



ODYSSEY SIM



A maritime virtual test environment for uncrewed vehicle operations

Odyssey Sim provides a physics-based, modular simulation environment for maritime operations. Its 3D virtual world platform includes customizable terrains, real-time environmental updates and dynamic ocean effects. By integrating hydrodynamic solvers and sensor emulation microservices with the virtual world platform, Odyssey Sim supports realistic mission execution, vehicle design assessment and system testing. Its hybrid configuration enables seamless transitions between virtual and hardware-in-the-loop operations.

Mission Application

- Enables global virtual deployment of uncrewed systems in target operational environments.
- A maritime autonomy training platform that facilitates undersea maneuvering, collaborative surface vessel operations and navigation in complex flow regimes.
- Assesses vehicle performance and supports design, development, integration and testing of uncrewed maritime vehicles.
- Provides operational planning and training through simulations of unforeseen or challenging conditions.
- Allows accurate mission verification, reducing the need for extensive sea trials.



ODYSSEY

Advantages

- **Customization:** Modular architecture supports customization and scalability of simulations.
- **Flexible Configuration:** Virtual-hardware hybrid setup transitions from virtual environments to hardware-in-the-loop configurations.
- **Rapid Fielding:** Seamless integration with third-party autonomy or payloads for rapid deployment and testing.
- **Dynamic Realism:** Real-time vehicle response to changing environmental conditions, such as waves and currents, for realistic scenarios.

Features

- Hydrodynamic solver for six degrees of freedom vehicle dynamics, ensuring precise responses in a variety of flow conditions.
- Contains REMUS digital twins that facilitate software and hardware development and integration.
- Emulated actuator, sensor and acoustic communication components replicating hardware behavior.
- Capability to create unique virtual environments tailored to operator needs.
- Real and synthetic bathymetry.
- Population of 3D vehicles, obstacles, and targets in operational environments.
- Support for collaborative operations and capturing collision events.
- Configurable simulation tools for vehicle testing and mission planning.



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