Abstract

Image segmentation is often considered as a preliminary step in medical image analysis for computer aided diagnosis and therapy. Still it is tough to justify the accuracy of various segmentation algorithms, regardless the nature of the treated image. The abnormal growth of tissues reproducing themselves in any of the part body is called as tumor. There exist a various different types of tumor having different kind of Characteristics and treatment accordingly. As a result of imprecise detection of tumor a large number of people having brain tumors die every year. Due to the complex nature of medical image, analysis work of those is a challenging task. For early detection of abnormal behavior in human organs and tissues Magnetic resonance imaging (MRI) is an important diagnostic imaging technique which uses a combination of radio frequencies, large magnet and a computer to generate detailed images of organs and structures within the body. MR images are examined visually for detection of brain tumor producing less accuracy while detecting the stage & size of tumor. In this paper we propose the combination of K MEANS, AMS and EM algorithm for the detection of tumor stage in brain MR images and finding out the accuracy for those. In this method segmentation of tumor tissue is done with accuracy and reproducibility than manual segmentation with less analysis time. Also this accuracy is compared with the accuracy produced by the segmentation algorithms K MEAN and FCM combination. Then the tumor is extracted from the MR image and its exact shape,
Brain Tumor Segmentation and Stage Detection in Brain MR Images using K AMS EM Algorithm

position and stage is determined.

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**Index Terms**

Computer Science   Algorithms

**Keywords**

Brain tumor   Adaptive Mean-Shift (AMS)   Expectation-Maximization (EM)   K-means Magnetic Resonance Imaging (MRI)

Pre-processing

Support Vector Machine (SVM)

Contrast Limited Adaptive Histogram Equalization (CLAHE).