Brain Computer Interface
Notes for the project

Dorian Konrad, Jonathan Arreguit, Salif Komi, Tristan Barjavel

EPFL, Switzerland

1 Procedure

Algorithm 1 show the procedure to apply in order to analysis the data and build a model classifier. Here, we mean by sample's dimensions, the number of features. This number equal the number of electrodes multiplied by the number of discretised frequencies. This is similar to the feature approach we used when classifying image samples.

Algorithm 1: Procedure for pre-processing and data analysis

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1 Read RAW Data;

2 Read Events;

3 Define Epochs;

4 for *all Epochs* **do**

5   **for** *All 1s window in Epoch (separate by 0.2s)* **do**

6   Apply Spacial Filter (CAR, Little Laplacian or Big Laplacian);

7   Apply Frequencial Filter;

8   Save window data as a Sample;

9 Separate sample in train and test set;

10 for *All sample's Dimensions* **do**

11   Apply statistical tests (univariate criterion) to determin importance of selected feature;

12   Keep feature if p-value is lower than 5%;

13 for *All kept Features* **do**

14   Apply sequential feature selection using a Wrapper (forward search and backward search);

15   Train a classifier (linear, diaglinear, quadratic, diagquadratic and mahalanobis);

16   Evaluate performance using cross-validation set;

17 Keep best features set and best classifier;