

Brain Tumor Classification Project Proposal

The brain is a major organ of the human body that controls all the body's functions. A brain tumor is the growth of abnormal cells in the brain. There exist many types of brain tumors. Some are cancerous (malignant) and others are noncancerous (benign). The growth rate and the location of a brain tumor determine how the function of the nervous system will be affected. As the brain is the control center of the body, more than any other cancer, brain tumors can have lasting and life-altering physical, cognitive, and psychological impacts on a patient's life.

A formal diagnosis of a brain tumor takes multiple steps. A series of tests will be undergone based on the symptoms, the location and the nature of the tumor, and the patient's health history. The diagnosis usually starts with magnetic resonance imaging (MRI). When the MRI scans show the presence of a brain tumor, a sample of the tumor's tissue (a biopsy) is usually needed to determine the type of brain tumor. However, manually reviewing the MRI scans is time-consuming and also prone to human error.

The goal of this project is to use machine learning techniques to determine the types of brain tumors from MRI scans. The diagnosis time is then shortened and the doctors can proceed with the treatment plan earlier. We will use deep learning algorithms to build a convolutional neural network as our predictive model. We will also explore the transfer learning technique to build another convolutional neural network based on the pre-trained EfficientNetB1 model.

The dataset was taken from [Kaggle](#) and the notebooks were run on Google Colab using their GPUs to speed up the computational time.