

2023 NSWCDD AI/ML Prize Challenge



Information Package

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Terminology

- **BLUE:** Refers to friendly assets controlled, with engagement systems controlled by the Participant AI
- **Hackathon:** Refers to the primary days of the challenge held in-person at UMW-Dahlgren
- **JCORE:** Naval Surface Warfare Center Dahlgren Division developed wargaming software serving as the simulation environment for this challenge
- **Planner:** Refers to the go-between software that interfaces with JCORE and the Participant AI
- **Participant AI:** The AI/ML model/algorithm that is developed by a participating university team
- **Participant University:** Universities that are selected to compete in Phase II following Phase I evaluation.
- **RED:** Refers to enemy assets not controlled by the Participant AI.
- **Scoring Run:** The scenario run that is scored and done using the GUI version of JCORE in real time

The Challenge

The purpose of this document is to give your team some preliminary intel on what you can expect the challenge to consist of, as well as provide an overall preliminary idea of what the competition flow will look like. This document is part of the overall Competition Prep Packet, which consists of:

- Information Package (this document)
- Planner Instruction Manual
- JCORE Software Package

The AI you develop (the Participant AI) will be responsible for protecting an evolving group of BLUE ships from incoming RED missiles. RED assets will only be incoming missiles, your Participant AI will not see or need to interact with RED launch platforms. Therefore, the only threats that the Participant AI needs to consider are airborne threats. All enemy actions are controlled by the game. Participant Universities and AI will not have access to enemy commands.

The Participant AI will only be responsible for handling the engagement behavior of BLUE platforms. Positioning of BLUE platforms that will be used to launch BLUE weapons will be established at the beginning of a given scenario and BLUE assets will not move. Engagements will only last 5 minutes.

Over the course of the three days, the challenges will get progressively more challenging. All training in advance of the March 2nd – 4th challenge will be conducted using JCORE. The software required to run and interface with JCORE is being provided as part of your competition packet. For additional information, please see the PowerPoint slide deck titled “Planner Instruction Manual”.

Third party software libraries are permitted. However, it is incumbent on each participating team to ensure that the license associated with the library permits usage in this competition. ***Any software libraries required to operate a team’s algorithm should be submitted to the government 2 weeks in advance to ensure that the library is preinstalled on their government-provided laptop.***

Once teams arrive at the competition, they will work with competition staff to move their algorithm and any required libraries to a government-provided laptop. From the time teams arrive, all algorithm development must take place on the government-provided laptop. This laptop MUST NOT leave the UMW-Dahlgren campus. This laptop will have the following minimum specs:

- 11th Gen i9 or equivalent
- NVIDIA GeForce RTX 3080 16GB or equivalent
- 32GB DDR5 RAM or equivalent
- NVMe Solid State storage or equivalent

It should be noted that the above specs far exceed what is required for the competition. The above specs are just the specs of the laptops that teams will have access to during the Prize Challenge.

To ease competition flow, ensure your source code is setup outside of the Planner Environment folder and consolidated to a single folder, if possible. Teams will bring the government-provided laptop to the competition room for the scoring runs of the competition. A competition build of JCORE will be transferred to the government-provided laptop, and this is the build that will be used for your scoring run. Note that the score provided by the Planner API will be used for the team's score.