

IEEE Journal of Oceanic Engineering
Call for papers

**Special Issue on the Maritime RobotX Challenge:
Pushing for Higher Autonomy and Cooperative Behaviors in Maritime Robotics**

Many similarities exist between the requirements for autonomous land vehicles and those for autonomous marine systems. Many recent advances in the field of driverless cars may be applicable to autonomous surface vessels, underwater vehicles, and even aerial vehicles. Cooperative autonomy for a fleet of unmanned vehicles working together in the aerial, underwater, and surface domains has the potential to be a game-changer for ocean exploration. Multiple cooperative vehicles operating across heterogeneous domains offer many potential capabilities not available with a single platform. These include creation of ad-hoc wireless networks, supplying additional mobility, range, and duration for the underwater and aerial vehicles, and offering the capability for data reduction and in-situ data analysis. In fact, cooperative behavior in the marine environment may be key to novel ocean exploration solutions. Yet a significant barrier to autonomy in the marine environment is the prohibitive cost of the sensor suites necessary for marine robotic platforms.

Autonomous systems have developed to the stage where they may work well independently, but we have yet to fully achieve the goal of integrating each of their particular performance strengths into a system of vehicles to safely perform cooperative tasks. There are a number of challenges to autonomous vehicle cooperation, including reliable communications links between vehicles in harsh low bandwidth environments, sensor integration (both on-board and off-board), network state estimation, energy consumption, and launch and recovery of underwater and aerial systems.

The following list of topics will be considered for this Special Issue of JOE on the Maritime RobotX Challenge: Multi domain marine vehicle cooperation, novel obstacle detection, path planning, mapping and localization approaches in the maritime environment, as well as development and uses of simulation environments for autonomous marine systems.

Polished manuscripts already prepared and screened for the Maritime RobotX Forum 2017 are eligible for the special issue. Only papers that are suitable for publication either as-is or with only minor changes will be considered.

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Deadline for submission of papers: April 20, 2018. All manuscripts must be submitted through the Journal website: <https://joe.msubmit.net> and must be noted as intended for the Maritime RobotX Challenge Special Issue.

Anticipated issue publication: Late 2018