

Feature Reduction of the EEG in the Spectral Domain

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Abstract

Quantitative EEG analysis in combination with modern Soft Computing methods offers the feasibility of processing a large amount of different features. This paper compares empirically the case of no feature reduction to four variants of feature reduction. Investigations were performed on a data set of more than 3,700 examples of microsleep events experienced by young adults in an overnight driving simulation study. More than 4,600 features were extracted from seven EEG and two EOG channels utilizing only the common modified periodogram method to estimate power spectral densities. Investigations revealed band averaging in narrow or in freely optimized spectral bands performed better than no reduction or reduction in common bands of EEG analysis.