

Postdoc in large-scale brain network modeling and epilepsy

Two postdoc positions are available in the laboratory of Viktor Jirsa at the Institut de Neurosciences des Systèmes (<http://ins-amu.fr/>), Aix-Marseille University, France.

Both positions are part of the Human Brain Project (<https://www.humanbrainproject.eu/en/>). The post-doctoral fellows will join an international team of computational neuroscientists working on the creation of personalized large-scale brain network models in clinical applications, in particular epilepsy. The patient cohort is part of the clinical trial EPINOV (“Improving Epilepsy Surgery Management and Prognosis using Virtual Brain Technology”, <http://www.epinov.com>), which evaluates the use of personalized computational brain network models in the clinical decision making of epilepsy surgery.

Key words

Virtual Brain; computational neuroscience; personalized brain network model; connectome; epilepsy; stimulation; surgery.

Summary

We are a multi-national team interested in understanding the mechanisms underlying the spatiotemporal organization of large-scale brain networks. Our work comprises mathematical and computational modeling of large-scale network dynamics and human brain imaging data, the development of neuroinformatics tools for studying large-scale brain networks applied to concrete functions and dysfunctions (epilepsy, dementia). Currently, we seek to fill two post-doctoral positions in the domain of epilepsy research. The first postdoctoral fellow will create virtual brain models of individual patients using techniques of nonlinear multi-scale modeling. The patients’ brain models will be validated against intracranial EEG data using state-of-the-art machine learning approaches. The second postdoctoral fellow will retrace the same steps in rodent models. The objective is to discover novel minimally invasive techniques of network intervention to stop seizures using stimulation and disconnection paradigms. The successful candidates will join a dynamic interdisciplinary team working towards the same goals.

Qualification

Candidates should hold a degree in computational neuroscience, biomedical engineering, statistics, mathematics, physics, or a closely related field. Comprehensive knowledge and experience in network sciences, nonlinear dynamic system theory, data analysis and signal processing techniques is appreciated. Prior experience in (scalp or intracranial) EEG and/or neurophysiological recordings (LFP) are also valued. Ability to program in a numerically oriented language (R, Python, MATLAB) is a plus. Excellent communication skills, both in writing and oral presentations, are indispensable.

Terms of salary and employment

The position is initially for one year, renewable on an annual basis based on performance. Salary will depend on diploma and experience. Operating language in the laboratory is English and French.

Contact

For applications, please prepare the following items

- CV
- Letter of motivation
- Two names of referees including their email addresses and websites

and send them to

lisa.otten@univ-amu.fr | Institut de Neurosciences des Systèmes <https://ins-amu.fr/>.