

Bachelor's / Master's Theses

Real-time target localization in 4D ultrasound

Ultrasound is the most commonly used imaging modality in the clinic. Due to its good soft-tissue contrast, high acquisition speed, low risk and low cost it is a promising candidate for many real-time image guided procedures. Modern volumetric ultrasound ("4D") offers even more possibilities for accurate target localisation and motion compensation. This project aims at following complex soft-tissue motion to be used for improving radiotherapy cancer treatment accuracy or guiding robotic ultrasound exams.

Tasks

You will develop target localization strategies (feature tracking, block matching, optical flow, etc.) and evaluate them in phantom and patient data. The main goal is a robust and real-time capable method to follow and compensate target motion.

Qualification

- Programming skills and willingness to learn (C# / C++, Matlab, CUDA, etc.)
- Interest in medical image processing and its applications (including robotics and clinical studies)

Interested? Contact Svenja Ipsen at ipsen@rob.uni-luebeck.de

