

SahandTech BCI Team

BCI Competitions 2003

Dataset Ia Classification Algorithm

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Preprocessing:

For every trail (test or train), we first applied a moving average transform (calculating mean average of signals in a 500ms window which is sliding 125ms over time) on A1-Cz and A2-Cz. This gives 25 points for each signal. Then we removed DC component of this signal and scaled it to fit in $[-1,1]$ region (by dividing every sample with amplitude of largest one).

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) over different input space dimensions (some of networks takes data resulted from A1-Cz and some from both A1-Cz and A2-Cz as input). 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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