Robust Classification of Multi Class Brain Tumor in MRI Images using Hybrid Structure Descriptor and Fuzzy based Kernel- SVM

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Abstract

Tumor is a cluster of anomalous cells growing up in the brain. Brain tumor classification is an imperative and difficult task in cancer radiotherapy. However, manual classification is time-consuming, and the intra- and inter-observer inconsistency potentially leads to considerable discrepancy in the classification. Manual classification results look better because it involves human intelligence but the disadvantage is that the results may differ from one person to another person and takes long time. MRI image based automatic diagnosis method is used for early detection and treatment of brain tumors. In this article, fully automatic, multi class brain tumor classification approach using hybrid structure descriptor and Fuzzy-HKSVM in MRI images is developed. It classifies the brain tumor images in to four different classes such as Meningioma, Metastasis, Gliomas grade II and Gliomas grade III. Classification accuracy of proposed system in class 1(Meningioma) type tumor is 98.6%, class 2(Metastasis) is 98.6%, class 3(Gliomas grade II) is 97.67 and class 4(Gliomas grade III) is 98.6%.

Keywords: Segmentation, MRI, SVM, Classification, Feature Extraction, Brain Tumor.
References


