

Master Thesis | Research Internship | Semester Thesis

Can we make it in the lab? Underwater soft sensorized physical twin robot of water ecosystems

Robotics, Mechanical

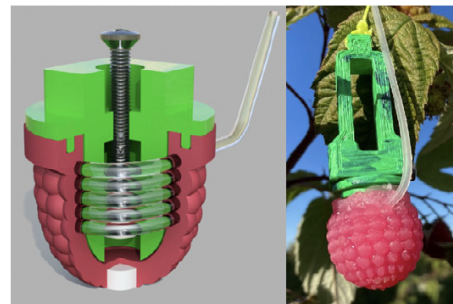
Professorship of eAviation (Prof. Armanini)

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Description

This project aims to pioneer a novel approach to environmental sensing in water ecosystems by developing soft sensorized twin robots. Inspired by natural ecosystems, these robots will utilize soft materials for underwater deployment. Drawing inspiration from echinoderms, algae, and other aquatic species, the robots will undergo comprehensive lab testing before real-world applications. Emphasizing the transfer of testing procedures from field to lab ensures robust validation of robotic solutions and enhances data collection capabilities underwater. Furthermore, these twin robots will evaluate hazards like chemical exposure, sound pollution, and physical impact, thereby enhancing safety measures. Through publication in top robotics conferences and journals, this project underscores its commitment to advancing innovative solutions for environmental monitoring. The project aims to publish in top robotics conferences and journals. The project involves collaboration with EMPA's Sustainability Robotics Laboratory in Zurich, EPFL's ENAC department, and Imperial College London's Aerial Robotics Lab.



Similar application for agricultural applicaiton.

About us

Current 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, sensing and robotics.
- Experience with soft materials is beneficial

Work packages

WP1 Design and prototype the soft sensorized physical twin robot.

WP2 Integrate the sensing capability for accurate environmental data collection.

WP3 Validate robot performance and safety through comprehensive lab testing.

WP4 Scale the solution to create a swarm of robots.

Application

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

Timeframe

Immediate start possible.