BCI Compition 2008 ¸ Dataset IIb

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Preprocessing

For each of the three bipolar channels, some frequency signals were computed via 5th order butterworth filter, which also guaranteed the causality of our processing.

8-10Hz, 9-11Hz, 10-12Hz …, 28-30Hz

8-12Hz, 9-13Hz, 10-14Hz …, 26-30Hz

8-16Hz, 9-17Hz, 10-18Hz …, 22-30Hz

The EOG artifacts were also removed after filtering.

Training

1. CSSD algorithm was made between different frequency bands and channels. And three couples of spatial filters were selected to make the features.
2. Various window sizes had been applied for CSSD algorithm. At each time point, the windows with the best performance in self-test were selected. There were 32 widows in all for selection
   3.4-5.4s, 3.6-5.6s, 3.8-5.8s …, 6.0-8.0s
   3.4-5.9s, 3.6-6.1s, 3.8-6.3s …, 5.0-7.5s
   3.4-6.4s, 3.6-6.6s, 3.8-6.8s …, 5.0-8.0s
3. LDA discriminate function was made for each time point.

Testing

1. We tested all trials in the 45(9*5) datasets, including the labeled trials and the trials marked as artifact.
2. For the labeled sessions (session 1-3), the classifiers used were made by themselves. And we tested the unlabeled sessions (session 4, 5) using the classifiers made by the dataset of session 3.
3. The results were saved as "result.mat", in which the data 'result{i,j}(k,t)' means the classlabels for the jth dataset of the ith person, the kth trial at the time point t.