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Research Letters in Signal Processing
Volume 2008 (2008), Article ID 293056, 5 pages
doi:10.1155/2008/293056

Research Letter

Discrimination between Ictal and Seizure-Free EEG Signals Using Empirical Mode Decomposition

Ram Bilas Pachori

Communication Research Centre, International Institute of Information Technology,
Hyderabad 500032, India

Received 18 October 2008; Accepted 15 December 2008

Academic Editor: Jiri Jan

Abstract

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Abstract

A new method for analysis of electroencephalogram (EEG) signals using empirical mode decomposition (EMD) and Fourier-Bessel (FB) expansion has been presented in this paper. The EMD decomposes an EEG signal into a finite set of band-limited signals termed intrinsic mode functions (IMFs). The mean frequency (MF) for each IMF has been computed using FB expansion. The MF measure of the IMFs has been used as a feature in order to identify the difference between ictal and seizure-free intracranial EEG signals. It has been shown that the MF feature of the IMFs has provided statistically significant difference between ictal and seizure-free EEG signals. Simulation results are included to illustrate the effectiveness of the proposed method.