Looking for PhD applications in FI-STEP call for AI applied to Neurotechnology

Applications are invited for a **full-time PhD position** in the context of a collaborative project between Universitat Politècnica de Catalunya (BIOCOM-SC - Biologia Computacional i Sistemes Complexos, Physics Department) and Pompeu Fabra University (MULTISENSORY RESEARCH GROUP at the Engineering Department). The candidate will apply to a FI-STEP 2025 scholarship with the support and supervision of Salvador Soto-Faraco (UPF) and Mireia Torralba Cuello (UPC).

The candidate. We seek applications from candidates with a degree (BSc, MSc) in Biomedical Engineering, Physics, Mathematics, Computer Science, or similar demonstrable background, with high motivation for real time data analysis. Knowledge in automatic classification of EEG time series, ML, XAI, BCI, and/or brain imaging will be highly appreciated.

The project. The goal of this PhD project is to develop a Brain Computer Interface that integrates electroencephalographic (EEG) data with a VR driving environment in real time. This is an ongoing project which already counts with a programmable VR driving environment, proof of concept datasets (from young and older adults), and analytical pipelines based on automatic detection of oscillatory episodes and ML classification offline. The PhD project will begin from these pipelines, with the aim at improving/optimizing classification, and implementing the algorithm online in real time EEG data as users navigate the virtual environment. The system should be able to anticipate the user's errors and episodes of disorientation, and provide guidance on time to facilitate a seamless navigational experience. Ultimately, this system should be extrapolated to real navigation conditions. More information on past results can be found in Torralba-Cuello, M., Marti-Marca, A., Pápai, M. S., & Soto-Faraco, S. (2024). Single-Trial Characterisation of Frontal Theta and Parietal Alpha Oscillatory Episodes during Spatial Navigation in Humans. bioRxiv, 2024-10.

Conditions*

Duration: three years max.
Nationality: EU citizens only.
Starting date: No later than November 1st, 2025
Salary (gross): 18,180 Eur/year (approx.)
Training expenses: up to 12,000Eur.
This is an on-site, full-time position.
Deadline: April 9, 2025 at 2pm (local time in Barcelona).

*Please, see the full details in the AGAUR FI-STEP 2025 call and check all of the applicability criteria.

If you are interested, please contact us at applications.MRGLab@gmail.com with a CV, the names of two academic referees, and a letter describing your research interests briefly. Mention 'FI-STEP 2025' in the email subject.