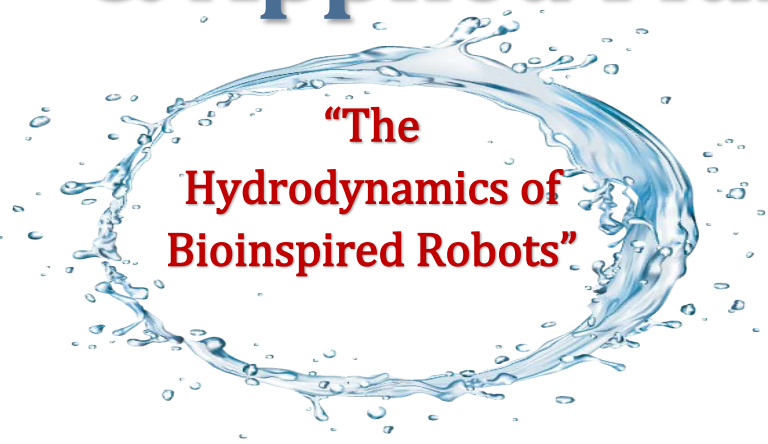


Center for Environmental & Applied Fluid Mechanics



"The Hydrodynamics of Bioinspired Robots"

Prof. Tyler Van Buren
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Mechanical Engineering



Abstract: Underwater swimming robots have been a rapidly growing area of need in industry, defense, and research. However, traditional designs with tube-like hulls and propellers for thrust can be slow maneuvering, loud, and inefficient. Natural swimmers seemingly exceed our capabilities---especially in small to mid-sized platforms---and so we look to them for design guidance. In this talk, we will cover how we can be inspired by swimming animals in design and how it has led to a novel vehicle that is fast, efficient, quiet, and highly maneuverable. We will showcase how the body is optimized in shape to minimize drag while being used for maneuvering, and how the oscillating propulsors take advantage of optimized shape, compliance, and fin-fin interaction to maximize swimming performance. Following this, we will pivot to showcasing a series of compliant underwater robots inspired by animals like the shark, jellyfish, and sea turtle. These simple and easy to construct robots serve as educational tools for K-12 students.

Fall 2024 CEA FM Seminar Series

October 4, 2024 ✦ 3:00 PM ✦ Gilman 132