1   Introduction

Presentation   The goal of this project is the prediction of a subject's gender from its brain rhythms. The dataset provided by Dreem for this project is divided into a *training set* and a *test set*. The training set and the test set both contains EEG measurement for 946 subjects. On each of these subjects, the EEG signal has been recorded on 7 channels on 40 time intervals of 2 seconds. The sampling frequency of the signal is 250 Hz. As a consequence, each subject is associated with an input array of size $(40, 7, 500)$. The recordings were made during the night.

Previous work   The challenge webpage was presented with a reference article [3]. In this work, the author applied a deep-learning model to the prediction of the gender from EEG recordings. Using a convolutional neural network, they achieved 81% of accuracy.

Data balancing

2   Deep learning-based classification

In this section, we develop the deep learning pipeline used for the gender classification.

Braindecode   [1]

References

[1] Schirrmeister et al. Deep learning with convolutional neural networks for brain mapping and decoding of movement-related information from the human EEG. *CoRR*, 2017.

[2] Tasali Hofmann Van Cauter Latta, Leproult. Sex differences in delta and alpha eeg activities in older adults. *Sleep*, 2006.

[3] Arns van Putten, Olbrich. Predicting sex from brain rhythms with deep learning. *Scientific Reports*, 2018.