

# Bachelor / Master Thesis

## Automatic Vessel Segmentation in 2D/3D Ultrasound

A fundamental problem of endovascular therapy is the high radiation exposure - especially for the surgical team - caused by continuous X-ray imaging during the operation. A vascular reconstruction based on consecutive ultrasound images or volumes is an important step towards a radiation-free navigation in endovascular procedures. In order to create a 3D model of the artery or vein, a reliable and automatic segmentation of the vessel in the ultrasound image or volume is necessary.

### Tasks

You will acquire ultrasound images and volumes on a phantom and humans. Thereafter, you will implement and evaluate different methods of automatic vessel segmentation. Finally, you will test your algorithms in order to create a 3D model of the vessel.

### Qualification

- Interest in image processing and medical technology
- Willingness to work in a team but also to work independently
- Programming skills (Matlab, Python)

