Offer #2025-08965

Post-Doctoral Research Visit F/M
Modeling a participant's task engagement during brain-computer interface (BCI) training using physiological sensors.

Contract type : Fixed-term contract

Level of qualifications required : PhD or equivalent

Fonction : Post-Doctoral Research Visit

About the research centre or Inria department

The Inria Centre at Rennes University is one of Inria's nine centres and has more than thirty research teams. The Inria Centre is a major and recognized player in the field of digital sciences. It is at the heart of a rich R&D and innovation ecosystem: highly innovative PMEs, large industrial groups, competitiveness clusters, research and higher education players, laboratories of excellence, technological research institute, etc.

Context

Within the framework of the NIRVANA project, funded by the French National Research Agency (ANR), this post-doctoral position is part of a collaboration between the University of Chieti and Inria. The project focuses on enhancing task engagement during brain-computer interface (BCI) training using physiological sensors.

Assignment

Collaboration :
The recruited person will work in close collaboration with Agustina Fragueiro from University G. d'Annunzio of Chieti-Pescara (Italy) and Claire Cury from the Centre Inria de Rennes, PI of the NIRVANA project. The recruited person will also occasionally work in collaboration with a PhD student, also part of the NIRVANA project.

Responsibilities :
The person recruited is responsible for designing and conducting experiments related to EEG and fMRI data acquisition, analyzing physiological signals (EEG, ET, and SC), and developing models for task engagement estimation and neurofeedback target adaptation. She/he will take initiatives to improve data collection protocols, analyzing results, and contributing to the scientific dissemination of findings through conference papers and journal articles.

The recruited person will also be responsible for publishing the data following the RGPD.

Main activities

Main activities:

- Design and conduct experiments to acquire EEG, eye-tracking (ET), and skin conductance (SC) signals from participants.
- Develop and validate models for estimating task engagement levels using physiological signals.
- Adapt neurofeedback targets based on real-time engagement levels and performance metrics.
- Extract and analyze EEG features related to task engagement.
- Validate methodologies and models using collected datasets and statistical analyses.

Additional activities:

- Write documentation and reports on experimental procedures and results.
- Publish findings in conference papers and journal articles.
- Present research progress and results to project partners and at scientific conferences.
- Collaborate with team members to integrate findings into broader project objectives.

Skills

Technical skills and level required:

- PhD in Neuroscience, Biomedical Engineering, Computer Science, or a related field.
- Experience with EEG, eye-tracking, and physiological signal processing.
- Proficiency in MATLAB, Python, or similar tools for data analysis and modeling.
- Knowledge of machine learning techniques and statistical analysis.

Languages:

- Proficiency in English (written and spoken).
- Knowledge of French is a plus.

Relational skills:

- Ability to work collaboratively in a multidisciplinary team.
- Strong communication skills for presenting research findings and writing scientific publications.

Other valued appreciations:

- Experience with neurofeedback systems and real-time data processing.
- Familiarity with MRI data acquisition and analysis.

Benefits package

- 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

Remuneration

Monthly gross salary amounting to 2788 euros.

General Information

- **Theme/Domain :** Computational Neuroscience and Medicine
  Biologie et santé, Sciences de la vie et de la terre (BAP A)
- **Town/city :** Rennes
- **Inria Center :** Centre Inria de l'Université de Rennes
- **Starting date :** 2025-10-01
- **Duration of contract :** 2 years
- **Deadline to apply :** 2025-08-18

Contacts

- **Inria Team :** EMPENN
- **Recruiter :**
  Cury Claire / claire.cury@inria.fr

About Inria

Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with

other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

The keys to success

There you can provide a "broad outline" of the collaborator you are looking for what you consider to be necessary and sufficient, and which may combine :

- tastes and appetencies,
- area of excellence,
- personality or character traits,
- cross-disciplinary knowledge and expertise...

This section enables the more formal list of skills to be completed and 'lightened' (reduced) :

- "Essential qualities in order to fulfil this assignment are feeling at ease in an environment of scientific dynamics and wanting to learn and listen."
- " Passionate about innovation, with expertise in Ruby on Rails development and strong influencing skills. A thesis in the field of **** is a real asset."

Warning : you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

Instruction to apply

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

Defence Security :
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST).Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy :
As part of its diversity policy, all Inria positions are accessible to people with disabilities.