



RINA/IMarEST Technical Presentation

Robust Mission Planning for Autonomous Underwater Vehicles Cooperatively Inspecting Subsea Structures

Speaker:	Fletcher Thompson AMC PhD candidate
Date	Wednesday 4 April
Venue:	Harricks Auditorium Engineers Australia 8 Thomas St Chatswood
Refreshments:	6:00 pm
Presentation:	6:30 pm

Intervention-class Autonomous Underwater Vehicles (I-AUVs) are highly-maneuvrable low-endurance vehicles which are ideal for operation in and around complicated underwater structures. With modular docking technology, I-AUVs are capable of recharging, offloading data, and easily changing payloads, providing the opportunity for long service autonomous monitoring, inspection and maintenance of underwater structures.

The presentation will cover the work done to produce an automated planner for a fleet of modular I-AUVs which can effectively allocate tasks to individual vehicles based on their individual capabilities and limitations, according to the urgency and dependencies of the tasks as part of the user-specified mission objectives. The planner is presented as a solver for an energy-aware variant of the Team Orienteering Problem with realistic, collision-free path planning using artificial potential-flow theory. The planner has been applied to a simulated offshore wind-farm inspection mission, with four I-AUVs working together to complete the mission objectives.