Event-related potential measurements

Technical white paper

mindrove.com/products

HOME OFFICE-FRIENDLY solution. Non-experts can also perform measurements on themselves, no external help is needed. Measurements need only **A FEW EASY STEPS**: wet the electrodes with a few drops, switch the device on, put it on, check contacts in the app, start).

Event-related potentials (ERPs) like P300, and evoked potentials (EPs) such as visual evoked potentials (VEPs) are physiological responses in the EEG signal which are time locked to an 'event' (so-called stimulus) which is frequently and repeatedly presented to a human subject. Unlike EP measurements, ERP measurements require some form of response and/or cognitive processing from the subject. They reveal how the brain handles visual, auditory or somato-sensory inputs.

P300

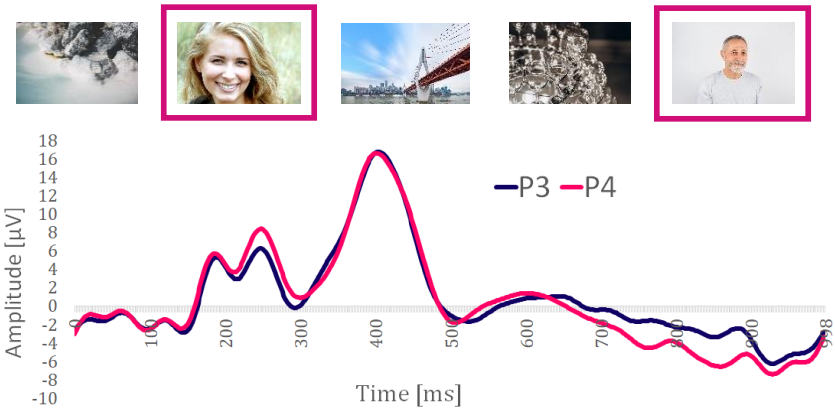
PARADIGM

Visual oddball paradigm, was applied with a target probability of 10%. The subject was counting the times the target (a human face) was presented. Pictures were shown for 1 sec, with interstimulus intervals of 1 sec. The target and non-target images were randomly selected from 10 and 84 possible images, respectively.

FIGURE

The responses to the targets of 6 measurements, averaged and filtered with 20 Hz low pass filter.

Signals of two electrodes, located at the P3 and P4 (parietal) regions are shown.



VISUAL EVOKED POTENTIALS

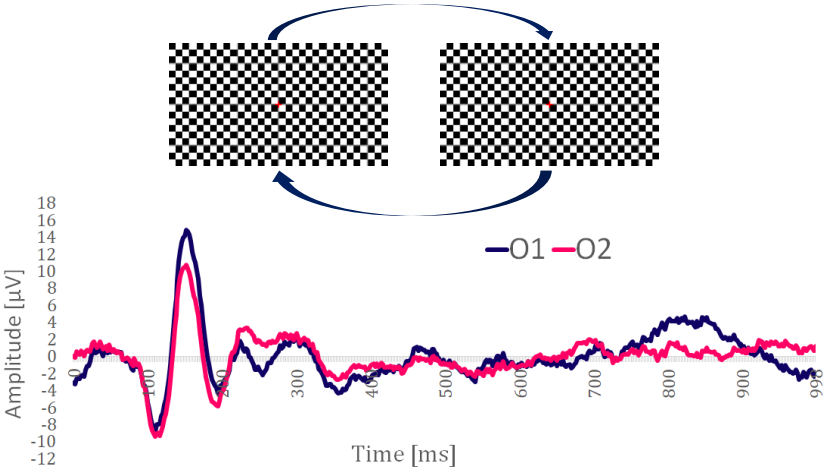
PARADIGM

The paradigm was based on the "Visual Evoked Potentials Standard 2004" (by Vernon Odom et al) pattern reversal technique. The individual measurements lasted up to 256 sec, the chessboard changed polarity in every 1 sec.

FIGURE

Average image of 256 VEPs from a single measurement.

Signals of two electrodes, located at the O1 and O2 (occipital) regions are shown.



TECHNICAL DETAILS

RUN TUTORIALS AND GET CREATIVE

Our pre-created tutorial paradigms (event sequences) can be tested, but users can create and run their own paradigms as well.

VARIOUS MEASUREMENT REGION CONFIGURATIONS

Measurement regions can be chosen in various configurations: central, central-parietal, or parietal-occipital regions can be targeted.

6 channels

SAMPLE RATE **500 sps**

RESOLUTION **24 bit**

CONNECTION **WiFi**

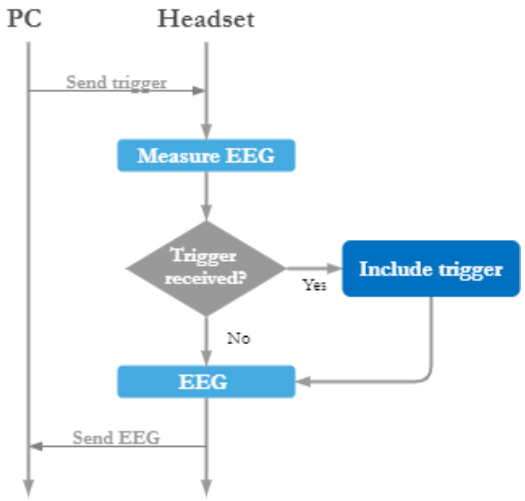
ELECTRODES **Semi-dry**

Platinum microfiber and conductive fabric

SYNCHRONIZATION OF THE EEG STREAM WITH THE EVENTS

The synchronization is automated and works smoothly in the background, the user does not have to take any action.

During the EEG measurements the stimuli are generated by the MindRove PC GUI. When a stimulus occurs, the PC GUI immediately sends a trigger signal to the MindRove headset. The headset includes the trigger signal in a trigger channel besides the EEG raw data and sends the packet back to the PC.



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