

# CS464 PROJECT PROPOSAL

## 1. Name of the Project: Brain Tumor Detector

## 2. Group Members of Group 1:

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## 3. Problem Definition

In this project, our main focus is to eliminate the problem of detecting brain tumors and helping patients with the help of Machine Learning. We will detect the type of brain tumor among 3 different brain tumor types. To do that, we are planning to feed our dataset consisting of MRI test results that is in JPG format into our model. Then the trained model will be used to evaluate the MRI results. Convolutional Neural Network (CNN) will be used for our model.

## 4. Dataset Description

The dataset we will use contains 7023 different MRI images and labeled with the four types. One label is for healthy images while three labels are for main types of brain tumors which are Glioma, Meningioma, Pituitary. 5712 of the images are separated as training dataset and remaining images are separated as test dataset. Total size of the images is approximately 160 MB [1].

## 5. What We Plan to Achieve by the Milestone

- We plan to complete the following until the progress demo:
  - Preprocess the data and create 2D matrices.
  - Separate the data into three parts which are training, validation and test. Training and validation sets will be used to train the model while test dataset will be used at the final to analyze success rate of the model.
  - Learn machine learning tools like PyTorch and Google Collab.
  - Learning more about image classification and Convolutional Neural Network.
  - Deciding the details of the model and starting to implement and train it.
- We plan to complete the following until the final demo:
  - Improve the previous results we obtained before the progress demo by working on the models and algorithms more and making them more complex.
  - Demonstrate the results we obtained from different models and algorithms with their accuracies.
  - Compare the results we obtained throughout the semester.
  - Present our final results.

## 6. References

[1] <https://www.kaggle.com/datasets/masoudnickparvar/brain-tumor-mri-dataset?select=Testing>