

# An pre-processing toolbox for image processing and image segmentation

## Project Characteristics

Modeling: ★★☆☆☆  
 Mathematics: ★★☆☆☆  
 Programming: ★★★★★

### Geometric Modeling for biomechanical applications:

- Accurate geometric models form the basis for a numerical simulation
- Modeling workflows applied for mechanical parts are inapplicable in biomechanics
- Geometric models should arise from CT scans and voxel data in a highly automated manner

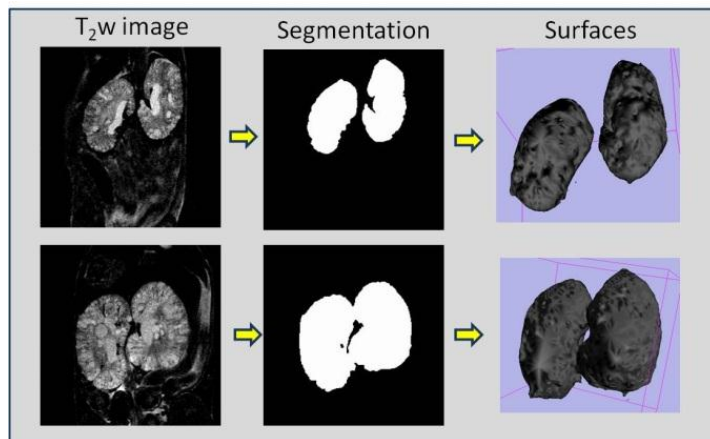


Image processing and segmentation for organs

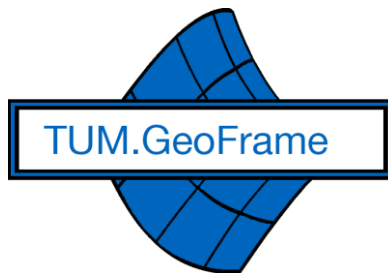


Surface model from voxel data

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## Your task in this project:

- Get familiar with the existing preprocessing framework TUM.GeoFrame and the open source 3rd party libraries OpenCASCADE and QT
- Develop image processing and segmentation tools using the open-source libraries ITK and ITK-snap
- Integrate the developed tools in the graphical user interface of TUM.GeoFrame



## TUM.GeoFrame

An academic framework for:

- geometric representation
- pre-processing
- mesh generation

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## What you will learn in this project:

- High-level object-oriented C++ programming in a larger framework
- Geometric modeling with the powerful open-source library OpenCASCADE
- GUI programming with QT
- Image processing and segmentation with widely used libraries (ITK , ITK-snap)

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