Professorship of eAviation
TUM Department of Aerospace and Geodesy
Technical University of Munich

Master Thesis | Research Internship | Semester Thesis

Towards fish tagging robot: soft 3-bellow manipulator

Robotics, Mechanical

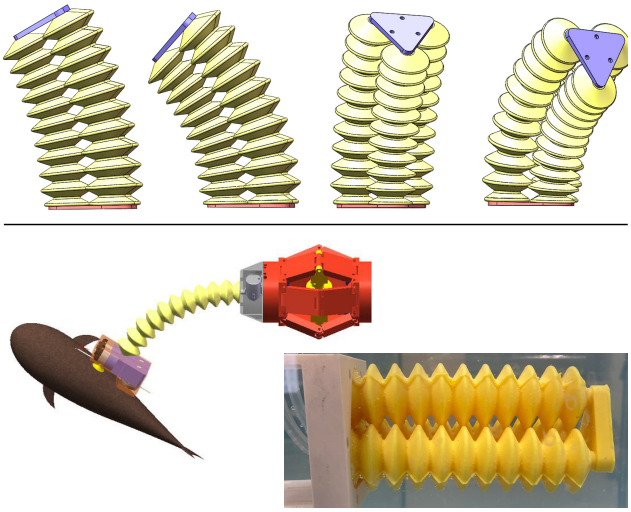
Professorship of eAviation (Prof. Armanini)

Contact: Luca Romanello | luca.romanello@tum.de | Lise-Meitner-Str. 9, 85521 Ottobrunn | www.asg.ed.tum.de/eav

1 September 2024

Description

The project focuses on developing an advanced underwater soft hydraulic 3-bellow manipulator for fish tagging. Mounted on an underwater pod equipped with locomotion, the manipulator will be integrated with a drone for deployment. The manipulator has already been designed, developed, and tested. The remaining tasks include designing the pod attachment, integrating the electronic systems for pumps and valves, developing a robust control system, and conducting field tests. The system must adhere to constraints on weight, waterproofing, and robustness. The ultimate goal is to enhance marine research through precise and efficient fish tagging.



Soft hydraulic 3-bellow manipulator.

Work packages

WP1 Design and develop attachment mechanisms for the manipulator to the underwater pod.

WP2 Integrate electronics, including pumps and valves, and ensure waterproofing and robustness.

WP3 Develop and test a control system to manage the manipulator's operations.

WP4 Conduct outdoor tests with the manipulator mounted on a drone for real-world evaluation.

About us

Research projects: https://www.asg.ed.tum.de/en/eav/research/current-projects/

Requirements

- Student in a relevant field, e.g. robotics, mechanical or similar.
- Experience in projects involving mechanical design, materials and/or robots.
- Experience with biodegradable materials is beneficial

Application

- CV and motivational letter.
- Transcript of records.
- Portfolio of projects.
- Some words on your experience and interests.

Timeline

Immediate start possible.