UPSCHOOL MACHINE LEARNING & DEEP LEARNING PROGRAM
IN PARTNERSHIP WITH GOOGLE DEVELOPERS

# LOW-GRADE GLIOMA SEGMENTATION

**Project Proposal**

**Eda AYDIN**

**Advisor: Tuna Çakar**

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## Description of Available Data

- The Brain MRI segmentation dataset is obtained from The Cancer Imaging Archive (TCIA) via Kaggle.
- The dataset contains brain MR images together with manual FLAIR abnormality segmentation masks.
- They correspond to 110 patients included in The Cancer Genome Atlas (TCGA) lower-grade glioma collection with at least fluid-attenuated inversion recovery (FLAIR) sequence and genomic cluster data available.

## Planning the Project Process Part

- These stages are planned to be done in order
    - Data Preparation
    - Data Visualization
    - Data Augmentation (if necessary)
    - One or both of these will be used for the modeling part. All three can be used for comparison. (Still being researched.)
        - U-net
        - ResNet
        - FPN (Feature Pyramid Network)
    - Comparison of Different Models
    - Writing the report on the project

## Related Articles

- Association of genomic subtypes of lower-grade gliomas with shape features automatically extracted by a deep learning algorithm
- Radiogenomics of lower-grade glioma: algorithmically-assessed tumor shape is associated with tumor genomic subtypes and patient outcomes in a multi-institutional study with The Cancer Genome Atlas data
    - Both articles were written using this data.

## Why did I choose this data?

I chose this dataset because I took courses on neuroscience and artificial intelligence, and because I wanted to continue my career as an artificial intelligence engineer, machine learning engineer, or data scientist in the health sector, I chose this dataset because I thought it would be training for me before hiring.