LabEx NUMEV Montpellier, France

Digital and Hardware Solutions for the Environmental and Life Sciences

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Postdoctoral Research Associate

Sensorimotor and brain recovery after stroke.

We seek motivated candidates to take a lead role in a collaborative, NUMEV-funded project (NeuroMov) to numerically identify biomarkers of brain plasticity during routine clinical assessments in patients with stroke.

NeuroMov builds on the expertise of three research groups in Montpellier under the umbrella of NUMEV (https://numev.edu.umontpellier.fr/en/home/) :

- Euromov Digital Health in Motion is a research group combining health sciences, digital sciences and movement sciences, with the objective of identifying digital and sensorimotor markers of health (https://dhm.euromov.eu/). The PI is Denis Mottet (https://www.researchgate.net/profile/Denis-Mottet-2).
- The Physical Medicine and Rehabilitation Federation of Montpellier and Nimes brings together two University Hospitals with extensive experience in the implementation and analysis of clinical research protocols in humans concerning kinematic and cerebral evaluation (ReArm clinical project: https://doi.org/10.1186/s13063-021-05689-5). The PI is Karima Bakhti (https://www.researchgate.net/profile/Karima-Bakhti).
- Interactive Digital Human is a research group about human-robot interaction with a particular interest for control and perception and for the analysis and interpretation of neurophysiological signals (EEG, EMG), especially in the context of motor tasks and neural interfaces (https://www.lirmm.fr/teams-en/idh-en/). The PI is Sofiane Ramdani (https://www.researchgate.net/profile/Sofiane-Ramdani).

The core mission of the post-doctoral fellow is:

1. To contribute to the data acquisition and to lead the data analysis of the full cohort of 60 patients with the objective of publications.
2. To analyze the time series of fNIRS, fEEG, and fMOCAP to better characterize the recovery patterns and the effect of post-stroke rehabilitation on brain plasticity and recovery of the use of the paretic arm, patient by patient.

Other responsibilities include:

- Work closely with the research engineer (https://www.researchgate.net/profile/Makii-Muthalib), physical therapists and the medical team in the hospital.
- Prepare and submit research manuscripts.
- Assist with grant preparation and report writing.
- Provide guidance and mentorship to more junior members of the team.
- Disseminate research through presentations within and outside the NUMEV groups.

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The position offers opportunities to participate in other ongoing studies with healthy people and methodological developments regarding time series analysis with applications to neurophysiological data. Mentoring will be provided by the senior scientists in joint meetings. The candidate will have numerous training opportunities in both research laboratories and at the hospital, especially to increase their skills in a multidisciplinary manner.

Applicants should hold a PhD in a discipline with appropriate expertise (e.g., behavioral neuroscience, biomedical engineering, biomechanics, human movement science/kinesiology, signal processing, neurophysiology, robotics, etc.).

Duration: Funding is secured for 18 months, but we will provide grant writing training to sustain the position for up to 36 months.

In their application and during interviews, candidates will have to demonstrate their skills in more than one of the disciplines needed for the project (e.g., biological signal processing, neurophysiology, biomechanics, clinical experience, artificial intelligence).
Expertise in Matlab (or Python) and Git is mandatory, as well as scientific English.
Non-French speaking candidates will be encouraged to take courses offered by the university, although the working language of the team is scientific English.

We encourage applicants to email a curriculum vitae, a statement of research experience and interests, and the names and contact information for at least three scientific references directly to the PIs denis.mottet@umontpellier.fr, k-bakhti@chu-montpellier.fr and sofiane.ramdani@umontpellier.fr.

Applications will be considered until the position is filled.
The position can start as early as October 2022, but the start date is flexible.
The net monthly salary is 2170€.