Automatic Artifact Detection Method

Abstract

The Automatic artefact detection method here proposed is mainly inspired by the method developed by Coppieters in 2016 (http://hdl.handle.net/2268/172300).

First, obvious bad channels are detected with fixed thresholds and removed from further analyses. Then a finer detection is processed by comparing signals. This first processing aims to detect **flat** and **noisy** channels.

For high density EEG, z-score are used over close channels and over smaller time windows in order to detect **incoherence**.

From the fieldtrip function: '`ft_channelrepair`', interpolation is processed over bad channels.

Users

Users can modify the length of time windows and interpolate bad channels over large and small time windows.

To read results obtained after the artefact detection process, one can use the function 'csg_read'.

All bad channels (flat, noisy and incoherent) are pulled together in a binary matrix with '1' for artefact detected and '0' for cleaned epoch of 1s. Rows are channels and columns are 1s epochs. This binary matrix is available from csg_read('artefact');