Detrended fluctuation analysis and Hurst exponent as a measure to differentiate EEG signals

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This work analyze the dynamics of the electroencephalographic (EEG) signals of normal and epileptic patients. The Detrended Fluctuation Analysis (DFA) and the Hurst exponent methods are used for estimation of the presence of long term correlations in physiological time series observed in healthy and unhealthy brains. The presence of long-range correlation in a biological time series is an usually response observed in healthy organisms. The complexity of the recorded signal can guarantee some adaptability of the organism to the situations of disturbances. By other hand, the absence of this correlation indicates the loss of this complexity. Non-parametric Wilcoxon test was used for both, namely healthy and unhealthy groups, in order to compare the mean values of the Hurst exponents. Comparison of the means values of the Hurst exponents of normal and epileptic patients, using the Wilcoxon test results, point to some significant difference between two groups [1].

References

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