

WAVELET TRANSFORM BASED NEURAL NETWORK ALGORITHM FOR DETECTION AND CHARACTERIZATION OF SEIZURE ACTIVITIES OF THE BRAIN

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ABSTRACT

In this paper, a wavelet-based neural network (WNN) classifier for recognizing EEG signals is implemented and tested for different sets EEG signals(healthy subjects, patients with epilepsy). First, the Discrete Wavelet Transform (DWT) with the Multi-Resolution Analysis (MRA) is applied to decompose EEG signal at resolution levels of the components of the EEG signal to extract the percentage distribution of energy features of the EEG signal at different resolution levels. Second, the neural network (NN) classifies these extracted features to identify the EEGs type according to the percentage distribution of energy features. The performance of the proposed algorithm has been evaluated using in total four EEG signals. The results showed that the proposed classifier has the ability of recognizing and classifying EEG signals with 99% efficiency.

KEYWORDS: Back Propagation, Classification, EEG, Epilepsy, Energy Distribution, Neural Network, Wavelet Transform