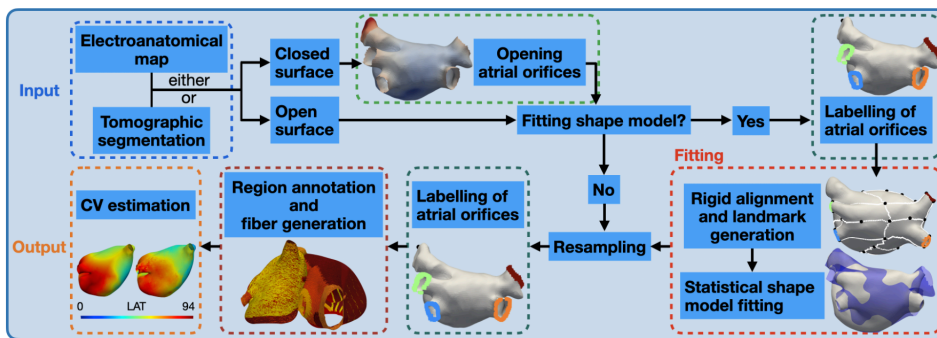


Hiwi / Student Assistant

Automated Generation of Patient-Specific Atrial Models

Motivation

Modeling and simulating patient-specific heart geometries hold great potential for helping electrophysiologists identify the origins of atrial fibrillation (AF) and accelerate clinical interventions. However, creating these models from clinical data remains a challenging and labor-intensive process due to anatomical variations among patients. To facilitate the creation of personalized models, Augmenta [1] was developed at IBT. Augmenta automates the annotation based on specific rules for each atrial region and helps with further data augmentation. However, manual interventions can be necessary for certain patient geometries. For our current research, we collect clinical electrophysiological data in two German hospitals to create patient-specific atrial digital models.



Structure of Augmenta [1].

Task

This project will focus on improving the Augmenta pipeline to generate patient specific digital atrial models. Therefore, clinically obtained data will be used to identify and solve current problems within this pipeline.

Skills required

- Coding experience (preferably Python)

Good to have

- Interest in cardiac electrophysiology

Field of research

Atrial modeling

Title of project

Automatic generation of patient-specific atrial models

Program

Python programming/ atrial model building

Course of study

Electrical engineering,
Computer science,
Physics, similar

Starting date

as soon as possible

Contact

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[1] L. Azzolin *et al.*, "Augmenta: Patient-specific augmented atrial model generation tool," *Computerized Medical Imaging and Graphics*, vol. 108, p. 102265, Sep. 2023, doi: [10.1016/j.compmedimag.2023.102265](https://doi.org/10.1016/j.compmedimag.2023.102265).