Aquatic Locomotion Using Flippers

Alejandro Martin // Damian Torres
Advisor: Tryphon Georgiou, Ph.D.

UCI Samueli School of Engineering

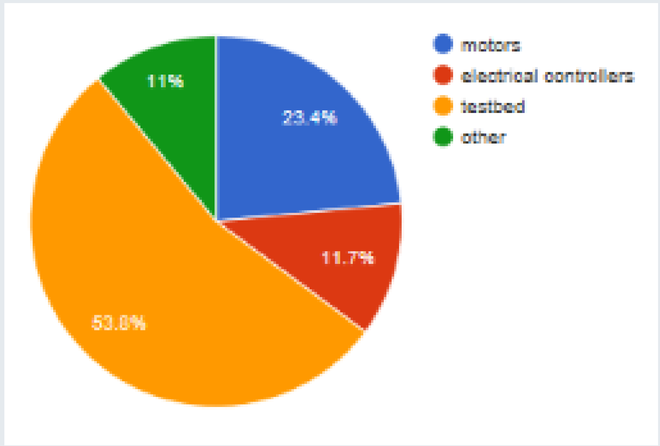
Abstract

The goal of this research project is to engineer a biomimetic propulsion system for aquatic locomotives based on flippers as a more efficient alternative to conventional propellers. The inspiration for our design is provided by the evolution of multi-joint propulsion mechanisms observed in aquatic animals.

Goal

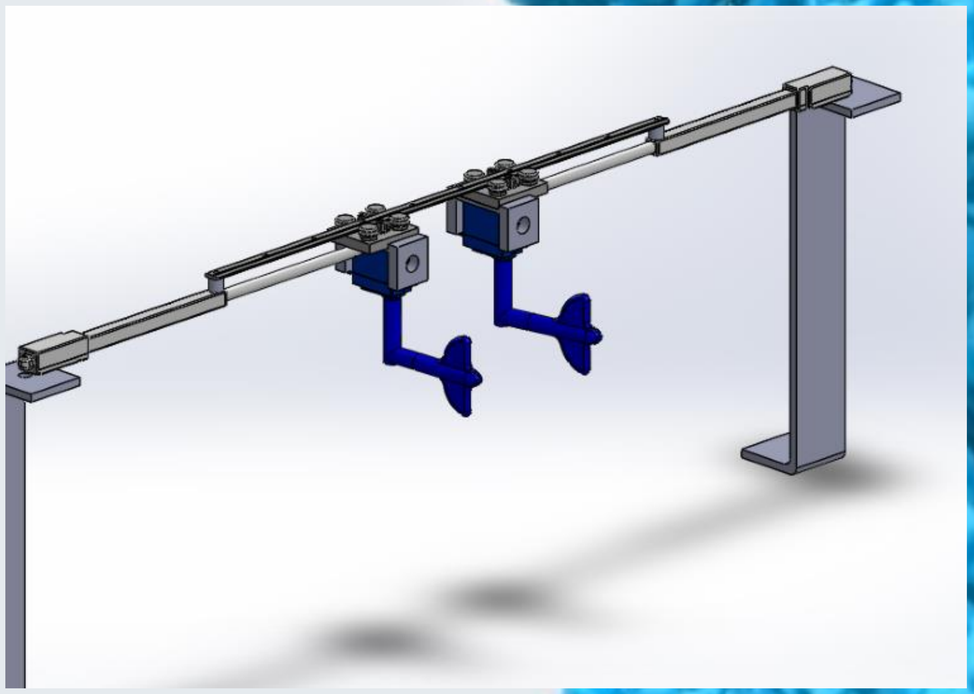
Increase efficiency of mechanical underwater propulsion from 50% to 90% in order to reduce maritime contribution of pollution and reduce noise disturbances to the marine environment.

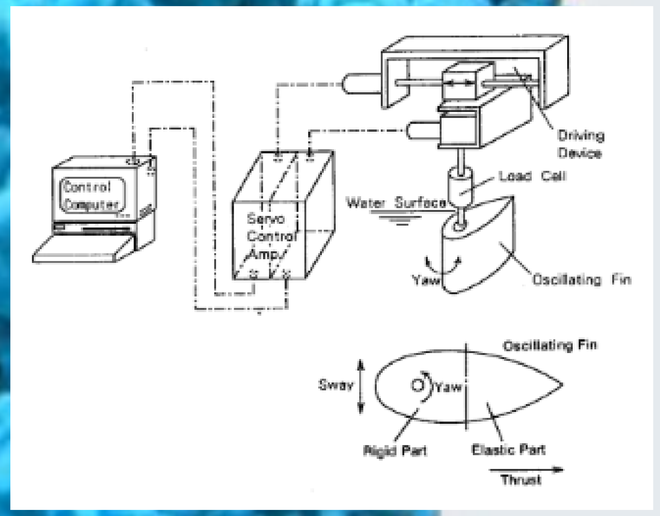
Budget



Design Features

- Two multi-axis propulsion tails
- Four servomotors
- Prototype 1 - Dolphin Tail
- Acrylic water tank





Timeline

Research and Planning 11/1 → Design and Analysis 12/1 → Construct testbed 2/1 → Prototype fin (1) 3/1 → Prototype fin (2) 5/1 → Project Completion 6/1