

## Statistical Wavelet Features, PCA, and SVM-Based Approach for EEG Signals Classification

**Authors :** R. K. Chaurasiya, N. D. Londhe, S. Ghosh

**Abstract :** The study of the electrical signals produced by neural activities of human brain is called Electroencephalography. In this paper, we propose an automatic and efficient EEG signal classification approach. The proposed approach is used to classify the EEG signal into two classes: epileptic seizure or not. In the proposed approach, we start with extracting the features by applying Discrete Wavelet Transform (DWT) in order to decompose the EEG signals into sub-bands. These features, extracted from details and approximation coefficients of DWT sub-bands, are used as input to Principal Component Analysis (PCA). The classification is based on reducing the feature dimension using PCA and deriving the support-vectors using Support Vector Machine (SVM). The experimental are performed on real and standard dataset. A very high level of classification accuracy is obtained in the result of classification.

**Keywords :** discrete wavelet transform, electroencephalogram, pattern recognition, principal component analysis, support vector machine

**Conference Title :** ICDMCI 2015 : International Conference on Data Mining and Computational Intelligence

**Conference Location :** London, United Kingdom

**Conference Dates :** February 16-17, 2015