



CAScination AG is an award-winning medical technology company dedicated to development, manufacturing and commercialization of innovations in computer-assisted and image-guided surgery. Our CAS-One planning and navigation system is used to treat patients suffering from soft tissue cancer (e.g., liver cancer) by many hospitals across Europe.

We offer the following Master thesis topic:

Simulation of resection strategies for local liver tumour removal

in collaboration with the ARTORG Center. CAScination will supervise the thesis.

The Thesis

Background: During the last years, liver resection has evolved from anatomical resections (removal of at least two hepatic segments of the liver) towards tissue “preserving” surgeries, where the focus lies on the removal of the tumour while sparing as much healthy tissue as possible. CAScination’s CAS-One Liver system provides surgeons with an intraoperative navigation support enabling accurate and focused resection.

Idea: The student will work together with technical staff at CAScination and the clinical team at Inselspital to develop an automatic simulation based on pre-operative image data. The outcome should be an interactive workflow, where the surgeon can select the tumour and an appropriate resection strategy is defined based on a “carving-out” approach of the parenchyma considering pre-defined constraints relating to the anatomical region.

Tasks:

- Attendance of liver surgeries to gain in depth medical knowledge.
- Requirement and design specification.
- Development of a resection strategy simulation framework (image processing).
- Development of visualization tools for intra-operative guidance.
- Evaluation with clinical team.

Your Profile:

- Master student (FH/ETH/University) in biomedical engineering or computer science.
- Significant programming experience (C++ is an advantage).
- Experience in image processing and computer vision.
- Open, dedicated and self-driven person.

Does this master topic pique your interest? Then please send us your complete application documents* (CV, Motivation Letter, Working References, Diploma, etc.).

Contact:

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