

How to preprocess, analyse, and interpret EEG & ERP data

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EEG preprocessing and analysis

Visual inspection and artifact rejection

Bad channel detection

Filtering

Re-referencing

ICA and artifact removal

Segmenting

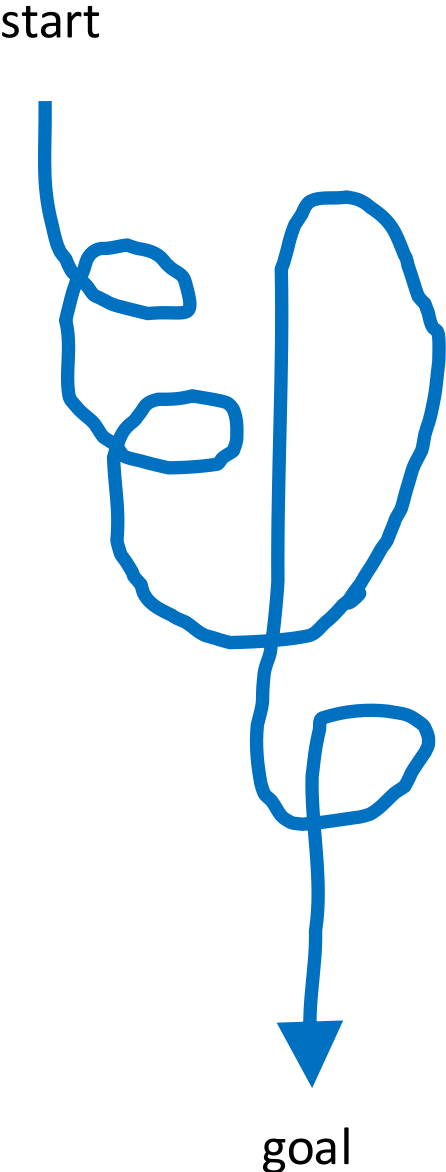
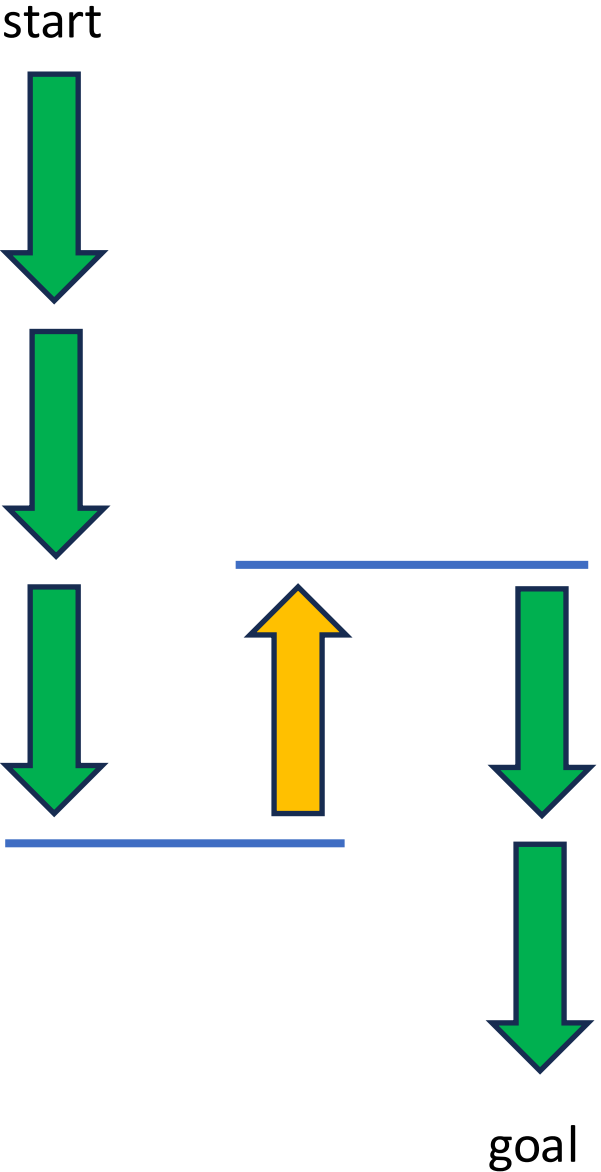
Averaging over trials to get the ERP

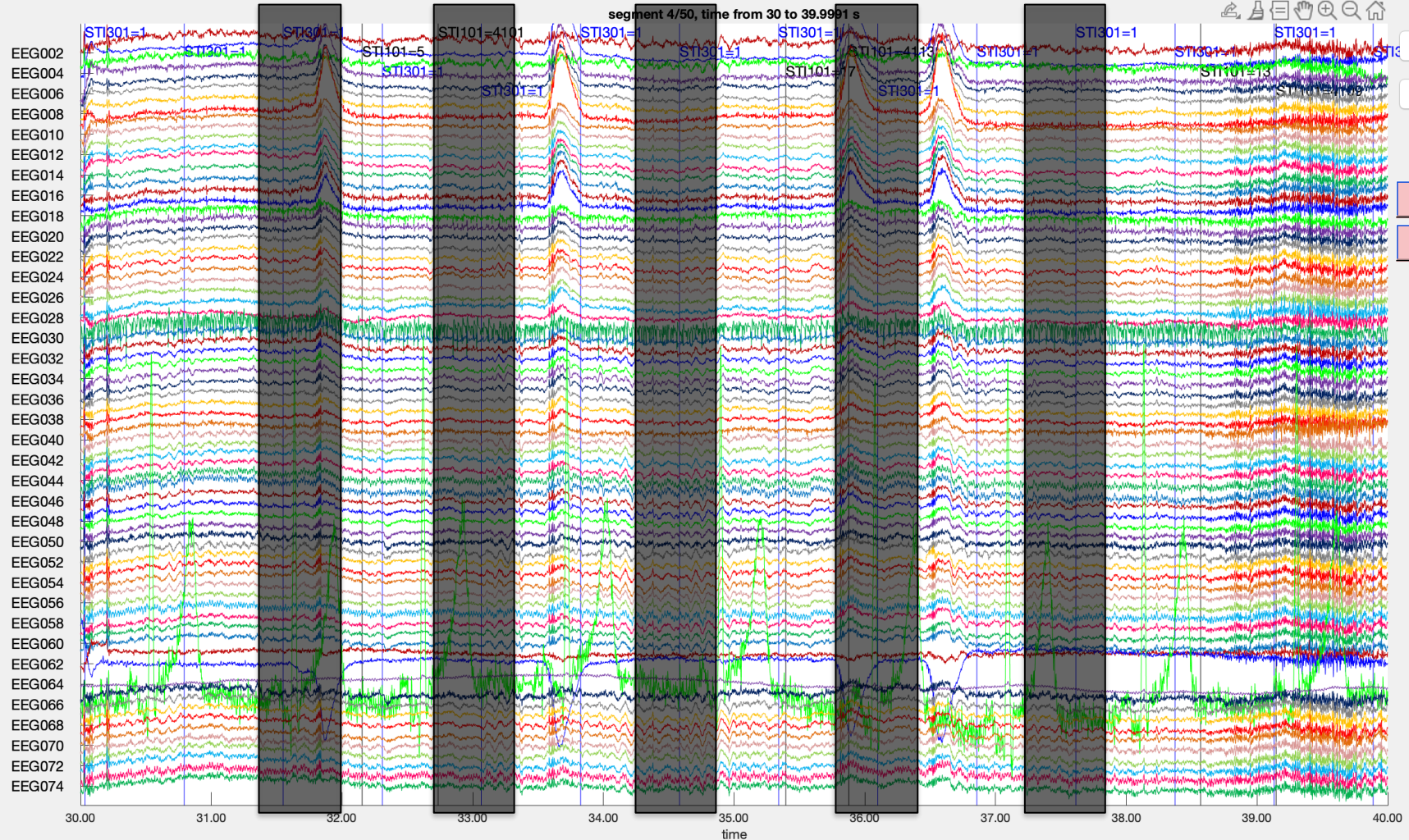
Computing TFRs and averaging over trials

Frequency analysis

Statistical evaluation over participants

EEG preprocessing often requires multiple iterations





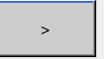
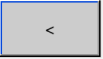
preproc

identify

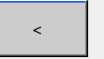
visual



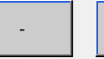
segment



channel

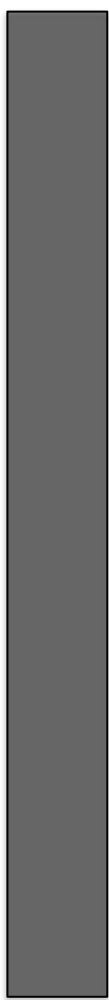
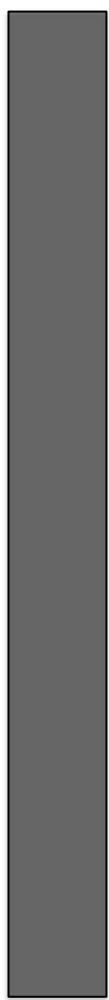
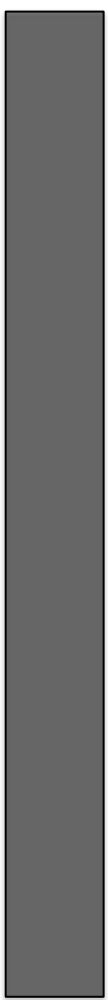


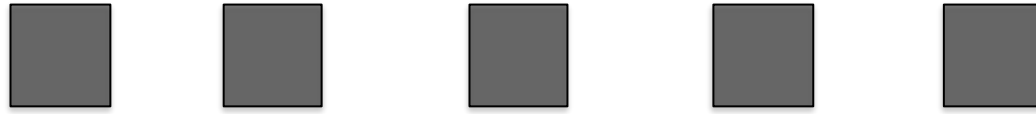
horizontal



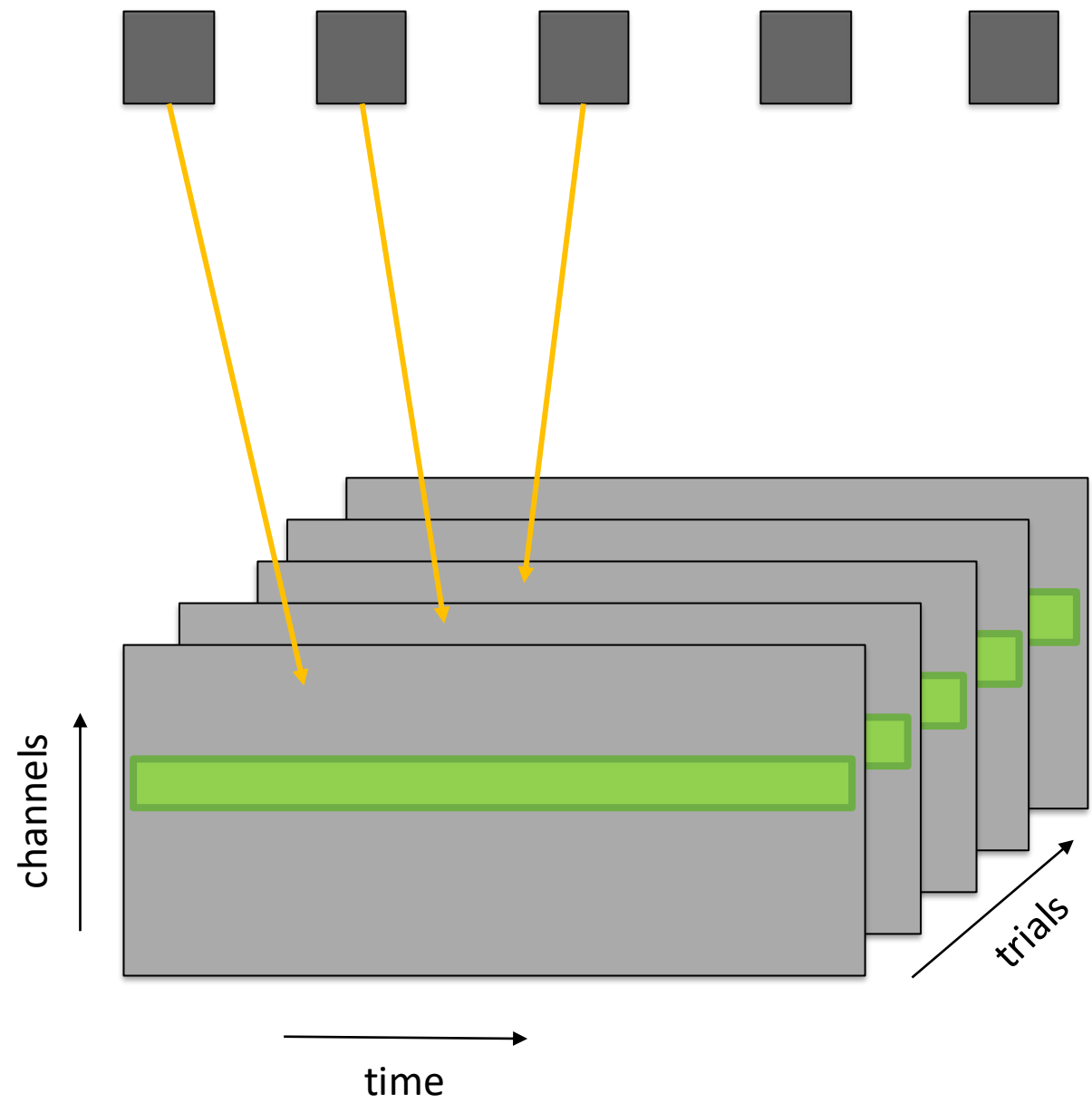
vertical







~ 100 channels
~ 1 second = 500 samples
So $100 \times 500 = 50.000$ numbers



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Statistical evaluation of condition differences or treatment effects over participants

Demonstration of EEG analysis