Mini project report on

BRAIN TUMOR DETECTION SYSTEM

Under the guidance of

Dr. Manoj Diwaker

Submitted by:

Name: Anushka N Mishra

Course: BTech CSE(E)

Univ Roll No.: 2016659

Semester: 4th

Problem Statement

Brain Tumor detection System.

Brief Motivation

Brain tumor occurs owing to uncontrolled and rapid growth of cells. If not treated at an initial phase, it may lead to death. Despite many significant efforts and promising outcomes in this domain, accurate segmentation and classification remain a challenging task. Brain tumor at an early stage is very difficult task for doctors. MRI images are more prone to noise and other environmental interference. So it’s difficult to find the tumor and it's cause. A major challenge for brain tumor detection arises from the variations in tumor location, shape, and size.

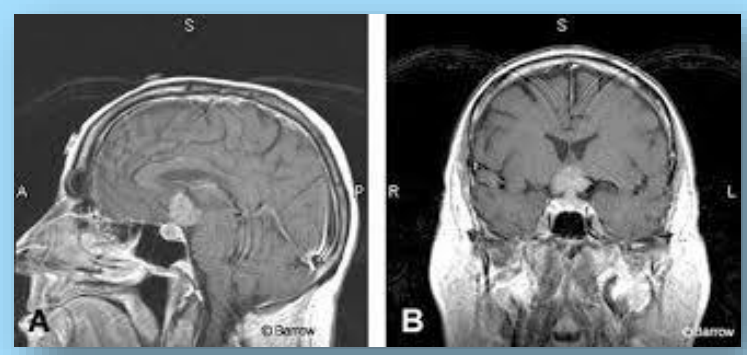
Tools Used

- Python
- Sklearn(Scikit-learn)
- OpenCV
- Numpy
- matplotlib
- Jupyter Notebook for Model Training and Testing.
- Dataset containing with/without brain tumor images.

Methodology

Introduction:

Brain tumor at early stage is very difficult task for doctors to identify. MRI images are more prone to noise and other environmental interference. So, it becomes difficult for doctors to identify tumor and their causes. So here we come up with the system, where system will detect brain tumor from images given in the dataset. The dataset contains the testing and training folder out of which we will be able to train our model and provide the results. Here we convert image into grayscale image.



We will be using one of the famous algorithms used in Machine Learning knows as Support vector Machine or SVM to compare the results whether the given data contains Brain Tumor or not.

Scope of Project:

- To make it essential and useful.
- To provide a user-friendly environment
- To make accurate results.

Objective:

The main aim of this project is to develop a system that can recognize whether the brain tumor is present in the patient's MRI scan image or not. This will be very helpful as Brain Tumor is one of the most dangerous and severe problem.

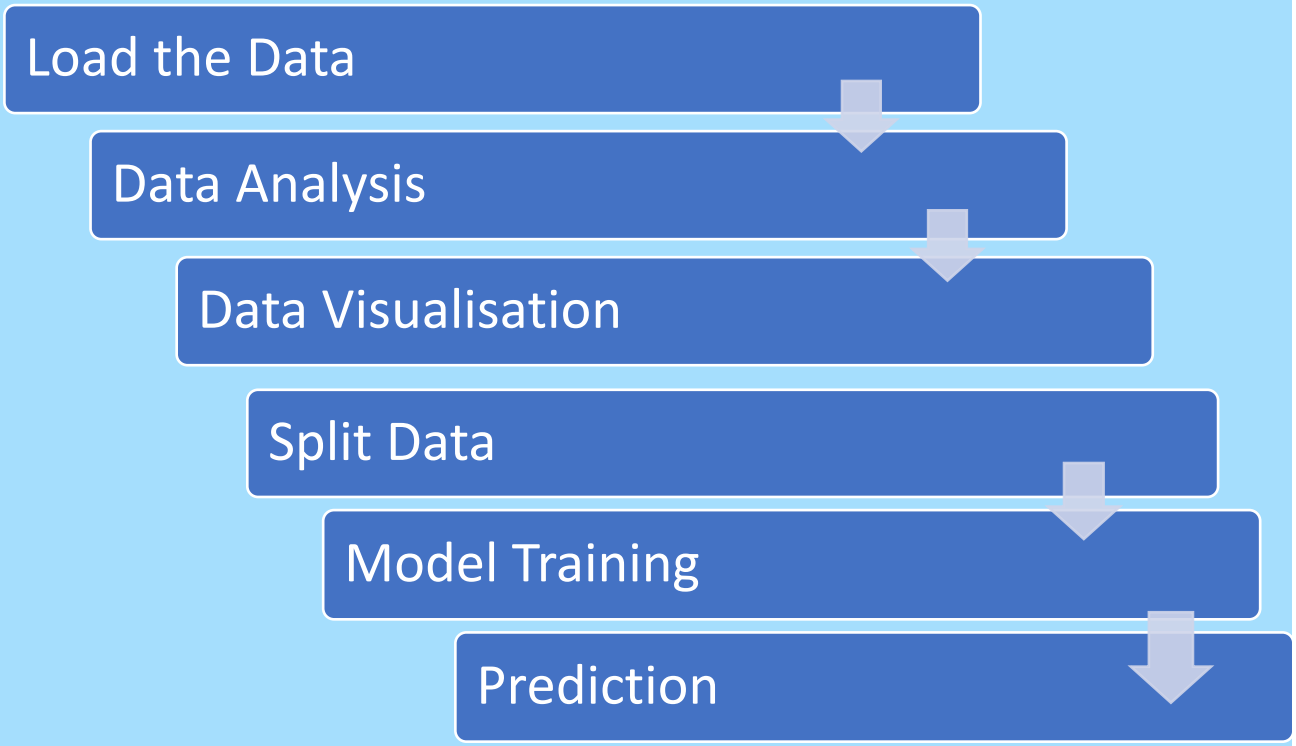
And thus the solution should be brought to cure the problem as soon as possible.

Software Description:

The Brain Tumor Detection System works on the Machine Learning Algorithm which is Support Vector Machine or SVM.

Here, we have taken dataset from(https://www.kaggle.com/) where we have testing and training data. The dataset consists of the with and without brain tumor images namely as Pituitary Tumor and No tumor.

First, we will import/load all the dependencies in the jupyter notebook. The dependencies include the numpy, pandas, OpenCV, matplotlib, scikit-learn. After this we will load and prepare the data by providing the path, followed by data analysis and visualisation and splitting the data (training and testing).



As the pre-processing part is done, thus we will now train our model using Support Vector Machine or SVM which is providing high performance then Logistic Regression Algorithm. Thus, we will predict the model and evaluate the results through the given testing folder in the dataset.

Conclusion

Due to the bad lifestyle, the Brain Tumor is now becoming common which is dangerous. Some of the Brain Tumor's are noncancerous(benign) while some of them are cancerous(malignant). Thus it is very necessary to detect such abnormal cells in the brain with high accuracy.