Markerless Preop-Registration with Stereovision

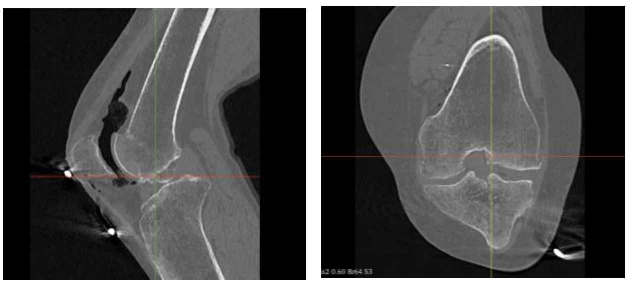
Master Thesis

Joint injuries and cartilage degeneration affect millions worldwide, causing pain and reduced mobility. The **LAROCARE (Laser-Assisted RObot-guided CArtilage REgeneration)** project uses a combination of robotics and laser technology to enable precise restoration of cartilage in the knee.

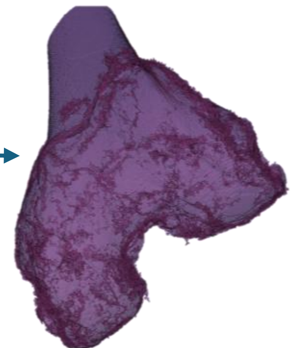
Deep Learning Point Cloud Registration for Intraoperative RGB-D Camera Data to Preoperative CT Scans for Computer Assisted Surgery.

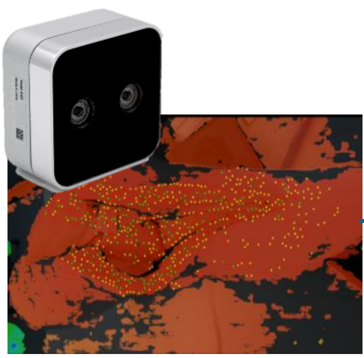
Point Cloud Registration, Markerless, Computer Assisted Surgery, RGB-D Deep Learning

(Preoperative) Femur Segmentation



Preoperative CT-Scans

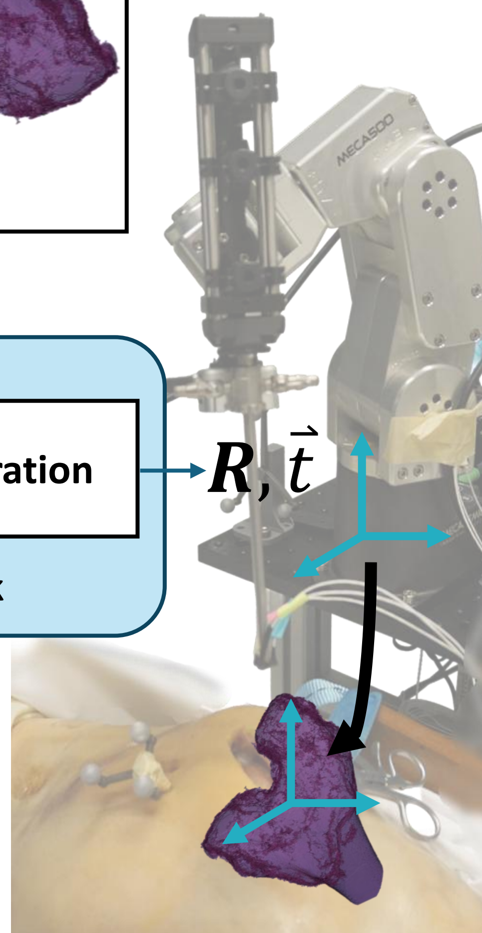




Intraoperative RGBD Pointcloud

Segmentation → **Registration** → $R, \vec{t}$

Deep Neural Network



Dataset: A motion capture system (FusionTrack500, Atracsys) provides the ground truth for training.

Apply to this project by email. Send us (jan.schimmelpfennig@unibas.ch) your **CV**, and **diplomas**, and **course transcripts**.

On-Site or Remote

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