Towards A New Control and Coordination Paradigm for Robot Teams in Geophysical Flows

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There has been a steady increase in the deployment of autonomous underwater and surface vehicles (AUVs and ASVs) for applications such as ocean monitoring, tracking of marine processes, and underwater hazardous waste mitigation. The underwater environment poses unique challenges since robots must operate in a communication and localization-limited environment where their dynamics are tightly coupled with the environmental dynamics. This talk presents ongoing efforts in the development of a control framework for distributed autonomous sensing and tracking of geophysical fluid dynamics. By better understanding the impact of geophysical fluid dynamics on underwater vehicle control and autonomy, one can better exploit the environmental dynamics to develop more efficient control and coordination strategies for networks of AUVs/ASVs operating in the ocean.

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