



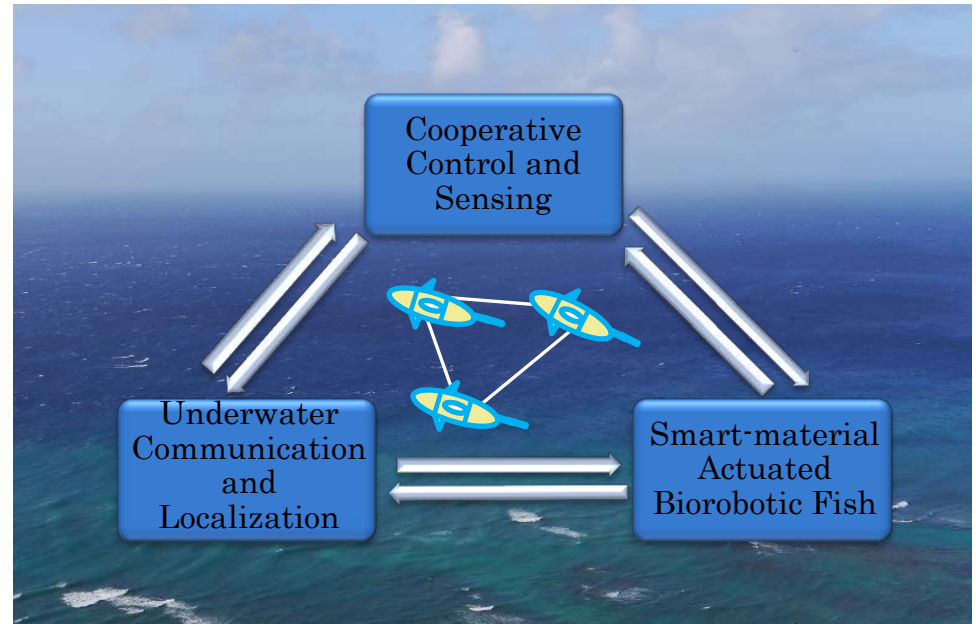
NSF CPS Synergy: Collaborative Research: Towards Effective and Efficient Sensing-Motion Co-Design of Swarming Cyber Physical Systems

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- 1446461; 1446557; 1446484

Swarming CPS in Underwater

Challenges

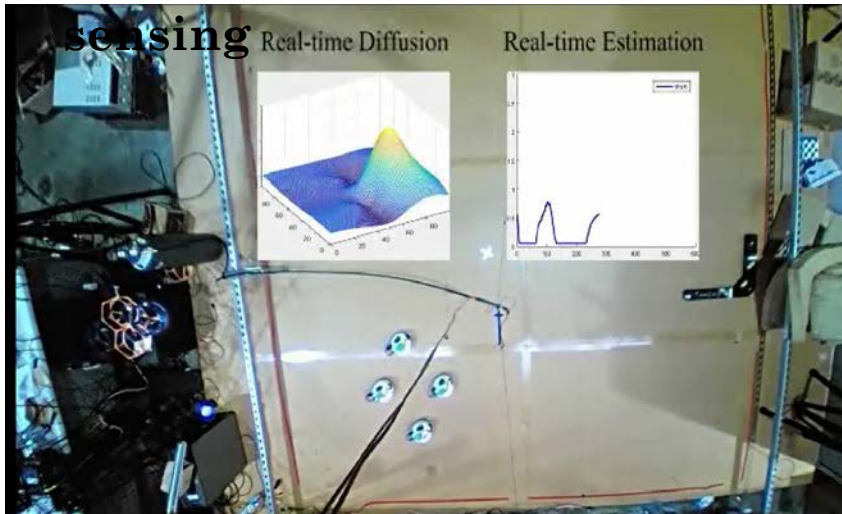
- Hydrodynamics of the phenomena of interest
- Complex & strongly coupled sensing-motion dynamics
- Limited underwater communications
- Resource constraints of mobile entities



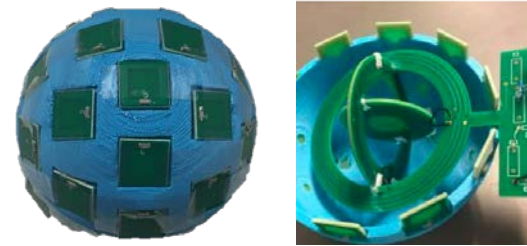
Objective: establish and demonstrate a generic motion-sensing-communication co-design procedure that significantly reduces the complexity of mission design for swarming CPS, and greatly facilitates the development of effective and efficient control and sensing strategies.

Findings

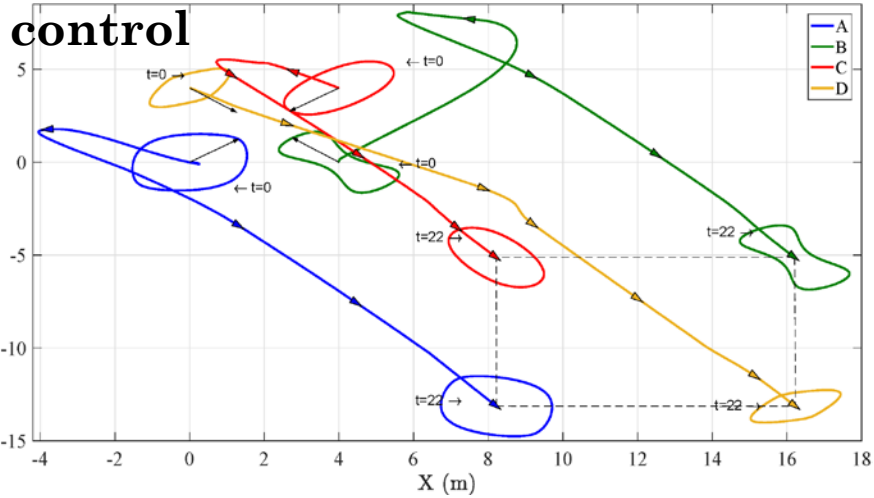
Collaborative & intelligent



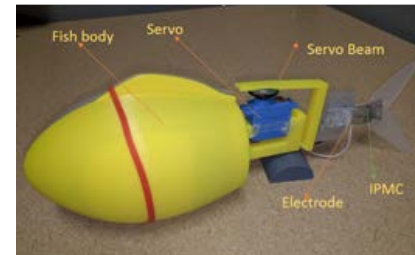
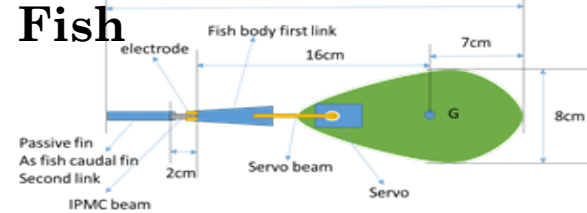
Underwater WiFi technologies



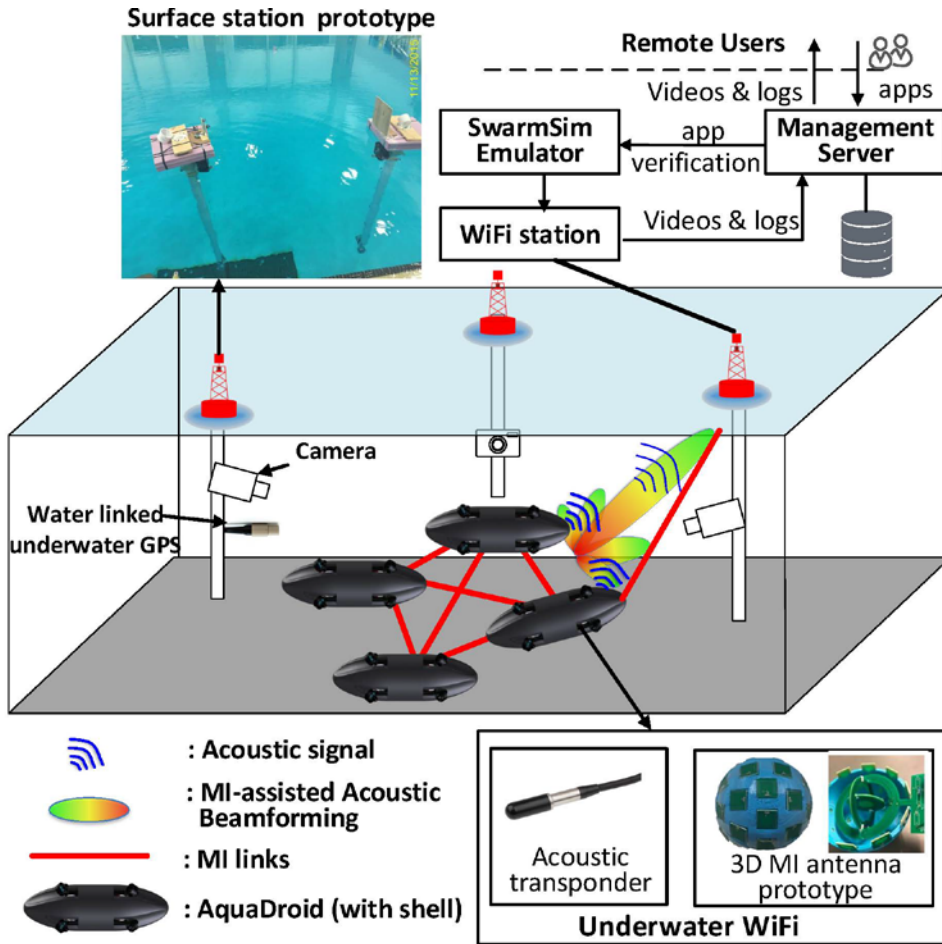
Collision-free motion swarm



Smart-material Actuated Robot



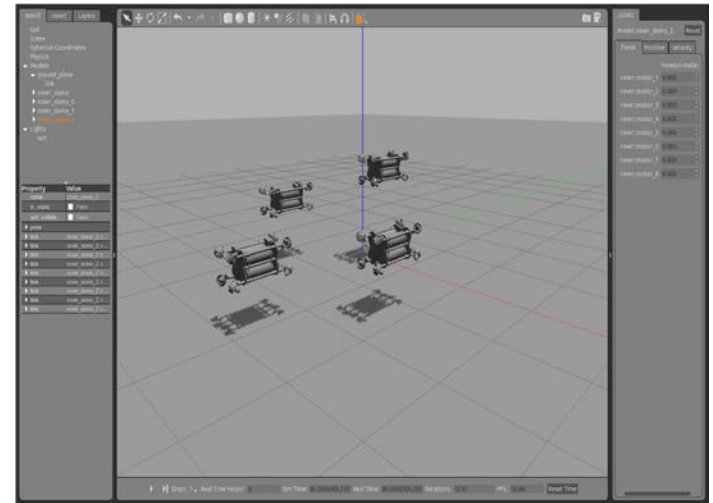
DeepBlue: Underwater CPS testbed



DeepBlue overview



AquaDroid



SwarmSim Simulator