

Abstract

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Effect of Extensive Training Load on the Classification Accuracy for a Three Class Motor Imagery Based Brain-Computer Interface

In Brain-Computer Interface (BCI), a subject's thoughts are read to provide an appropriate way of communication where only brain signals are used. The information of electroencephalogram (EEG) signals differentiate between subjects depending on their thoughts according to research. In this paper, a combined feature extraction methods are proposed to test the effect of the extensive training load on the classification accuracy of discrimination between three motor imagery (MI) movements which are Left Hand (LH), Right Hand (RH) and both Feet (F) through an offline analysis for one subject. Several classifiers and feature extraction techniques were used. Common Spatial Patterns (CSPs) combined with Band Power (BP) and classified by Linear Discriminant Analysis (LDA) were found to outperform all other combinations with an average classification accuracy equal 90% over three consecutive sessions.