Post Doctoral Position
Neuroergonomics and Human Factors Team
DCAS / ISAE-SUPAERO
Toulouse, France

Post doc position at ISAE-SUPAERO – Neuroergonomics and Human Factors Department (Toulouse, France)

HYPERSCAN Project: Real-time neurofeedback to improve cooperation between 2 humans

Context: The Neuroergonomics and Human Factors research team is currently involved in the Hyperscan project dedicated to improve the collaboration between two distant humans (i.e. not in the same place). This project aims at implementing hyperscanning techniques that allows the simultaneous recording of cerebral activity of multiple brains.

Objective: The challenge of this post-doctoral position will be to design solutions such as real-time neurofeedback to improve the situation awareness between the different humans involved in a common task. The candidate will have to: 1) design an experimental protocol; 2) identify the relevant neural markers that can be used for neurofeedback; 3) conduct experiments with a significant sample of participants equipped with EEG, eye tracking and ECG. The candidate will work in cooperation with another post-doctoral fellow who has a strong background in machine learning.

Supervisors: Prof. F. Dehais (frederic.dehais@isae.fr), Dr. C. Chanel (caroline.chanel@isae.fr) and R. Roy (raphaelle.roy@isae.fr)

Candidate's profile - for **EU** citizens**:**

- Neuroscience
- Neurophysiology (EEG or fNIRS)
- Eye tracking and ECG
- Cognitive psychology

Start & duration: The position starts in January 2019 for a duration of 24 months.

Location: Toulouse, France – ISAE-SUPAERO - Neuroergonomics and Human Factors Team (DCAS): https://www.isae-supaero.fr/fr/videos/isae-supaero-neuro-ergonomics-and-human-factors-scientific-research/

References:

Callan, D. E., Gateau, T., Durantin, G., Gonthier, N., & Dehais, F. (2018). Disruption in neural phase synchrony is related to identification of inattentional deafness in real- world setting. *Human brain mapping*, *39*(6), 2596-2608.

Gateau, T., Ayaz, H., & Dehais, F. (2018). In silico versus over the clouds: On-the-fly mental state estimation of aircraft pilots, using a functional near infrared spectroscopy based passive-BCI. Frontiers in human neuroscience, 12, 187.

Dehais, F., Duprès, A., Di Flumeri, G., Verdière, K. J., Borghini, G., Babiloni, F., & Roy, R. N. (2018). Monitoring pilot's cognitive fatigue with engagement features in simulated and actual flight conditions using an hybrid fNIRS-EEG passive BCI. *IEEE SMC*.

De Souza, P. E. U., Chanel, C. P. C., & Dehais, F. (2015, November). MOMDP-based target search mission taking into account the human operator's cognitive state. In *Tools with Artificial Intelligence (ICTAI), 2015 IEEE 27th International Conference on* (pp. 729-736). IEEE.