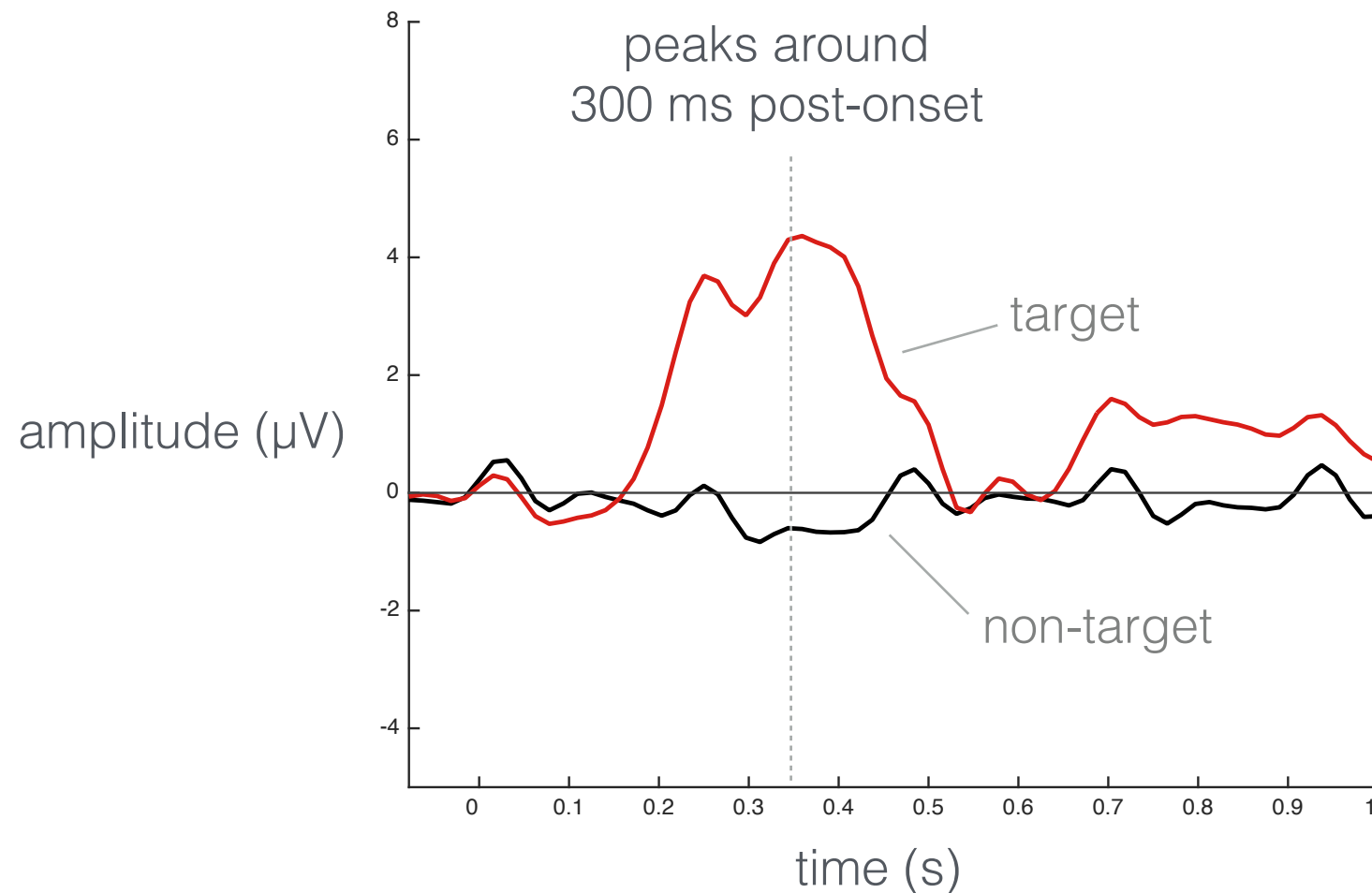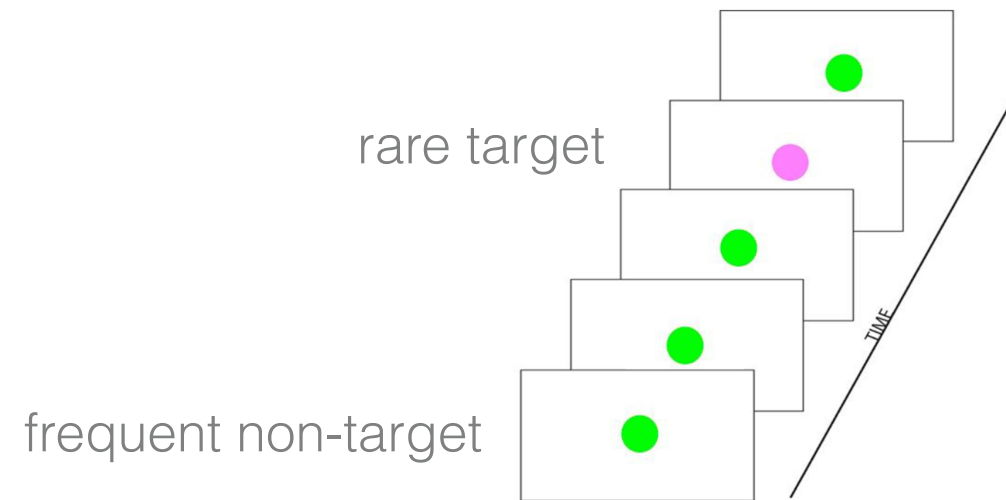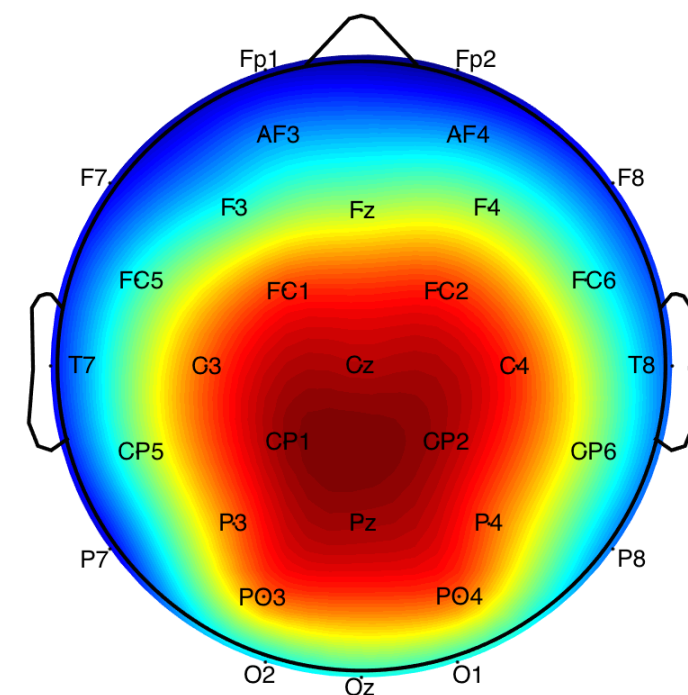# Brain-Computer Interfaces
Lab Session
P300 ERP

benjamin.wittevrongel@kuleuven.be
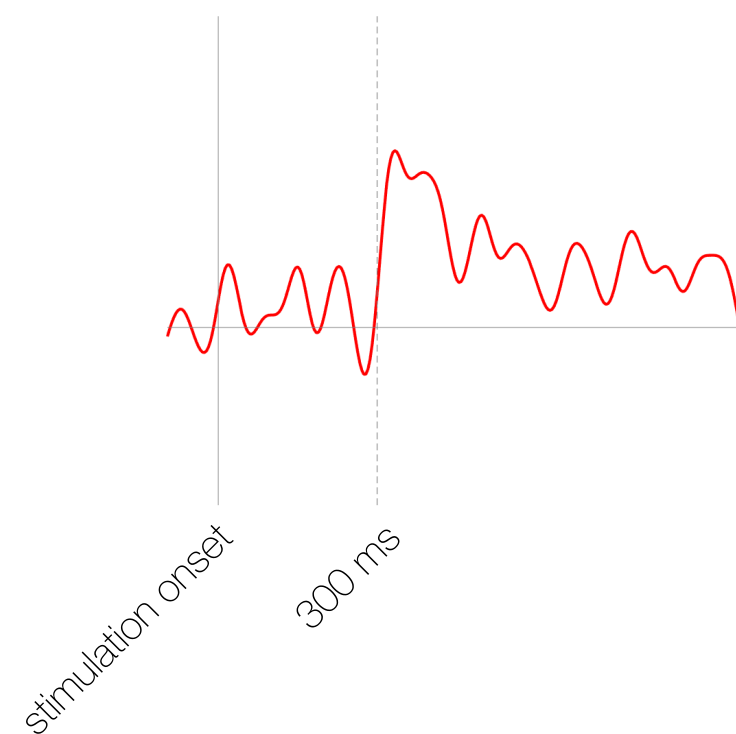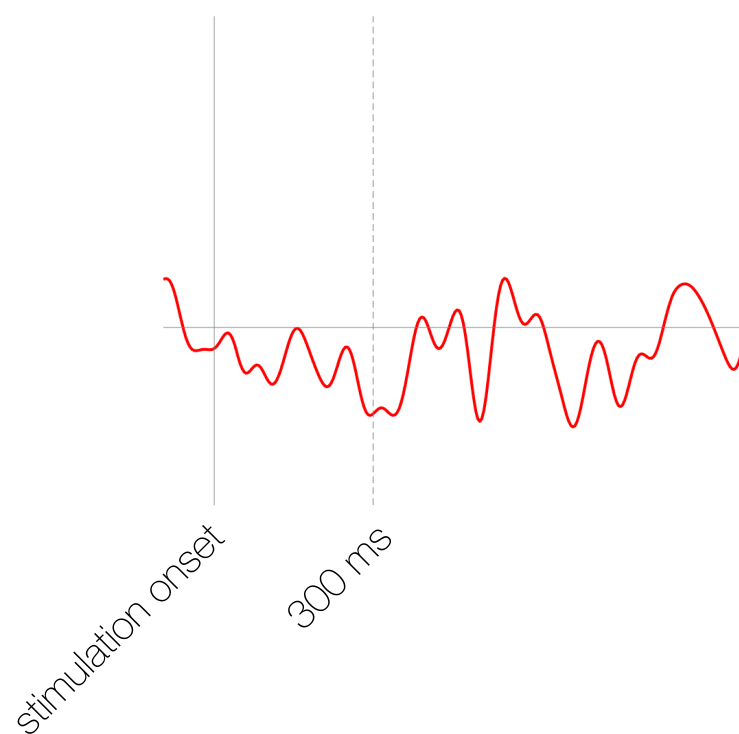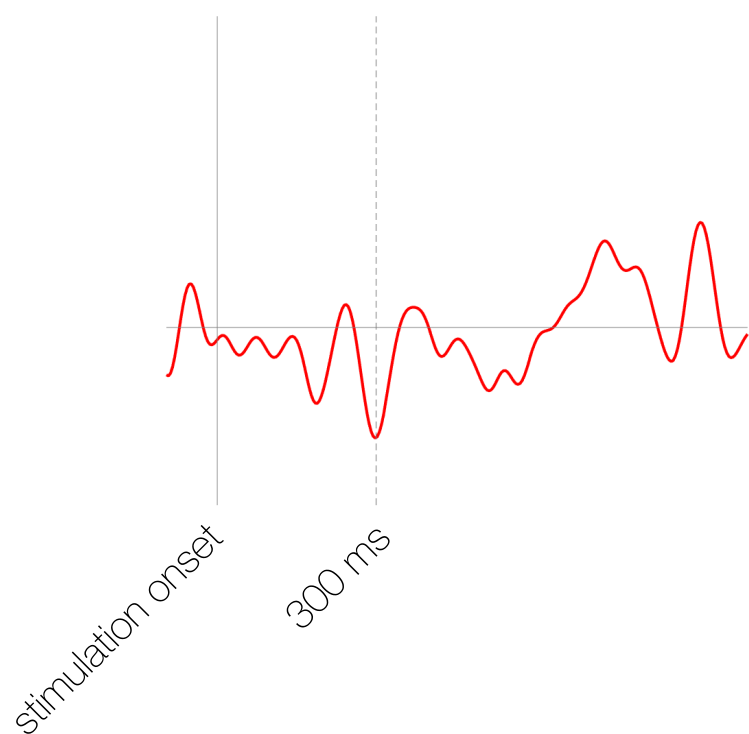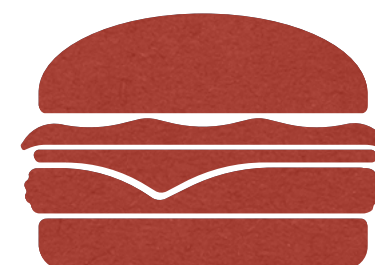
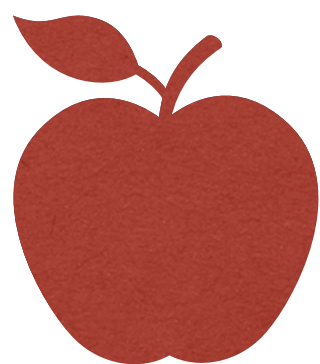# The P300 is a positive deflection of the EEG in response to a rare, attended stimulus ("oddball")

The P300 response can be used for BCI target selection, as it is only elicited by the intended target

In this session, we will solve a murder by analyzing EEG for the P300 response
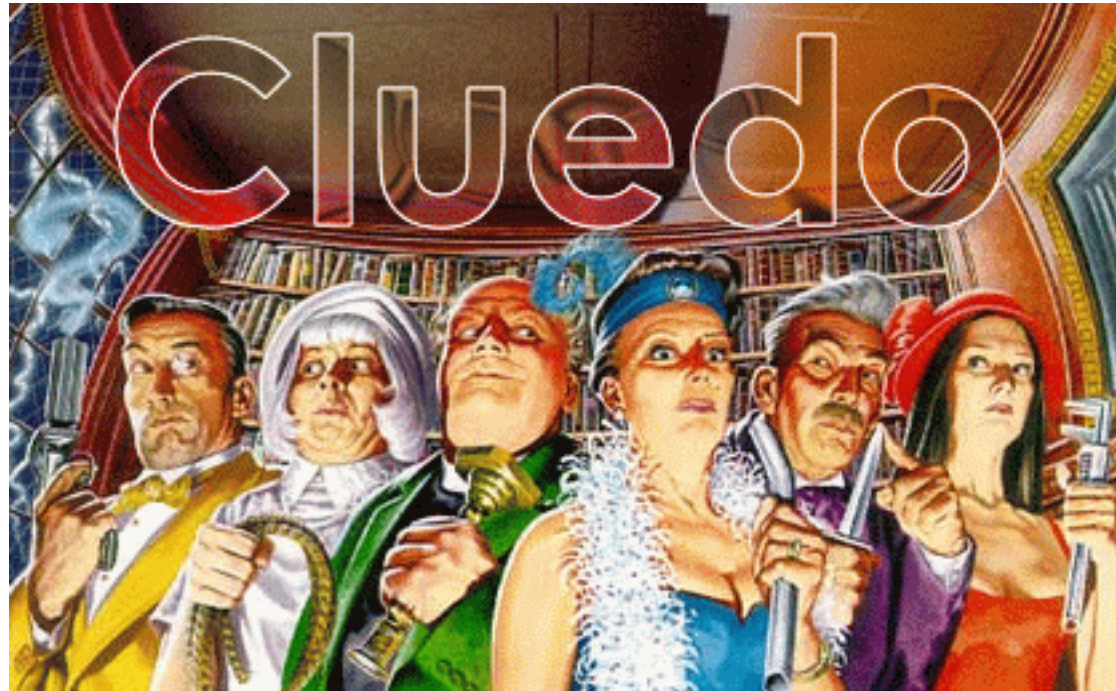
facts

    butler has been found dead

    9 suspects

    9 possible murder weapons

    9 possible murder locations

    witness identified the details using a P300 BCI

your task

    analyse the EEG

    find the correct murderer, weapon and location

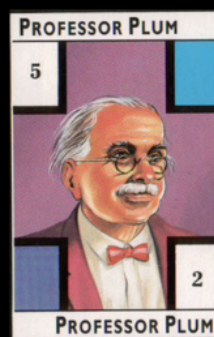The witness identified the murderer using the following interface

Analyzing the EEG for the P300 response has following steps:

cut the EEG into epochs

[-0.1, 1.0] sec window time-locked to the onset of the stimulation
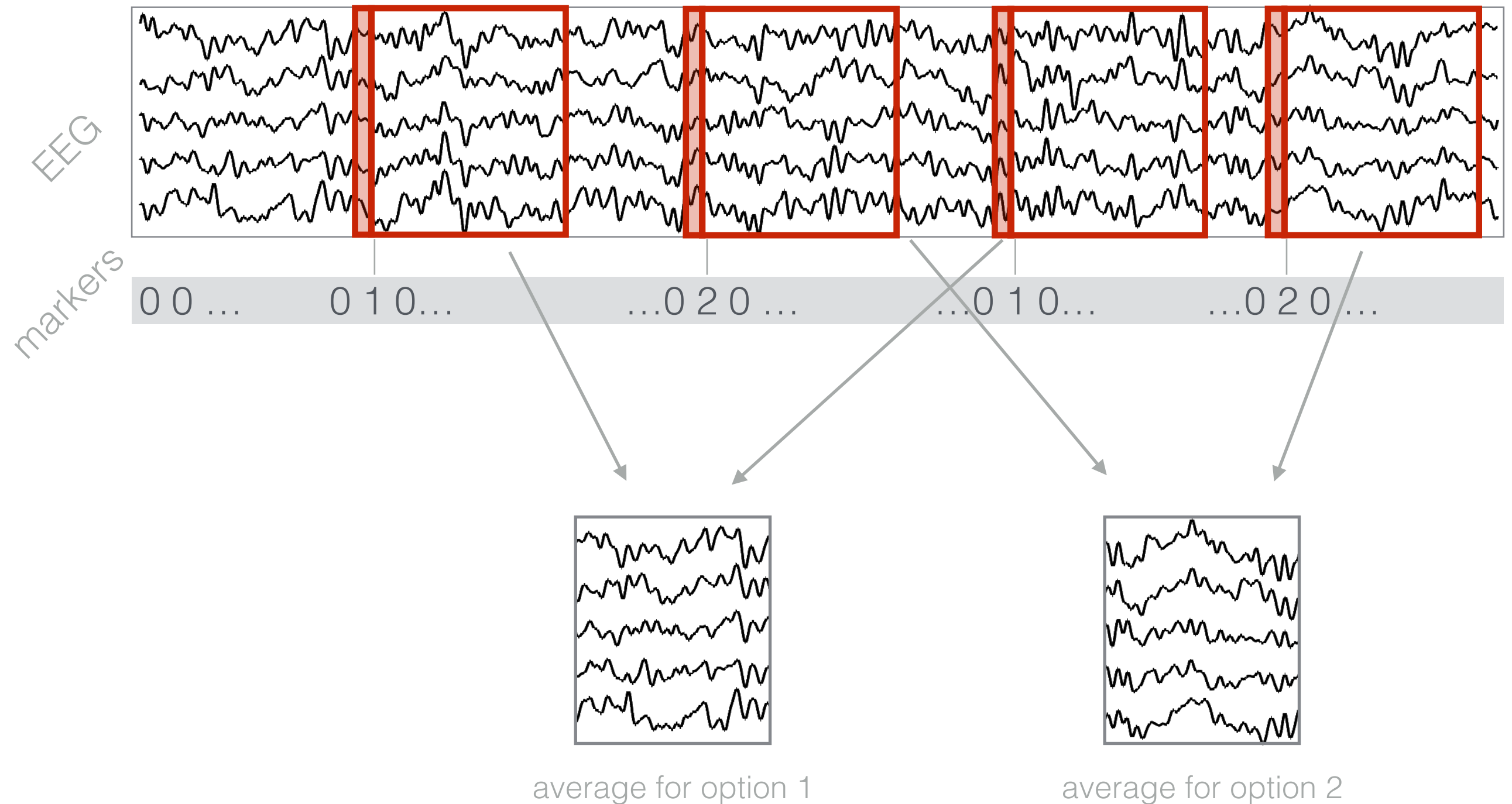
baselining

average pre-onset activity = 0

averaging per option

i.e., average epochs having the same marker

plot the ERPs

solve the murder

Analyzing the EEG for the P300 response:

EEG

markers

0 0 ...   0 1 0...   ...0 2 0 ...   ...0 1 0...   ...0 2 0 ...

average for option 1

average for option 2

https://kuleuven.box.com/v/LabSessionsBCI

Brain-Computer Interfaces
Lab Session
P300 ERP

benjamin.wittevrongel@kuleuven.be