Comparative Analysis of Spectral Estimation Methods for Brain-Computer Interfaces

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Abstract : In this paper, we present a method in order to classify EEG signals for Brain-Computer Interfaces (BCI). EEG signals are first processed by means of spectral estimation methods to derive reliable features before classification step. Spectral estimation methods used are standard periodogram and the periodogram calculated by the Welch method; both methods are compared with Logarithm of Band Power (logBP) features. In the method proposed, we apply Linear Discriminant Analysis (LDA) followed by Support Vector Machine (SVM). Classification accuracy reached could be as high as 85%, which proves the effectiveness of classification of EEG signals based BCI using spectral methods.