

## PREDOCTORAL POSITION

*at Biomedical Engineering Group of University of Valladolid (Spain)*

### POSITION AND PROJECT

A 3-year pre-doctoral position is available at the Biomedical Engineering Group (GIB) of the University of Valladolid. This position is part of the project “M3Rob – Neuromotor and cognitive platform by active therapies for stroke patients”, focused on developing a platform that combines simultaneously neuromotor and cognitive rehabilitation for stroke patients that have lost their ability to control their hands and/or wrists. The neuromotor rehabilitation will be driven by a haptic hand robot that will help patients to fight against hand spasticity. Additionally, the control of the robot will have also neural components through electromyographic (EMG) and electroencephalographic (EEG) signals. These signals would detect the motor intention of the user and activate the robot as an aid for the user. EEG signals will be also used by a Brain–Computer Interface (BCI) system based on sensorimotor rhythms (SMR) to offer *neurofeedback* and favor brain plasticity. In order to do that, an augmentative reality “game” will display two virtual hands to the user. The user will try to open the spastic hand while imagining the movement, receiving visual feedback. Through SMR training, user will learn to self-regulate EEG rhythms, favoring the rehabilitation.

This position seeks a pre-doctoral researcher that **will be implicated in the neurological part** of the project; i.e., developing the BCI system.

**Project details:** “Plataforma para rehabilitación neuromotora y cognitiva mediante terapias activas en personas que han sufrido un accidente cerebro-vascular”, Proyectos I+D+I “Retos Colaboración” 2019, dentro del programa estatal de Investigación, Desarrollo e Innovación orientada a los retos de la sociedad, RTC2019-007350-1, from 01/01/2021 to 31/12/2023.

### QUALIFICATION

Candidates must be committed to work toward a Ph.D. thesis in the research group; thus, they must hold a Master’s Degree and a Bachelor’s Degree. Welcome fields are Biomedical, Telecommunications, Informatics or equivalent Engineering, Mathematics or Physics. We are seeking highly motivated and creative junior Predoctoral Researchers with strong interests in neural engineering, signal processing, machine learning and coding. Good command in oral and written communication in English language is essential. Experience or previous knowledge about BCI systems, programming in Python/MATLAB/C# and Unity is also valuable.

Details: full-time position (37.5 hours/week), 3 years (from 01/01/2020 to 31/12/2022).

### THE BIOMEDICAL ENGINEERING GROUP

The Biomedical Engineering Group is a multidisciplinary research team associated with the University of Valladolid. It is mainly formed by Engineers and Medical Doctors specialized in various areas, such as neurology, neurophysiology, psychiatry, neumology and ophthalmology, that collaborate in different research lines. Further information can be found in our website: <http://www.gib.tel.uva.es>

### HOW TO APPLY

Formal applications including CV, university grades certificate(s) and project ID (RTC2019-007350-1) should be sent to Dr. Roberto Hornero ([roberto.hornero@tel.uva.es](mailto:roberto.hornero@tel.uva.es)) and Víctor Martínez-Cagigal ([victor.martinez@gib.tel.uva.es](mailto:victor.martinez@gib.tel.uva.es)). Recommendation and motivation letters are welcome. Shortlisted candidates will be interviewed.