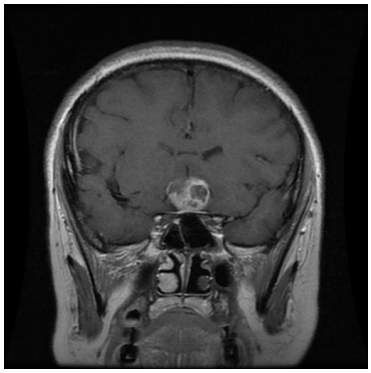
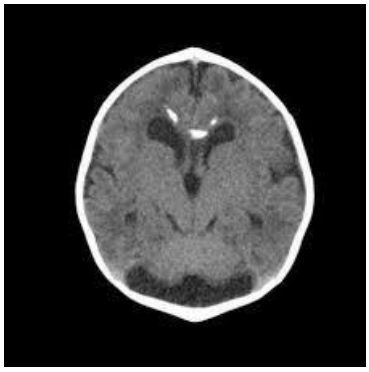
Brain Tumor Classification using Transfer Learning

Group Members –
Abhilash Nagineni (213310009)
Gaurav Singh (213310013)
Gunjan Kuhikar (213310021)

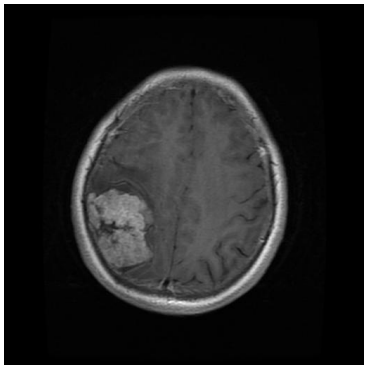
1.) The Dataset consists of MRI scans of Brain Tumor consisting of 4 classes glioma, meningioma, notumor, pituitary shown below.



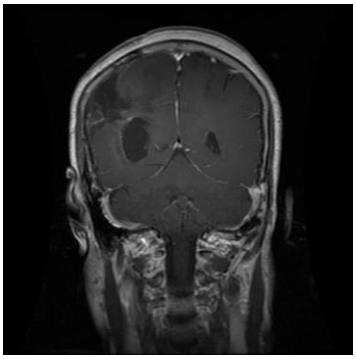
Pituitary



No Tumor

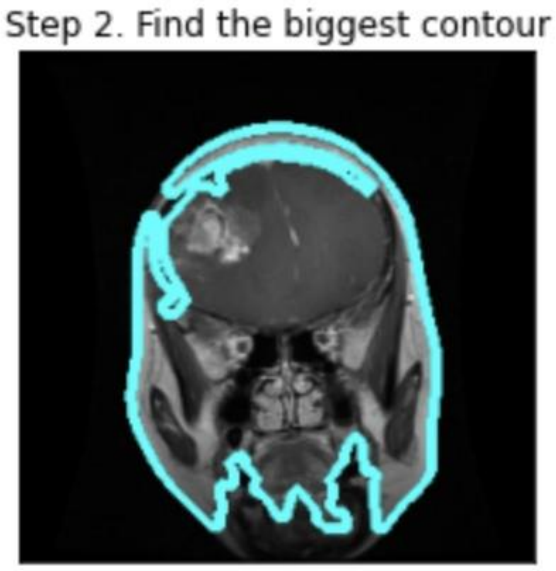


Meningioma

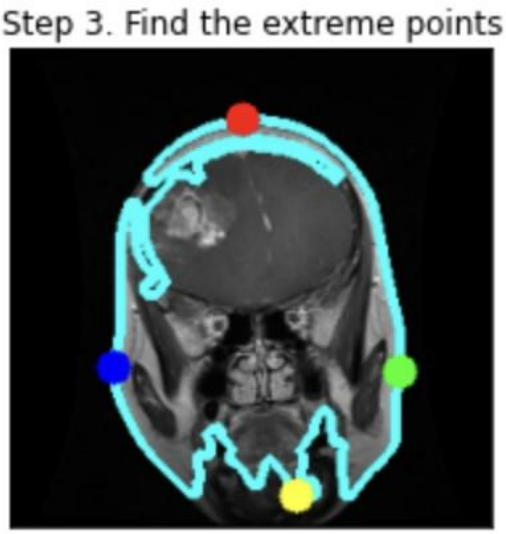


Glioma

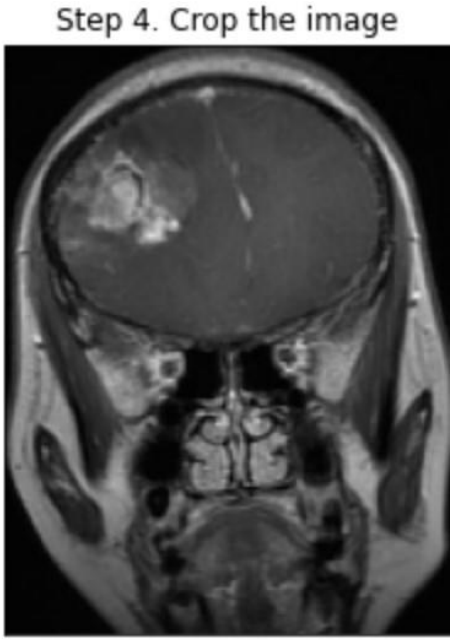
2.) Applied morphological operations to preprocess the image and get the contour to remove redundant black pixels



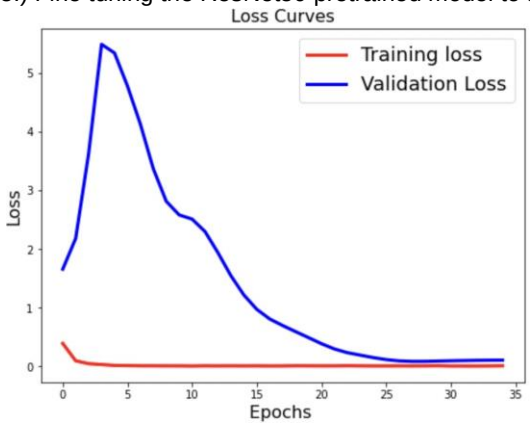
3.) Find extreme points

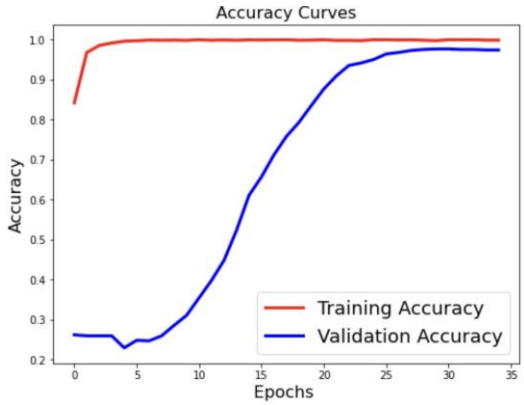


4.) Crop the image and remove redundant pixels

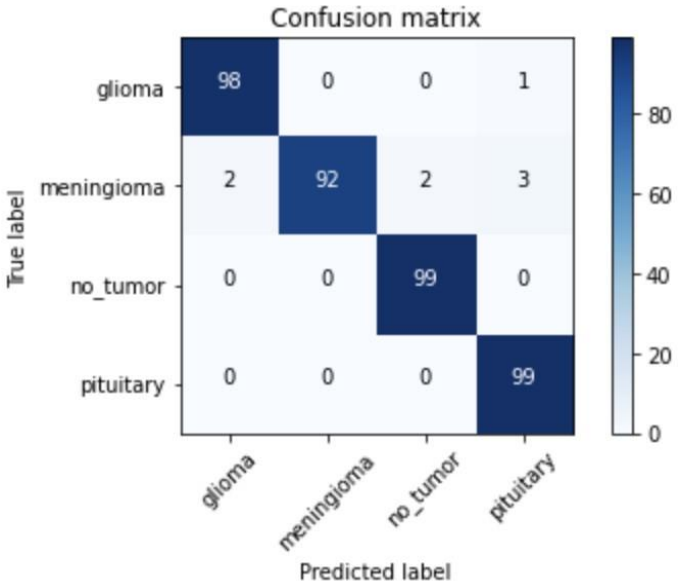


5.) Fine tuning the ResNet50 pretrained model to achieve accuracy of 97.98%

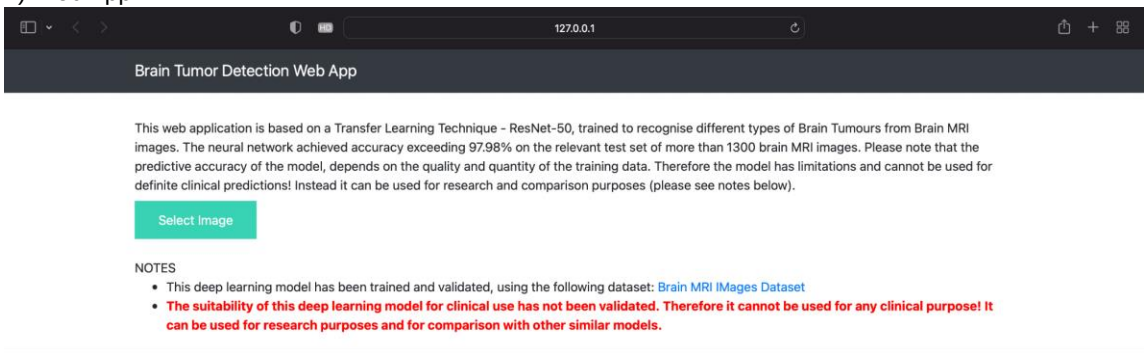




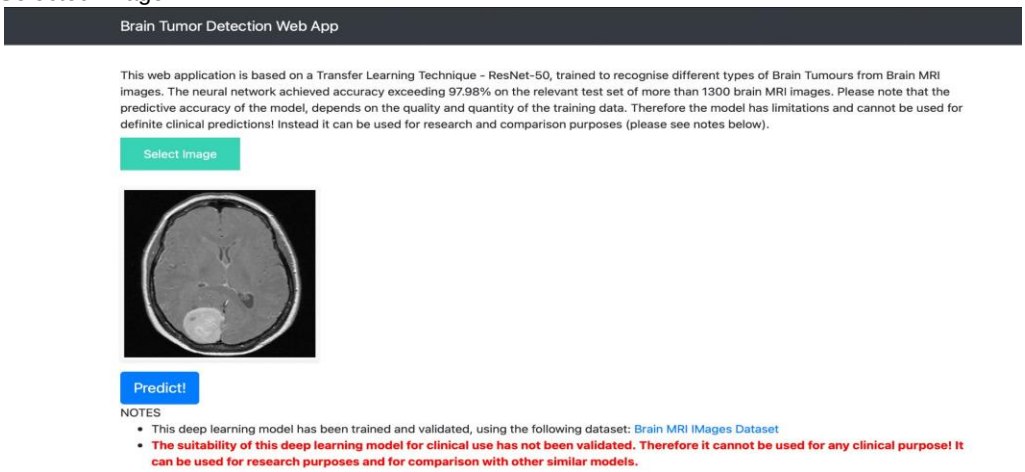
6.) Confusion Matrix



7.) Web App



Selected Image

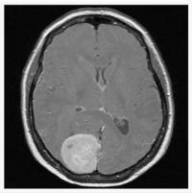


Predicted Class

Brain Tumor Detection Web App

This web application is based on a Transfer Learning Technique - ResNet-50, trained to recognise different types of Brain Tumours from Brain MRI images. The neural network achieved accuracy exceeding 97.98% on the relevant test set of more than 1300 brain MRI images. Please note that the predictive accuracy of the model, depends on the quality and quantity of the training data. Therefore the model has limitations and cannot be used for definite clinical predictions! Instead it can be used for research and comparison purposes (please see notes below).

Select Image



Result: Meningioma

NOTES

- This deep learning model has been trained and validated, using the following dataset: Brain MRI IMages Dataset
- **The suitability of this deep learning model for clinical use has not been validated. Therefore it cannot be used for any clinical purpose! It can be used for research purposes and for comparison with other similar models.**