SahandTech BCI Team
BCI Competitions 2003

Dataset III Classification Algorithm

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Preprocessing:

For every trail (test or train), we first filtered signals using a highpass 8Hz filter. Then we calculated AAR parameters of order 6 for filtered and original C3 and C4 signals and at last, normalized 12 AAR parameters for each time point.

Classification:

We used a neural network based approach in classification of signals.
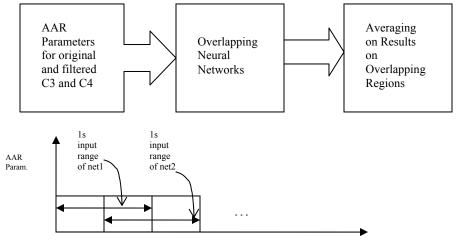
1) Training:

We trained neural networks on 2x11 different overlapping time regions of AAR parameters of filtered and original signals of C3 and C4 as follows: input time range was 128 samples (1 sec.) sliding 64 samples (500 m) for next network.

2) Testing:

Then we tested all of networks on test data and averaged their classification results on overlapping regions and on filtered and original input space. In non-overlapping time regions (first and last 500 ms) we simply used the results of single networks. Also, for classification certainty parameter for each time point, we provided the energy of classification signal up to every time points.

See figure 1 for more information.

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AAR Parameters for original and filtered C3 and C4 → Overlapping Neural Networks → Averaging on Results on Overlapping Regions

AAR Param.

1s input range of net1

1s input range of net2

. . .

Time