SUBJECT TO A FAVORABLE DECISION BY THE ANRT (Association National de la Recherche et de la Technologie)

**Date :** 24/05/2021

**PI for Essilor :** TARTAGLIA Elisa **Tél : +33** 01 55 96 47 29

**PI for Sorbonne/Institut de la Vision :** OTANI Satoru

**Description of the service / working environment:** Research and Prospective Department, Vision Science and Light & Life Science Services, in a Research / Development environment. Based in Bastille at the Institut de la Vision.

**Laboratory: Aging in Vision and Action Lab, Institut de la Vision.**

**Domain :**  Neuroscience, Ecole doctorale 3C, Paris

**Research theme:**

Use of electroencephalography (EEG) to identify the cortical mechanisms underlying photosensitivity.

**Description of the research theme:**

Photosensitivity is defined as the glare threshold of discomfort. Glare is any light entering the eye that does not contribute to vision.

The glare of discomfort is still relatively poorly understood and controlled. To date, there is no standardized and objective test for the evaluation of glare, on the one hand, because glare involves multiple neurophysiological origins, and on the other hand, because it is dynamic. , and finally because it can differ significantly from one patient to another.

In this context, we chose electroencephalography (EEG) because recording cortical activity could provide an objective, reliable and unambiguous glare signature.

Ultimately, we aim to improve the well-being of the wearer by optimizing the search for their glare threshold, as well as the automatic choice of the optimal filter to provide to reduce the feeling of discomfort.

**Job description:**

* The thesis will include the following stages:
* Bibliography - state of the art
* drafting and implementation of several experimental protocols for recording the cortical activity of human subjects
* experimentation on 40 to 60 subjects
* analysis and interpretation of EEG data
* Setting up a POC for a machine-brain interface
* writing the thesis

**Student profile and desirable knowledge:**

Master in Engineering / Physics / Biology / Neurosciences

*(This thesis is accessible to students with disabilities)*

**Required skills: English reading and writing. Matlab. Python. Experience with biological signal processing. Statistics for data analysis. Interest in BCI (brain-computer interface). Taste for experimentation.**

**Location :** Bastille (Institut de la Vision)

**Travel to be expected (in France? Abroad?)** Sometimes between the Bastille and Créteil sites

**Extract from the conditions of eligibility for a Cifre**

In accordance with the decree of May 25, 2016 setting the national training framework and the terms leading to the issuance of the national doctoral diploma, the doctoral student must have acquired a diploma conferring a master's degree or an equivalent level, on the effective date of the CIFRE, formally mentioned in the agreement signed by the ANRT and the beneficiary of the grant.

The Cifre system constitutes a full and complete modality of doctoral training. The candidate cannot be enrolled in a thesis for more than 9 months from the date of receipt by the ANRT of the Cifre application file. The candidate cannot be a doctor, nor have started another thesis.

The candidate for a Cifre undertakes to prepare and defend a thesis to obtain the degree of doctor. He therefore undertakes to register, throughout the Cifre, in an establishment accredited to issue the doctor's degree, in accordance with the aforementioned decree.

There is no nationality requirement, nor age requirement.

**Expected starting date :** september/october 2021

**Gross monthly remuneration :**  2800€ + 800€ of yearly bonus

**Both the start date and the financial support of the scholarship are subject to the final decision of the ANRT committee, within three months of the application being submitted. FYI, the probability of a positive response is 97%.**

**Contract length :** 3 y

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