Center for Environmental & Applied Fluid Mechanics

"Embodied Intelligence in Robofish"

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Fish-like robots may soon revolutionize the way we interact with our planet's oceans. But first, they will need to swim a lot better. The latest "robofish" have speeds approaching those of real fish, but they still trail fish in terms of efficiency, maneuverability, and stealth. One strategy for closing this performance gap is to endow robofish with embodied intelligence, i.e. intelligence that leverages the physics of fish-fluid systems. Embodied intelligence requires a strong bridge between physics and robotics. Physics-centered experiments (e.g. tethered airfoils in water channels) can uncover physical models, but they may oversimplify dynamics. Robotics-centered experiments (e.g. autonomous prototypes) offer realistic in situ conditions, but they may lack the precision needed to find physics-based patterns in the data. Here we present a new kind of semi-tethered water channel rig that we built to better connect physical models with the robofish they govern. We apply our approach to two ongoing areas of study in the world of robofish: active tail stiffness and near-boundary swimming.

Fall 2022 CEAFM Seminar Series

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https://wse.zoom.us/j/93762992307

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