Lehrstuhl für Bildverarbeitung RWTH AACHEN

LaBooratory of Nephropathology

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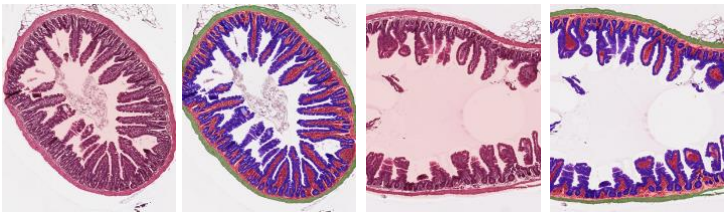
Master Thesis

Deep learning and machine learning methods for structural segmentation and feature extraction of gut and colon.

Backgrounds:

Segmentation of the mouse gut and intestine is a crucial step in understanding the underlying structures and functions of the gastrointestinal system. This project employs state-of-the-art techniques in machine learning algorithms to achieve precise segmentation, laying the foundation for advanced morphological feature extraction.



Objectives:

- **Accurate Segmentation:** Investigating and utilizing advanced image processing algorithms such as vision transformers and u-nets for the precise delineation of the mouse gut and intestine on already available data including annotation.
- **Morphological Feature Extraction:** Identifying and extracting key morphological features from the segmented regions.

Required Qualifications:

- Strong programming skills (Python, C++, or a comparable programming language)
- Basic skills in Bash Unix shells
- Deep learning and machine learning experience
- Version control (e.g. Git, GitHub, GitLab)
- Familiarity with libaries such as Pytorch, Numpy, SciPy (preferred)

Contact:

Please send your application via email to ppilva@ukaachen.de and please include a Short CV and your Transcript of Records