

SahandTech BCI Team

BCI Competitions 2003

Dataset IV Classification Algorithm

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Preprocessing:

For every trail (test or train), we first used an ICA method on signals of motor cortex (21 signals) to separate sources and then, we normalized source signals.

Classification:

We used a neural network based supervised/semi-supervised approach in classification of signals.

1) Primary Training:

We trained several neural networks with different properties (number of neurons, layers, activation functions and training algorithms) and on signals of different time regions (500 ms, last 300 ms and last 200ms of each signal). We used all of 21 sources in classification. After training sessions all networks classify train data exactly.

2) Primary Testing:

Then we tested all of networks on test data and averaged their classification results. Not all of networks agreed on test data results.

3) Retraining and Retesting:

We selected those test data which most of networks agreed on their classes as correct class to retrain our networks again. After retraining we saw improvement on most of those test trails which had poor classification agreement. We repeated this procedure of retraining and retesting of networks until all agreed on test data classes.

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