DEEP LEARNING PROJECT

TUMOR IMAGE SEGMENTATION

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Dataset Description

Dataset -> BraTS (Brain Tumor Segmentation)

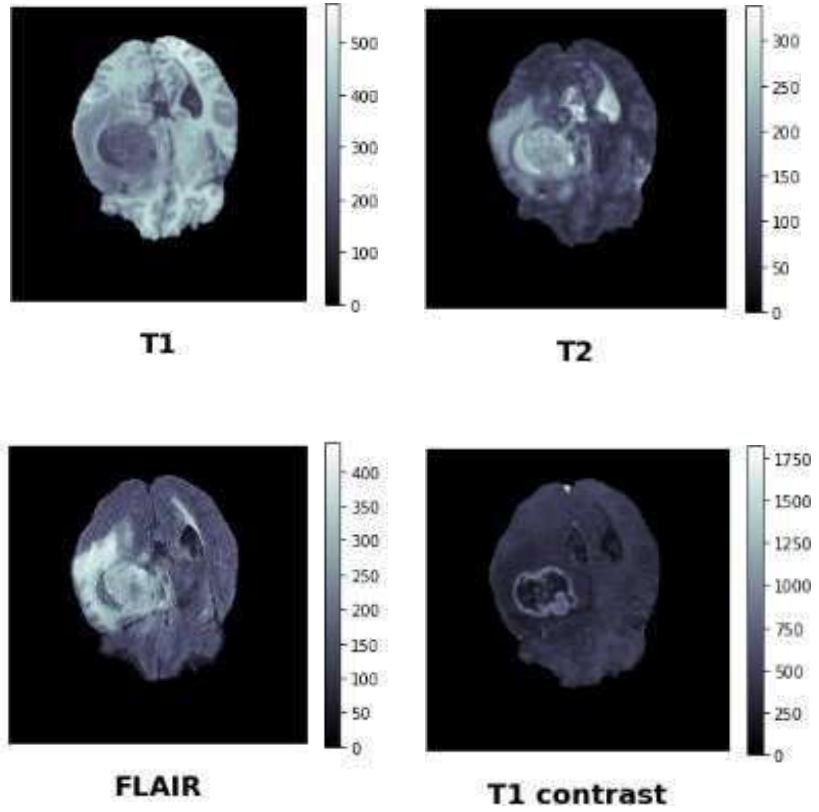
Link - [Brain Tumor Segmentation(BraTS2020) | Kaggle]

Description:

- Collection of medical imaging data designed for brain tumor segmentation.
- It includes MRI scans from various sources, covering different modalities:
  - T1-weighted
  - T2-weighted
  - T1-weighted images with contrast enhancement (**T1CE**)
  - Fluid-attenuated inversion recovery (**FLAIR**) images
- Size of all images is 240×240×155 pixels.

Applications:

- Benchmark for research in medical image analysis
- Evaluating algorithms for accurate brain tumor segmentation



Base Model

U-NET Architecture

- Convolutional neural network - due to symmetric architecture.
- It consists of :
  - **Encoding layer**
    - Extracts features from the input image
  - **Decoding layer**
    - Samples feature maps
    - Generates the final segmentation mask
  - **Skip-connections**
    - Capture fine-grained spatial details in the input image
  - **Fully convolutional layer**
    - Process input images of any size ,produces segmentation masks of same size.

U-NET Architecture