Offre n°2019-01683

Post-Doctoral Research Visit F/M R&D POSITION FOR INTEGRATION OF AN MRI-COMPATIBLE NIRS SYSTEM TO EXPLORE ONLINE BRAIN FUNCTION

Le descriptif de l'offre ci-dessous est en Anglais

Type de contrat : CDD

Niveau de diplôme exigé : Thèse ou équivalent

Fonction : Post-Doctorant

A propos du centre ou de la direction fonctionnelle

Inria, the French national research institute for the digital sciences, promotes scientific excellence and technology transfer to maximise its impact.
It employs 2,400 people. Its 200 agile project teams, generally with academic partners, involve more than 3,000 scientists in meeting the challenges of computer science and mathematics, often at the interface of other disciplines.
Inria works with many companies and has assisted in the creation of over 160 startups.
It strives to meet the challenges of the digital transformation of science, society and the economy.

Contexte et atouts du poste

The NIRS-EEG system consists of two devices, one for electroencephalography (EEG) to measure cerebral physiological activity and the other for functional near infrared spectroscopic imaging (NIRS or fNIRS) to indirectly measure the brain activity through hemodynamic responses associated with neuron behaviour. This EEG-fNIRS system is a portable device that can be used outside of MRI in individuals in free movement. A wearable multichannel fNIRS-EEG device can provide a continuous, real-time feedback of brain activity. Thus, in addition to the MRI devices available on the Neurinfo platform, these fNIRS-EEG devices will provide two simultaneous and complementary measurements of brain activity when used outside MRI. It will be the first equipment of its kind in western France, and even a unique set of equipment in France (and probably also in Europe), combining EEG-NIRS outside and under MRI.

Mission confiée

The objective of this project is to extend our technological capabilities toward NIRS-EEG-MRI simultaneous imaging by the exploitation of a new portable device (NIRS-EEG systems) for recording simultaneously the brain activity, allowing long term clinical monitoring of brain functions in and outside MRI. In the scope of the project, novel computational/statistical models, signal processing, empirical protocols and visualizations will be proposed and studied, partly via their computational implementations and tested on ambitious clinical protocols.

This work will benefit from research-dedicated 3T MRI and EEG/MRI compatible system provided by the NeurInfo platform on which these new research protocols will be set up (http://www.neurinfo.org). The experimental part will be conducted in close collaborations with the Engineering staff of Hemisfer and Neurinfo, and the clinical departments of Radiology, Rehabilitation and Psychiatry of the Hospitals of Rennes.

Principales activités

The selected research engineer / post-doc will collaborate with the other members of the team in specifying and designing an integrative software architecture that allows the integration of NIRS measurements potentially acquired jointly with fMRI and EEG. The significance and the effectiveness of the computational platform will be tested through a large set of home-made in-vivo experiments (normal controls, psychiatric disorders, stroke patients...). Further, the selected tenure may be requested to implement additional data processing algorithms, software components and computational improvements as needs arise from the research progress.

Compétences

The Neurinfo platform and the Empenn research team at IRISA (UMR CNRS 6074) are seeking a highly qualified young researcher with engineering experience and motivation in neuroimaging and real-time medical image processing for set-up and operation of a software platform for integration of a NIRS system in an MRI and EEG compatible environment design in a high technological environment.

The ideal applicant should have a strong background in computational sciences, image and signal processing, biophysics and statistics. A very good practice in programming, especially in Matlab and in object-oriented programming (C++) and/or Python is required. The applicant should have obtained the PhD degree prior to take the position. The position is opened for an initial period of 12 months with a range of gross salary starting from 2500€ per month, according to experience.

Applicants should send their complete application package by email. It will include:

- Motivation letter
- Complete CV with publication list
- PDF of **one** representative paper (or slideshow) of the candidate in connection with this project.
- Recommendation letters (preferably directly sent by the mentor)
- **Incomplete applications will not be processed.**

Avantages

- Subsidized meals
- Partial reimbursement of public transport costs
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Social security coverage

Rémunération

Monthly gross salary amounting to 2653 euros.

Informations générales

- **Ville :** Rennes
- **Centre Inria :** Centre Inria de l'Université de Rennes
- **Date de prise de fonction souhaitée :** 2019-09-02
- **Durée de contrat :** 12 mois
- **Date limite pour postuler :** 2019-06-30

Contacts

- **Équipe Inria :** EMPENN
- **Recruteur :**
  Coloigner Julie / julie.coloigner@irisa.fr

A propos d'Inria

Inria est l'institut national de recherche dédié aux sciences et technologies du numérique. Il emploie 2600 personnes. Ses 215 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3900 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 200 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.

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.

Consignes pour postuler

Please submit online : your resume, cover letter and letters of recommendation eventually.

For more information, please contact julie.coloigner@irisa.fr.

Sécurité défense :
Ce poste est susceptible d'être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L'autorisation d'accès à une zone est délivrée par le chef d'établissement, après avis ministériel favorable, tel que défini dans l'arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel 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.