Validation of glioseg: towards robust glioma segmentation

Research Line: Applied Medical Image Analysis
Project type: Master Project
Approx. duration: 3-6 months

Project description

Tumor segmentation is a crucial step in neuro-oncology, and improving its accuracy has great relevance for patient surveillance and monitoring treatment effects. This project focusses on performing an extensive validation of Glioseg, a pipeline for automated segmentation of glioma's, which are primary tumors of the brain. This pipeline includes pre- and post-processing of scans and the evaluation of several pre-trained AI segmentation models (see Figure 1).

During the internship, you will work on assessing the robustness of Glioseg through an extensive validation protocol, which includes analyzing the outputs of the individual segmentation models used in the pipeline, and explore various label fusion strategies to combine these outputs. The goal is to implement and compare several fusion strategies (from simple to more advanced ones), and find the optimal one that improves the segmentation accuracy. For the evaluation phase, you will use a hold-out dataset of scans from patients with glioma, for which the segmentation of two expert raters will be available. The work will contribute to improving the robustness of the pipeline and potentially lead to better clinical applications for brain tumor analysis. For this project, it is important to have some minimal prior experience with python programming and deep learning.
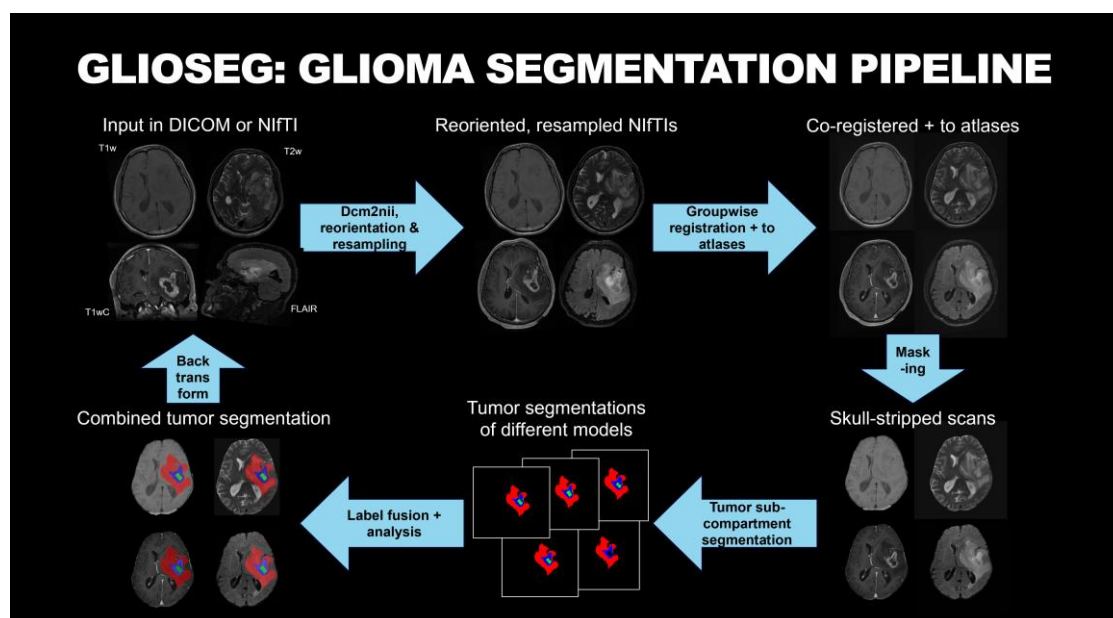

Figure 1: Flowchart of the Glioseg pipeline.

Interested in this project?

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