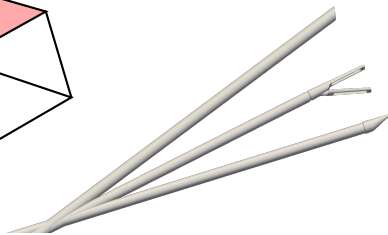
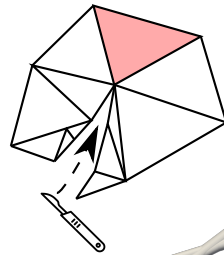
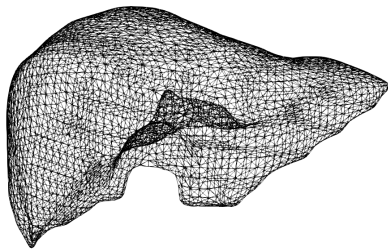


Student Research Assistant Position

Designing an Experimental Test Bench for Synthetic Tissue Deformation and Cuts



Context

Accurately predicting deformations of organs and their internal structures under manipulation is essential for surgical navigation systems. In our group, data-driven approaches have been developed to address this challenge but are currently limited to the start of a surgery, as the simulated training data lack tissue manipulations. To address this limitation, efforts are underway to incorporate cuts into the simulations. The new training data needs to be validated both in silico and, preferably, using real-world data. This project focuses on designing a test bed for experiments to collect high-quality validation data. The setup should enable experiments with precisely defined material movements, deformations, and cuts.

Tasks

- Conceptualization, construction and evaluation of a validation setup, including actuators, sensors, and a suitable modality for deformation assessment
- Development of data collection and storage protocols aligned with FAIR principles

Requirements

- Programming experience in Python, C++
- Interest in hardware elements (sensors, actuators) and their specifications
- Strong analytical skills, attention to detail
- optional: Programming experience with the Robot Operating System (ROS) or microcontrollers



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