SSVEP classification using CNN with a limited training dataset

SSVEP DATA SET

Five users aged 23, 25, 31, 42, and 46 participated in the experiment. The users sat comfortably in a chair. A green LED of 1 cm diameter was placed at a distance of about 1 meter from a person's eyes. EEG signals were recorded using g.USBAmp with 16 active electrodes. The users were stimulated with flickering LED lights with frequencies: 5 Hz, 6 Hz, 7 Hz, and 8 Hz. The stimulation lasted 30 seconds. The recorded signals were divided into the data used for training, the first 20 seconds, and the data used for testing, the next 10 seconds, for each signal. All sessions were held at the same time of the day to avoid circadian influences on the measurements. Electrodes were placed according to the international 10-20 system at the following positions: O2, AF3, AF4, P4, P3, F4, Fz, F3, FCz, Pz, C4, C3, CPz, Cz, Oz, O1. The EEG sampling frequency was 256 Hz. The signals were filtered using a Butterworth bandpass filter (0.1-100 Hz) and a notch filter (48-52 Hz) to correct a technical artifact of the power network.

For every user, there are four files (for the stimuli of 5Hz, 6Hz, 7Hz and 8Hz each) for training and four files for testing. Data are provided in MATLAB format (*.mat) containing raw EEG signals (3 EEG channels O2, Oz, O1).