**Annotated Bibliography**

Akter, S., Simul Hasan Talukder, Md., Mondal, S. K., Aljaidi, M., Bin Sulaiman, R., & Alshammari, A. A. (2024). Brain tumor classification utilizing pixel distribution and spatial dependencies higher-order statistical measurements through explainable ML models. *Scientific Reports*, *14*(1). <https://doi.org/10.1038/s41598-024-74731-8>

Paper discusses using CNN models such as LeNet, AlexNet, VGG16, VGG19 and ResNet50 using different optimizers, sigmentation and classification methods. The dataset used in the study is from Cheng’s(2024) post on *Figshare*. The authors point out the dataset’s three classes of brain tumors are not well balanced and used ADASYN to synthetically re-balance them.

The percentage of each tumor class is meningioma 23\*, glioma 47%, and pituitary 30%. Authors stress good data cleaning is required to make accurate classification and predictions using this dataset for training.

Cheng, J. (2024, December 21). *Brain tumor dataset*. Figshare. https://figshare.com/articles/dataset/brain\_tumor\_dataset/1512427

This dataset contains 3064 T1-weighted contrast-enhanced images from 233 patients with three kinds of brain tumor: meningioma (708 slices), glioma (1426 slices), and pituitary tumor (930 slices). The files are in matlab format and have to be converted in to a python usable form the data structure is as follows:

* **cjdata.label**: 1 = meningioma, 2 = glioma, 3 = pituitary tumor
* **cjdata.pid**: patient ID
* **cjdata.image**: image data
* **cjdata.tumorBorder**: a vector storing the coordinates of discrete points on tumor border. For example, in [x1, y1, x2, y2,...], (xi, yi) are planar coordinates on the tumor border. They were generated by manually delineating the tumor border. So we can use it to generate binary image of tumor mask.
* **cjdata.tumorMask**: a binary image with 1s indicating the tumor region

Nickparvar, M. (2021, September 24). *Brain tumor MRI dataset*. Kaggle. https://www.kaggle.com/datasets/masoudnickparvar/brain-tumor-mri-dataset

Dataset is a combination of the following:

* [figshare](https://figshare.com/articles/dataset/brain_tumor_dataset/1512427)
* [SARTAJ dataset](https://www.kaggle.com/sartajbhuvaji/brain-tumor-classification-mri)
* [Br35H](https://www.kaggle.com/datasets/ahmedhamada0/brain-tumor-detection?select=no)

It contains 7023 images divided into four classes: glioma, meningioma, pituitary, and no tumor. The no tumor class images were taken from the Br35H dataset