عنوان مقاله:

Epileptic Seizure Detection in EEG Signal using Discrete Stationary Wavelet-Based Stockwell Transform

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خلاصه مقاله:

Epilepsy is a neurological disorder occurs at the central nervous system, Electroencephalography (EEG) is the reliable tool for analyzing the human brain activity with the help of the signals, and moreover, it plays a significant role in the detection of epileptic seizures. The abnormal electrical discharge leads to loss of memory, from the recent survey over five crore people are affected by epilepsy. An effective detection system is a vital solution for detecting the epileptic disease in the initial stage. In this paper, an improved epilepsy seizure detecting system is improved with better accuracy. We proposed EEG signal in both time and frequency domain with the use of Discrete Stationary wavelet-based Stockwell transform (DSWST), the feature extraction is processed by a temporal feature, spectral feature and Amplitude Distribution Estimation (ADE) from EEG signals in which the normal EEG signals will have various spectral and temporal centroids. Also, a modified filter bank based particle swarm optimization (MF-PSO) helps for the feature selection; it significantly improves the classifier accuracy. Finally, a Hybrid K nearest support vector machine (Kn-SVM) is employed for classification to investigate the performance of feature to classify the brain signals into three groups of normal (healthy), seizure free (inter-ictal) and during a seizure (ictal) groups.

کلمات کلیدی:

Epilepsy Seizures, Electroencephalography, Support vector machine, Discrete Stationary Wavelet Based Stockwell Transform (DSWST), Modified Filter Bank Based Particle Swarm Optimization (MF-PSO), Hybrid K Nearest Support Vector Machine (Kn-SVM)

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