGE #1 Gate Navigation

a) Successfully leave the dock untethered
b) Navigate a 2-buoy gate
c) Points will be awarded for navigating successfully through the gate.

a) Partial points for any portion of the boat entering the gate
b) Full points for the entire LPV passing through gate
c) Additional points awarded for zero contact with either buoy



Lime Green

Red

CHALLENGE #2 Dodge

2. Dodge
    a. Successfully navigate the buoy slalom course, following Buoy Navigation Rules
    b. Points will be awarded for navigating successfully through the slalom path
        i. Additional points awarded for zero contact with bouys
    c. Bonus points will be awarded for the “fastest” slalom time recorded versus all teams
        i. Dodge time will begin after entering Gate “A”
        ii. Dodge time will end after crossing the plan of Gate “B”

Lime Green

Red

CHALLENGE #3 Evade

3. Evade
    a. Evade detection along a path
    b. Navigate the defined channel following Buoy Navigation Rules
    c. LiDar detectors will be placed according to the image on varying sides of the channel
    d. Points will be awarded for navigating successfully through the channel while avoiding detection
    e. Bonus points will be awarded for the “fastest” slalom time recorded versus all teams
        i. Evade time will begin after entering Gate “A”
        ii. Evade time will end after crossing the plan of Gate “B”

CHALLENGE #4 Identify




a) Navigate to a specific-colored buoy
b) Contact the buoy with the LPV to receive points
c) Teams can define the colored buoy that their LPV will seek & contact
d) Additional points can be earned by having judge randomly select the color for the team

CHALLENGE #5 Deployment

a) Teams will be able to define a deployable sensor
b) Navigate to the “Zebra” buoy
    a) 2” wide black electrical tape will be “spiral” wound around the white buoy
c) Deploy the sensor
    a) Sensor must not be tethered to the LPV
    b) Senor must float or be above water
d) Sensor upon initial deployment must be within 6’ radius of Zebra Buoy
e) Sensor must be able to be safely retrieved after scoring

CHALLENGE #6 Launch

a) Navigate to the Black Buoy which signifies the recommended Launch area

b) Launch a provided toy football, such that it lands on the launch target.

c) Points will be awarded for the projectile successfully leaving the LPV, landing on the target. Additional points will be awarded for the projectile's location on the target

d) Aerial Drones (guided or autonomous) are permitted but can NOT be launched or landed on the dock, shore, or any DNR state property. Drones must be launched and landed from the LPV.

NO PERSON CAN "CATCH" a drone as retrieval.

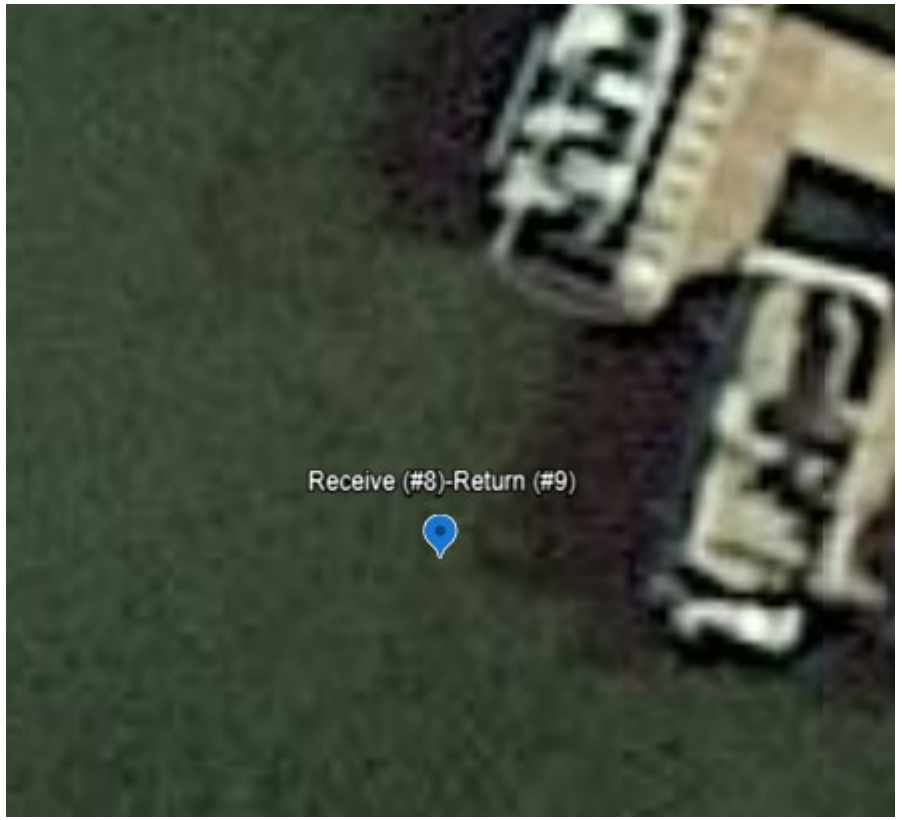
https://www.amazon.com/VEVOR-Inflatable-Floating-Dock-Trampoline/dp/B0D2R8MK9C/ref=sr_1_9?crid=9RQEVQ22ZI87&dib=eyJ2IjoiMSJ9.SoL6SRH8egRL4oGAgQlf5W0uo_742NVG-bstofubfAO3sgqsf1SrorArlSqfIFeYUNqagq9aHzTqq0qFpX_zMLGJRxMtam0jzjYOnyRQfXVLOGSJMQmzSKzUiRJ2vIXisE29POuNBTwNObPnGTjlXVl5cHCx1iUrDnSJar9xFotU7WAVKWKlapsu3TG8-RhixiwaFLMbjVXVV5gN1d4ZfKOHee-DD7WfGeCDMRa52by25OOXhspQ1EKOQxp2Fp-2QPw3UQZk4UacKz3-0u6hmcpKCyIH-mWIpLM8bIR402c.vdnSJW8q2DU9fdWjkJ0BnvabsagJ4RTldy9SQby_xX4&dib_tag=se&keywords=vevor+inflatable+floating+dock+10+ft&qid=1725013250&sprefix=vevor+inflatable+floating+dock+10+ft%2Caps%2C314&sr=8-9

https://www.amazon.com/NERF-Vortex-Aero-Howler-Flight-Optimizing/dp/B08P29SC84/ref=sr_1_1_sspa?crid=5S01XQUDLDSS&dib=eyJ2IjoiMSJ9.q3XhPe_3WANtxzZ3ROjd2W9OBfdeE537WKwizzL7VqdnItCbizi4KizsTX7IXV5otKNrMoqQ8XLwek_5PhiQkEQtTxXqHyZuotFBWgrzYW7lQ4lCOdkwv5w4XfwzY4qWD5PXeKJrAd3X9HHvvQI3hVXR3dZwvLf4LRbpyOdvx0Y9sPUFwV5PujLPmYnQoxIeQdktuxY7kx6cfTDkY8CG6C1DG-z_XQQtgrtLtHlw5Z_lKMfRAuVWee2sLw4QXkDygW3MKOqB4jaMnRIcoPKBo1Abuqu-968eFvDasP4flUM.eOtcxRt51z5DvnFNK2ZMshFvl5_iLXC8DPum2En6u8w&dib_tag=se&keywords=nerf%2Bvortex%2Baero%2Bhowler%2Bfoam%2Bfootball&qid=1725013375&sprefix=nerf%2Bvortex%2Baero%2Bhowler%2Bfoam%2Bfootball%2Caps%2C260&sr=8-1-spons&sp_csd=d2lkZ2V0TmFtZT1zcF9hdGY&th=1

CHALLENGE #7 Recover

a. Find & Retrieve a floating case
b. Scoring
    1. Retrieve the object and the object stays in the water will have “Value 1”
    2. Full removal of the object from the water will have “Value 2”
    3. Any damage to the object will result in decreased points

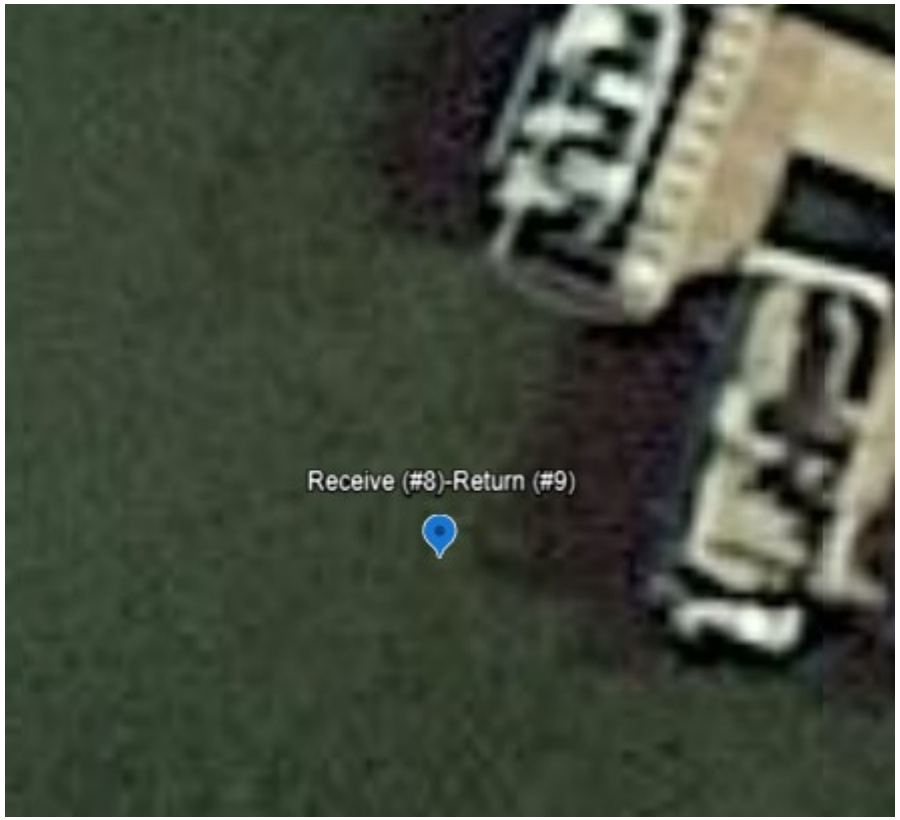
CHALLENGE #8 Receive



From Dock

a. Communicate wirelessly with the Deployed Sensor from Task #5
b. Validate the data to receive additional points

CHALLENGE #9 Return



Vessel will return to the dock by making contact with a marked return buoy.

Total Time Bonus:

If a team completes a minimum of 4 tasks, they will be eligible for the fastest course points bonus. The team's time will be divided by the number of tasks completed to create an average "per-task" time. The team with the smallest per-task time average will be awarded a bonus, the other total time bonus eligible teams will be ranked for this time and point value will be awarded.