Implant Object Detection in Intraoperative X-Ray Images

SIEMENS Healthineers

Pattern Recognition Lab

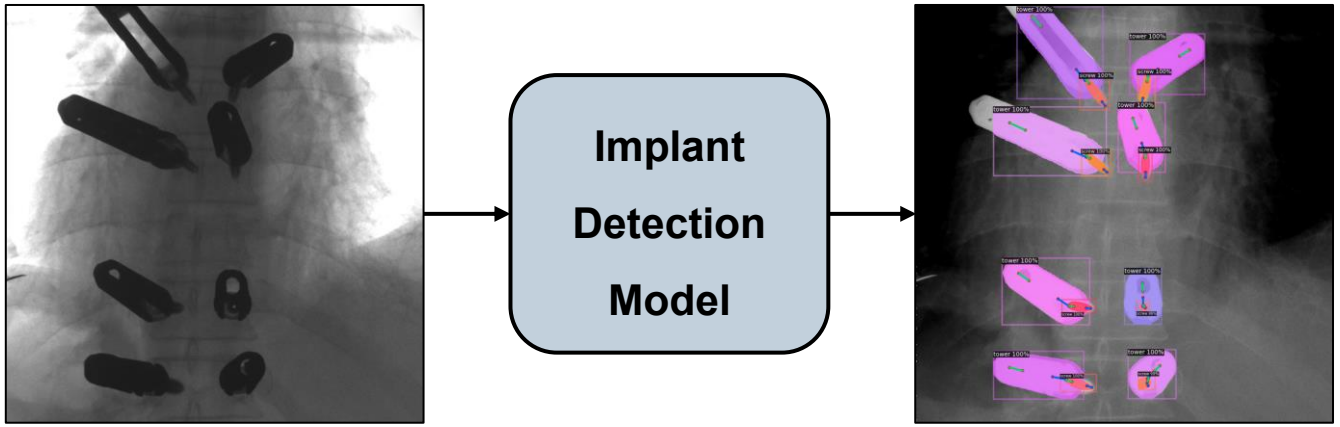
FAU

Master's Thesis

This project focuses on the development of a deep learning-based object detection model capable of predicting class labels, bounding boxes, segmentation masks, and keypoints of implants in intraoperative 2D CBCT projection images.

Work packages:

- Literature research on relevant models and methods for (implant) object detection
- Training of SOTA architectures (e.g., YOLO, Faster-R-CNN, DINO-DETR) on provided datasets consisting of real clinical and simulated samples
- Extensive evaluation and comparison with already existing baseline model



Collaboration Option:

The thesis can be done at the university or in collaboration with Siemens Healthineers, with paid employment during the project.