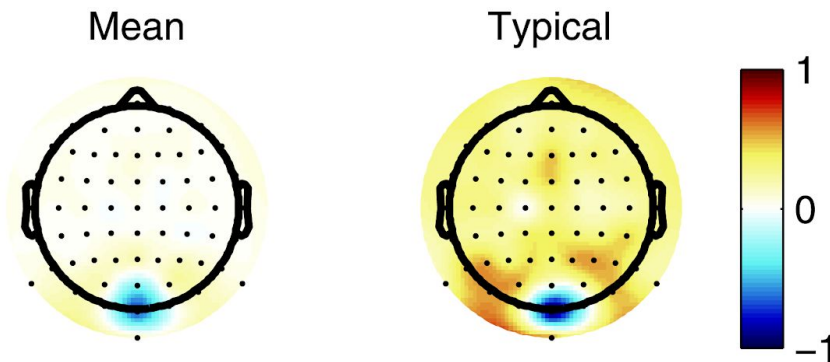


Headset layout MindAffect cVep system

Brain-Computer Interfaces (BCIs) allow users to control devices and communicate by using brain activity only. BCIs based on broad-band visual stimulation can outperform BCIs using other stimulation paradigms. Visual stimulation with pseudo-random bit-sequences evokes specific code-modulated Visual Evoked Potentials (cVEPs) that can be reliably used in BCI for high-speed communication in, for example, speller applications.

The typical response to code-modulated Visual Evoked Potential Brain Computer Interfacing is strongest in the locations as shown below, where the blue spot has the significant activation.



<https://doi.org/10.1371/journal.pone.0133797>

Our headset is designed such that the bottom electrode is just above the inion, the bump on the back of your head right above the neck. The electrodes are spaced exactly 4cm apart, this distance is based on extensive data analysis of acquired EEG signals. The headset used by MindAffect contains water-based electrodes with AgCl. However, we believe it should work with typical cup-electrodes or dry electrodes when the connections are made right.

MindAffect headset

For the Ganglion we only use 4 working electrodes, located in a row approximately 1cm above the inion. They are centered around the reference electrode in the middle (median/sagittal plane), which leads to two electrodes on the left and two on the right of the reference electrode. The ground is mounted on the forehead by a conducting headband, however, one can use an electrode sticker on the forehead, a bracelet around the wrist or use an electrode as far away as possible from the brain signals measured.

MarkIV UltraCortex headset

The OpenBCI headset has successfully been tested with the use of the O1, Oz, Poz and O2 electrodes for the signals, the Pz for the reference and one of the earclips for the Ground. Please note that only a handful of tests have been conducted with this headset, and the electrodes might not be optimal. Also, note that the headset is made of dry electrodes, this might induce longer classification times.