

Project Description

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Problem Statement

Hundreds of thousands of MRI brain scans are performed every day. With the scans being so intricate, it can sometimes even be hard for a trained professional to determine whether or not a patient has a brain tumor, and even harder to tell which kind. Having a tool that could detect such tumors within seconds with high accuracy would save a lot of time and money. Not to mention the impact it would have on developing nations who might not have as many specially trained doctors that can readily perform MRI analysis. The goal of the model is to solve this problem.

Dataset

The dataset we will be using comes from a group of brilliant students at Savitribai Phule Pune University in India. It can be found [here](#), on Kaggle. It is a well respected and reviewed dataset. The data consists of 394 files, which are all images of MRI scans. The images are divided into four sets. Three are for different tumor kinds, and one is a set of “no tumor” scans. Our input features will be extrapolated from the images, things like tumor shape, size, texture, etc. We will then use these features to classify the scan as one of the four possibilities.

Model & Goals

We plan to make a classification model with four classifications/outputs. Our goal is for our model to have an accuracy of over 95%, but we are not sure how feasible that is yet. In its completed state, we hope to have a working frontend for the project that allows any user to upload a PNG of an MRI brain scan and receive the model’s prediction within seconds.

General Roadmap

- April 25th: One Pager Project Description
- Understanding how image classification differs from input variables
- Extrapolating input features from our images (feature selection)
- Exploratory Data Analysis (EDA)
- May 6th: Mid Quarter Report
- Working model with at least 50% accuracy
- Model training and fine tuning
- Working model with 95%+ accuracy
- Integrate model into frontend
- Report and demo
- June 6th: Report, Demo, and Source Code