BME 5020 Project Abstract

Title: **BRAIN TUMOR DETECTION USING COLOR BASED K MEANS CLUSTERING SEGMENTATION**

**Authors: Abhijit Nikhade (fr4466), Harshini Gangapuram (fr8393)**

**Instructor: Dr. Richard Genik.**

ABSTRACT

In this project, we proposed a color based segmentation method that uses the K means clustering technique to track tumor objects in magnetic resonance (MR) brain images. The key concept in this color based segmentation algorithm with k means is to convert a given gray level MR image in to a color space image and then separate the position of tumor objects from other items of an MR image by using K means clustering and histogram clustering.Clustering is an unsupervised way of data grouping with a given measure of similarity. Clustering algorithms attempts to organize unlabelled feature vectors into clusters, such as samples within a cluster, that are more similar to each other than to samples belonging to different clusters, in which a validity measure is computed for each set of clusters. The number of clusters, which optimizes this measure, is the optimum number of clusters in the data set. Experiment demonstrates that the method can successfully achieve segmentation for MR brain images to help pathologists distinguish exactly lesion size and region. Here we have proposed a Graphical User Interface also to detect the tumor

We proposed a Graphical User Interface (GUI) is used to detect the tumour. Here the input is the digital MR image and the output we will get is digital image with the tumour cells detected. We have created a pushbutton to select the MR Images and a push button is placed to run the functionality in backend and we will get an output as an image file in several iterations in same window.

Future work will focus on the construction of more accurate brain atlas using a non-rigid registration technique and on the investigation of the partial volume effect.