

# **Image Processing and Computer Vision- MATLAB**

**UE19CS333**

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## **Project :- Brain-tumor Detection**

### **Task:3**

#### **Problem statement**

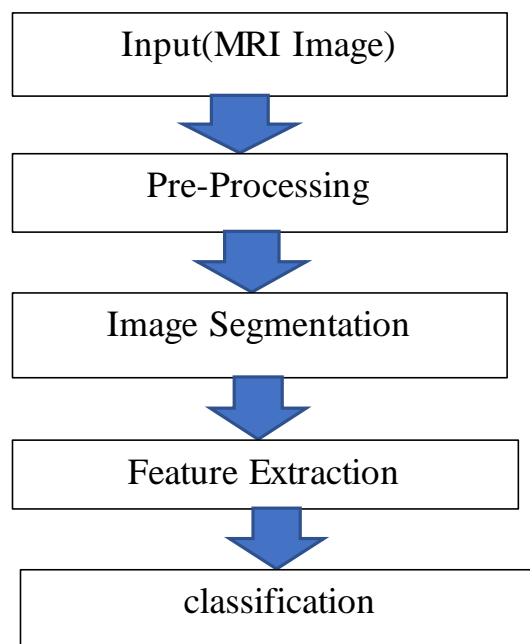
Nowadays we have seen most of the tumors are life threatening where brain tumor being one of them. As we know that brain tumor can be of any shape, size, location and intensity, therefore it is very difficult to detect tumor and diagnose it. The manual identification of tumor from MRI images is subjective in nature and may vary from expert to expert depending on their expertise and other factors which include lack of specific and accurate quantitative measures to classify the MRI images as it is brain tumor or not. So automated identification of brain tumor from MRI images help in alleviating the major issues and provide better results. Detection of brain tumor from the various symptoms of the patients has always been a major issue for the medical practitioner and pathologist for diagnosis and treatment planning. It is also a fact that some tests may be time consuming and it gives workloads and difficulty for the pathologists to obtain the accuracy of the presence of the tumor.

## Motivation and Objective

As the medical practitioner and pathologist face various such types of problems in detecting tumor manually from the MRI image, so there is a need of an automatic detection process. Thus the main aim of our project is to design a framework for automatic detection of the tumor to obtain more accuracy from the imaging dataset which plays vital role in the diagnosis of tumors by using various image processing algorithm in MATLAB. This framework will hopefully help the pathologist to reduce the work-load and minimize human error while maintaining and improving the accuracy to detect the tumor.

## Methodology used

The detection and classification of tumor from MRI images are a challenging task because of the complex structure of the brain. The various stages include pre-processing(enhancement) of MRI images, segmentation of suspicious portion, feature extraction and finally the classification.



## **Conclusion**

MRI images are best suitable for brain tumor detection. In this study digital image processing techniques are important for brain tumor detection by MRI images. The preprocessing techniques include different methods like filtering, contrast enhancement, Edge detection is used for image smoothing. The preprocessed images are used for post processing operation like threshold and then features are extracted using GLCM and classification is done by Artificial Neural Network where we have obtained 76.5% of accuracy when run on a dataset of 300 images in classifying tumor and non tumor images. This work help in detection of tumor which in turn save the precious time of doctor and pathologist to diagnose the tumor automatically in short span of time.