

Experimental Analysis of Foil on Foil Interaction for Flexible Flapping Fins

LT(N) Eric Jeunehomme, RCN

Prof. Alexandra Techet
Thesis Supervisor

In this thesis, I designed and fabricated robots leveraging additive manufacturing. This had two overarching purposes. One to make a testing apparatus that would allow the measurements of the influence of a flexible flapping foil onto a subsequent, in-line, foil with the optic of researching optimized propulsion solutions for under water vehicles. The second was to show that filament deposition modeling has advanced enough to produce bio-mimetic flexible robots of academic relevance that would allow, for a low price, the making of a number of experimental setup with specific measurements in mind. In order to reach those goals, two versions of a bio-mimetic archer fish of the genus *Toxotes* were modeled using various software. The models were modified to accept actuator assemblies and interface to the electronics and built using a modified hobby grade 3D printer.

Naval Engineer

Master of Science in Mechanical Engineering