Design, modeling and control of soft robots

Level: Bachelor thesis, Master thesis or an internship
Duration: 2–6 months
Start: By agreement
Mentors: Maja Trumić; Kosta Jovanović
Institution: ETF Robotics

Overview: Students may select a topic aligned with their interests within the field of soft robotics. An overview of my research in soft robotics is available on the website maja-trumic.github.io. Prior to finalizing a thesis or internship topic, an interview will be conducted to identify the most suitable research direction.

Technology focus	**Software & tools**
• Design of novel soft robots • Modeling of the soft robots available in the lab • Control of soft robots available in the lab	• Matlab Simulink • Python • ROS

Platforms / hardware	**Example project options** (projects can be modified based on student interests)
• Soft inverted pendulum with inner or outer tendon actuation	• Design and create a novel soft robot that can be used e.g. as a gripper • Identify the parameters for a model of a soft robot • Design and test the control strategy on a soft robot for tasks such as inspection or gripping

Expected outcomes	**Recommended background**
• Literature review • Project code and documentation/video • Final report in IEEE research paper form	• Linear algebra basics • Robotics basics