

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Efficacy Evaluation of Different Wavelet Feature Extraction Methods on Brain MRI Tumor Detection NOOSHIN NABIZADEH, NIGEL JOHN, MIROSLAV KUBAT, Univ of Miami — Automated Magnetic Resonance Imaging brain tumor detection and segmentation is a challenging task. Among different available methods, feature-based methods are very dominant. While many feature extraction techniques have been employed, it is still not quite clear which of feature extraction methods should be preferred. To help improve the situation, we present the results of a study in which we evaluate the efficiency of using different wavelet transform features extraction methods in brain MRI abnormality detection. Applying T1-weighted brain image, Discrete Wavelet Transform (DWT), Discrete Wavelet Packet Transform (DWPT), Dual Tree Complex Wavelet Transform (DTCWT), and Complex Morlet Wavelet Transform (CMWT) methods are applied to construct the feature pool. Three various classifiers as Support Vector Machine, K Nearest Neighborhood, and Sparse Representation-Based Classifier are applied and compared for classifying the selected features. The results show that DTCWT and CMWT features classified with SVM, result in the highest classification accuracy, proving of capability of wavelet transform features to be informative in this application.

Nooshin Nabizadeh
Univ of Miami

Date submitted: 13 Nov 2013

Electronic form version 1.4