

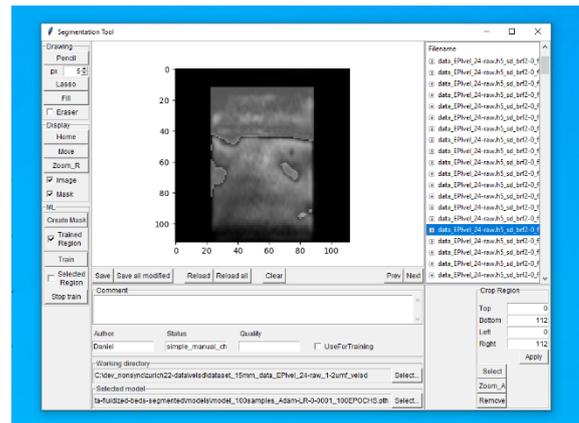
Development and publishing of a Python based application for image segmentation with GUI

Keywords: Computer Science, Data Analysis, Python Programming, GUI, Software Deployment

Motivation

Data science and machine learning are research areas that have seen strong growth and rapid development in recent years. State of the art applications use sophisticated methods and technologies such as transformers or convolutional neural networks (CNNs).

Equally important and often overlooked are the other areas of the data processing chain. Before further utilization, data needs to be summarized and structured in a so-called dataset. To create and manage datasets, efficient infrastructure is required. This can be in the form of tools, that allow the data to be viewed, audited, structured and preprocessed if necessary.



Screenshot of existing application.

Tasks

We have developed a GUI application for manual and semi-automatic segmentation of image data in Python. Now, the application should be rewritten with just the most important features with a focus on code quality and a well-planned software architecture. The software will then be made open source and published as a technical note, for which you will gain joint authorship. Important aspects of the work are:

- Add or improve useful features, remove unnecessary features to simplify the code.
- Anticipate possible use cases and structure the software in such a way, that the use cases can be realized with just few and easy code modifications. Examples:
 - loading data with different folder structure/file naming
 - working with monochrome and rgb image data etc.)
 - supporting different file formats
 - interface to popular machine learning frameworks
- Provide a useful documentation in form of code comments that makes the code accessible to third parties.
- The software is based on python, tkinter and matplotlib. Version control via git.

Kontakt

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