Chair of Computational Modeling and Simulation
TUM Deparment of Civil, Geo and Environmental Engineering
Technical University of Munich

Optimization Framework for the Development of Implantable Medical Devices

Project Characteristics

Modeling:
Mathematics:
Programming:
Science:

Task

Implement an optimization framework that uses results from current simulation models to reach specific targets and find ideal input parameters:

- Get to know the SPH software and the current use cases (Total Artificial Heart, Catheter/Endoscope, Material Tests)
- Research and define optimization methods that are appropriate for the above use cases: response surface-based, evolutionary algorithms, deep learning-based, etc.
- Expand the current software architecture to be able to perform optimization tasks, especially focusing on the Python – C++ interface
- Implement the optimization methods (Python), compare, benchmark, and select the most efficient one for each use case

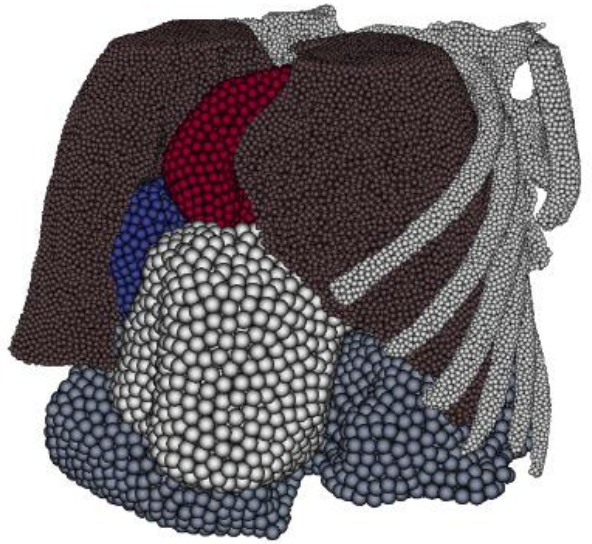

Figure 1.: Simulation of Total Artificial Heart to evaluate device fit

https://www.sphinxsys.org/

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