

## Instructions

### Results

For the notebook containing examples showing the different model variations training, loading existing models, and evaluating on the test set, load the results.ipynb into a Google Colab workspace.

Also copy the dataset.py, unet.py, unet\_model.py, data\_augmentation.py, lime\_xai.py, and metrics.py into the workspace.

The pre-trained model from Ratislav is obtained from [3D MRI Brain tumor segmentation | U-NET | Kaggle](#), under the name model\_per\_class.h5. This file should also be copied into the notebook (the path to this file may need to be changed).

The dataset should be downloaded from [BraTS2020 Dataset \(Training + Validation\) | Kaggle](#). The compressed file can be loaded into Google Drive and the cell at the top of the results notebook will extract it into the workspace.

Finally, uncomment the pip install lime in the final cell to install lime, so that the explanations can be seen.

With all these files, the cells in the notebook should run (although some of the paths may need to be changed). Note that the slice interval has been set to 50 for the models in the notebook so that training doesn't take too long, though for actual training a slice interval between 1 and 5 was used.

### Tests

To run the unit tests, use pip install -r requirements.txt to install the required python libraries.

Then, from the root project directory, run "pytest tests" from the terminal.

The tests will then be run, and will show successful completion if the libraries were installed correctly.

### Data Visualisation

The notebook for the data visualisation graphs for model training (data\_viz.ipynb) require the training log files for some of the models.

These will need to be download from my Google Drive.

[https://drive.google.com/drive/folders/10qBwbNtdrzLhU1QiNfD-GuzZWAX4cq4C?usp=share link](https://drive.google.com/drive/folders/10qBwbNtdrzLhU1QiNfD-GuzZWAX4cq4C?usp=share_link)

The example shows the training process of the multilabel model, using the FLAIR and T1ce modalities.