2022-04917 - Post-Doctoral Research Visit F/M Post-Doctoral Research Visit F/M Post-doctoral fellowship in machine learning and signal processing

Contrat renouvelable : Oui
Niveau de diplôme exigé : Thèse ou équivalent
Fonction : Post-Doctorant

A propos du centre ou de la direction fonctionnelle

Located at the heart of the main national research and higher education cluster, member of the Université Paris Saclay, a major actor in the French Investments for the Future Programme (Idex, LabEx, IRT, Equipex) and partner of the main establishments present on the plateau, the centre is particularly active in three major areas: data and knowledge; safety, security and reliability; modelling, simulation and optimisation (with priority given to energy).

The 450 researchers and engineers from Inria and its partners who work in the research centre's 28 teams, the 60 research support staff members, the high-level equipment at their disposal (image walls, high-performance computing clusters, sensor networks), and the privileged relationships with prestigious industrial partners, all make Inria Saclay Île-de-France a key research centre in the local landscape and one that is oriented towards Europe and the world.

Contexte et atouts du poste

The successful candidate will work closely together with Alexandre Gramfort (adviser) and become a member of the MIND team at Inria-Saclay https://team.inria.fr/mind/ (previously PARIETAL team).

This research project is funded by the French national research agency (ANR). All intellectual and data resources necessary enabling this project are provided by the Parietal team, which does not preclude fruitful exchange with collaborators of MIND.

The candidate will benefit from the numerous developments of the MIND team and its expertise in scientific computation applied to various domains (machine learning, optimization, statistics, neuroscience, medicine).

Mission confiée

We have recently proposed proxy measures of brain health derived from brain imaging and electrophysiology (https://doi.org/10.7554/eLife.54055). In subsequent work we have shown that MEG and EEG can be equally powerful for building electrophysiological proxy measures, potentially opening the door to clinical translation (https://doi.org/10.1016/j.neuroimage.2020.116893) targeting patient populations in which neither MRI nor high-density EEG is available. To unleash the full potential of electrophysiological proxy measures of brain health, it is necessary to build models that work robustly in many different situations and across different datasets (https://doi.org/10.1093/brain/awy251).

This project focuses on tackling the generalisation gap of proxy measure models when moving between different datasets and with that, between different acquisition protocols and recording devices.

Principales activités

- pro-active reading, staying on top of the latest research
- conducting data analysis and simulations
- communicating and presenting results at different stages of the work
- writing articles
- writing reproducible code for dissemination of the work

Compétences

Technical skills and level required:

- solid working knowledge in data analysis and applied statistics
- prior experience with analysing neuroscience data
- solid working knowledge in scientific computing with Python or R
- expertise with MEG / EEG is a strong asset

Languages:

- excellent written and oral communication skills in English

Relational skills:

- strong social communication skills
- fast prototyping, frequent communication
- embracing errors as opportunities for learning, favoring output over perfectionism

Avantages

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking (after 6 months of employment) and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage

A propos d'Inria

Inria est l'institut national de recherche dédié aux sciences et technologies du numérique. Il emploie 2600 personnes. Ses 200 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3500 scientifiques pour relever les défis du numérique, souvent à l'interface d'autres disciplines. L'institut fait appel à de nombreux talents dans plus d'une quarantaine de métiers différents. 900 personnels d'appui à la recherche et à l'innovation contribuent à faire émerger et grandir des projets scientifiques ou entrepreneuriaux qui impactent le monde. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 180 start-up. L'institut s'efforce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

L'essentiel pour réussir

The successful candidate has recently completed their PhD in computer science or signal processing and has a strong interest in computational statistics and neuroscience. Interest in empirical quantitative research (medical physics, biology, neuroscience, experimental psychology or related field) is a big plus.

The candidate can present strong evidence for their mastery of the English language (writing, speaking). French language skills are not required.

Prior experience in analysis of EEG or MEG is a **major** asset, as it will allow the candidate to immediately focus and advance on the project.

Working knowledge of scientific computing in Python (NumPy, Scipy) or R is required. Knowledge in both Python and R is a plus.

The principal work will be done in Python based on standard machine learning libraries (scikit-learn) and the MNE software (https://mne.tools) for processing MEG and EEG. Benchmarking work may require using code and libraries written in R.

The successful candidate will work with us, not for us.

We are looking for a strong communicator and team-player who balances scientifically curiosity and critical thinking with a pragmatic, rapid and focussed working style.

Consignes pour postuler

Rémunération

2653 € / month (gross salary)

défavorable pour un poste affecté dans une ZRR aurait pour conséquence l'annulation du recrutement.

Politique de recrutement :
Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.

Attention : Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.