



1SC4291 – Sleep analysis by EEG

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Department: DOMINANTE - VIVANT, SANTÉ, ENVIRONNEMENT
Language of instruction: FRANCAIS
Campus: CAMPUS DE PARIS - SACLAY
Workload (HEE): 40
On-site hours (HPE): 27,00

Description

Brief description. As part of this project, we propose to implement signal processing and machine learning methods to predict the different sleep phases from electroencephalogram (EEG) data. This is therefore an EEG signal processing and machine learning problem in which we will seek to build precise prediction models from large noisy massive data.

The students involved in this project will be divided into sub-groups which will be put in “competition in challenge mode”: The sub-groups will analyze the data through different techniques and will compete to produce the best model. Models will be evaluated in real time and a live ranking will be provided and visible to all. A collaborative platform for sharing scores, results and scripts will be used.

The data and the problem being provided by our DREEM partners, students will have to meet them several times.

Associated partner. DREEM
Location. Paris-Saclay Campus

Quarter number
ST4

Prerequisites (in terms of CS courses)
Statistics and Learning Course
Signal Processing Course

Class components (lecture, labs, etc.)
The students involved in this integration teaching will be divided into sub-groups which will be put in "competition in challenge mode" : The sub-groups will analyze the data through different techniques and will compete to produce the best model. Models will be evaluated in real time and a live ranking will be provided and visible to all. A collaborative platform for



sharing scores, results and scripts will be used. The data and the problem being provided by our external partners of DREEM, the students will have to meet them several times. Finally, they will have to report their results to all the students involved in the project, partners and supervisors.

Grading

The final score will be built from the score obtained in the challenge and the score obtained at the final defense.

Learning outcomes covered on the course

Students will be able to define, understand, choose a machine learning method and implement it in line with the problem posed.

Description of the skills acquired at the end of the course