Brain Tumor Detection

# Project Idea:

The project aims to build a model to classify and categorize tumors into four distinct classes. The dataset focuses on brain tumors and their classification. The four classes are as follows:

* Glioma: Cancerous brain tumors in glial cells.
* Meningioma: Non-cancerous tumors originating from the meninges.
* No Tumor: Normal brain scans without detectable tumors.
* Pituitary: Tumors affecting the pituitary gland, which can be cancerous or non-cancerous.

# Dataset :

# https://www.kaggle.com/datasets/masoudnickparvar/brain-tumor-mri-dataset/data

# Github Repo :

# https://github.com/MohabAli74/Brain-Tumor-Detection

# Tools and libraries

* TensorFlow
* Numpy
* Keras
* seaborn
* matplotlib
* gradio

# Project Team Members

* Mohamed Khaled Mohamed
* Mohab Ali
* Mahmoud Ayman

# Team Leader

* Name: Mohab Ali

# Final Project Deliverable

The project would detect whether the brain has a tumor and classify which type of tumor it is. We have 3 different types of tumors, glioma, meningioma, and pituitary.

# Machine Learning Pipeline

Use <https://app.diagrams.net/>

# Timeline Deliverables

## Week 1 (14/9 to 21/9)

**Week one deliverable(project-wise):**

Decide the project idea and start researching papers related to the project.

**Team Members’ Roles:**

* Mohamed Khaled’s role: search for data and read related papers about the project.
* Mohab Ali’s role: search for deployment techniques.
* Mahmoud Ayman’s role: search for deep learning algorithms related to the project.

## Week 2 (21/9 to 28/9)

**Week two deliverable:**

Start the data preprocessing and explore and select the appropriate model architecture.

**Team Members’ Roles:**

* Mohamed Khaled’s role: searching for data collection and reading related research papers.
* Mohab Ali’s role: Assist in data preprocessing and research potential deployment strategies.
* Mahmoud Ayman’s role: Evaluate various deep learning model architectures for suitability.

## Week 3 (28/9 to 5/10)

**Week three deliverable:**

Complete the data preprocessing and finalize the selection of the model architecture.

**Team Members’ Roles:**

* Mohamed Khaled’s role: Cleaning and preprocessing the dataset.
* Mohab Ali’s role: Testing deployment frameworks and starting integration planning.
* Mahmoud Ayman’s role: Refine and adjust the deep learning model architecture based on data insights.

## Week 4 (5/10 to 12/10)

**Week four deliverable:**

Implement the selected model architecture and begin training the model with preprocessed data.

**Team Members’ Roles:**

* Mohamed Khaled’s role: Prepare the training data for the model.
* Mohab Ali’s role: Optimizing deployment techniques for smooth integration.
* Mahmoud Ayman’s role: starting the training of the model and monitoring its performance.

## Week 5

**Week five deliverable:**

**Team Members’ Roles:**

* Mohamed Khaled’s role:
* Mohab Ali’s role: improve model by Data Augmentation
* Mahmoud Ayman’s role:

## Week 6

**Week six deliverable:**

**Team Members’ Roles:**

* Member 1 role:
* Member 2 role:
* Member 3 role: