

A Description of the Algorithm Used for Classifying Dataset IVa (BCI COMPETITION III)

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In this algorithm the 100Hz sampled data were used for both training and testing. First of all to avoid visually evoked potentials being reflected by the data, the first 0.5 seconds of all the data were removed, also to avoid some additive noises the data were filtered by a band pass filter (0.5-45Hz). In the next step several features (including: Statistical features, features related to Parametric Models, Coefficient of different Transforming functions and ...) were extracted from the raw data. Then by using a combination of different classifier-independent measures, the extracted features were ranked according to their possible ability in classification. We trained the Bayesian Classifier for each subject twice: 1-based on the training data of the corresponding subject, 2-based on the training data of all the subjects. In each training stage, by applying the Bayesian classifier and using Leave-One-Out-Method, we considered the percentage of correct classification as an evaluation measure and selected fewer features from the high ranked features. Finally, by comparing the performance of the trained classifiers in each training stages, for each subject separately, we decided on the final classifiers to be used for each subject. That is, for subject 1 to 4 we used the classifier trained by only the samples regarded to the corresponding subjects, but for subject 5 we combined two classifiers which were trained by samples of subject 5 and samples of all the subjects.