2024 BraTS Post-Treatment Glioma Challenge

Project overview:

Gliomas are the most prevalent malignant primary brain tumors in adults, with diffuse gliomas being the most common. Diffuse gliomas are characterized by their infiltrative growth patterns within the central nervous system, presenting substantial challenges for treatment and monitoring due to their variability in biological behavior, prognosis, and response to therapy. Treatment for diffuse gliomas involves a multi-modal approach tailored to the tumor's characteristics and patient's health and includes surgery, radiation therapy and systemic therapies. MRI remains the gold standard for post-treatment imaging across the spectrum of diffuse gliomas. It provides crucial information on tumor size, location, and morphological changes over time. The post-treatment imaging of diffuse gliomas is a fundamental part of patient management that dictates changes in treatment and is associated clinical outcomes.

Data:

Multi-institutional routine post-treatment clinically-acquired multi-parametric MRI (mpMRI) scans of glioma, are used as the training, validation.

Annotations comprise the enhancing tissue (ET — label 3), the surrounding non-enhancing FLAIR hyperintensity (SNFH) — label 2), the non-enhancing tumor core (NETC — label 1), and the resection cavity (RC - label 4)

Implementation:

Implementation Overview:

We are trying to implement the Brain tumour image segmentation using the U net model ,which has been the standard architecture for medical segmentation problems. Then we try to enhance the architecture by introducing the new blocks or build an optimized u net model for brain tumor segmentation.We measure the accuracy of the model using the dice Score