



Master Thesis in collaboration with the University Hospital Zurich

Design of a Robotic System for Cardiac Surgery

Background

In cardiac surgery an increasing number of interventions are shifting to catheter-based approaches. They are minimally invasive, but because of the missing view to the operating field additional intraoperative imaging is required. However, this leads to an exposure of radiation to the patient as well as to the operator who is standing next to the patient to perform the procedure. A sufficient robotic system can combine a better and safer performance for the benefit of the patient, less radiation for patients by faster maneuvers and no radiation for the operator.



Goals of the Thesis

Based on a conceptual project work done in 2017 and 2018, the goal of this master thesis is to design a robotic system for a Transcatheter Aortic Valve implantation (TAVI). The needs have been defined and form the start for a detailed construction. The system will allow a telemanipulative intervention of a catheter that need to be pulled and twisted during the insertion process.

The resulting drawings and recommendations should serve for the fabrication of a first prototype.

Desired Knowledge

Mechanical design, mechatronics; interest to work with physicians.

Starting date

Immediately

Contacts

Prof. R. Riener, riener@hest.ethz.ch; 044 632 66 79

PD Dr. A. Plass, andre.plass@usz.ch