

## PhD project: An approach to tracking the provenance of data acquisition and analysis in neuroscience

The Helmholtz School for Data Science in Life, Earth and Energy (HDS-LEE) provides an interdisciplinary environment for educating the next generation of data scientists in close contact to domain-specific knowledge and research. All three domains – life & medical sciences, earth sciences, and energy systems/materials – are characterized by the generation of huge heterogeneously structured data sets, which have to be evaluated in order to obtain a holistic understanding of very complex systems. Visit HDS-LEE at: [www.hds-lee.de](http://www.hds-lee.de)

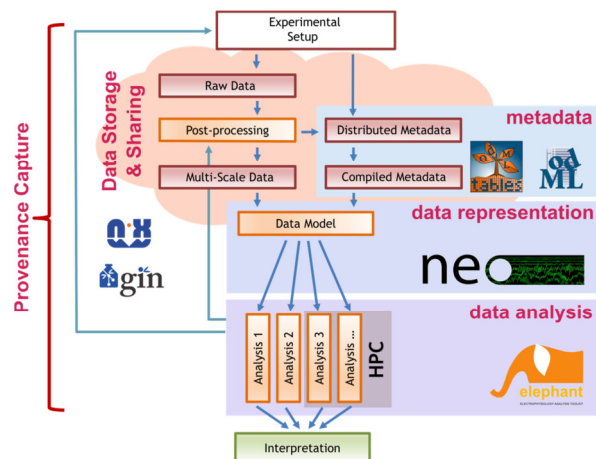
As a member of the Helmholtz Association, Forschungszentrum Jülich makes an effective contribution to solving major challenges facing society in the fields of information, energy, and bioeconomy. It focuses on varied tasks in the area of research management and utilizes large, often unique, scientific infrastructures. Come and work with around 5,900 colleagues across a range of topics and disciplines at one of Europe's largest research centres.

### The institute

The Institute of Neuroscience and Medicine (INM) at the Jülich Research Center in Germany investigates the structure and function of the brain. The department INM-6 consists of 6 groups that conduct research in the field of computational and systems neuroscience. The Statistical Neuroscience group headed by Prof. Sonja Grün develops computational methods to analyze the joint activity of neuronal networks, and applies these methods to experimental data in the context of international collaborations using state-of-the-art approaches from neuroinformatics. The group is hiring a Doctoral Student (m/f) to strengthen its international and interdisciplinary team.

### Your Job:

- Conceptualization, development and implementation of a tool and services to capture provenance of advanced workflows for the analysis of electrophysiological neuroscience data from complex, high-dimensional experimental recordings of brain activity.
- Implementation of version-controlled, provenance-tracked data/metadata processing and analysis workflows using state-of-the-art technologies along the FAIR principles.
- Co-development of data types and object models, metadata schemata, ontologies and software tools to describe results data and provenance information for typical analysis scenarios in neuroscience.
- Representing the technology at scientific conferences and courses, to the public, and within the EU Flagship Project "Human Brain Project".



### Your profile

- MSc. in natural sciences or computer science
- Good expertise in Python.
- Preferably knowledge in semantic web technologies relevant for data curation, ontologies and provenance (RDF, XML, JSON, SHACL, PROV,...), in version control and issue tracking systems, and in Linux
- Experience with electrophysiological data and corresponding acquisition/storage technologies
- Excellent communication skills in English are mandatory: TOEFL or equivalent evidence of English-speaking skills
- Outstanding organizational skills and the ability to work independently
- A high level of scholarship as indicated, for example, by bachelor/master study transcripts and two reference letters

- You are convincing with your confident attitude and good communication skills
- Outstanding organizational skills and the ability to work independently
- Very good cooperation and communication skills and ability to work as part of a team in an international and interdisciplinary environment

#### **Our offer**

- 3 year position
- Pay in line with 100 % of pay group 13 of the Collective Agreement for the Public Service (TVöD-Bund)
- Unique HDS-LEE graduate school program
- Continuous scientific mentoring by your scientific advisor
- Chance of participating in (international) conferences
- Further development of your personal strengths, e.g. via a comprehensive further training program
- FZ Jülich does not award PhD titles. Doctoral degree conferred by RWTH Aachen University
- World class science environment at the interface between neuroscience and technology on the most complex known systems
- A position in a creative and international team that conducts research at the frontiers of science, themes ranging from computational neuroscience to simulation technology
- The Jülich Research Center is one of the largest research centers in Europe, with excellent scientific equipment including the fastest supercomputer in Europe, is located on a green campus, and near the cultural centers Cologne, Düsseldorf, and Aachen/Aix-La-Chapelle
- Outstanding scientific and technical infrastructure – ideal conditions for successfully completing a doctoral degree

Forschungszentrum Jülich aims to employ more women in this area and therefore particularly welcomes applications from women.

We also welcome applications from disabled persons.

Become a part of HDS-LEE and apply at Dr. Michael Denker [m.denker@fz-juelich.de](mailto:m.denker@fz-juelich.de)

Apply until: 30<sup>th</sup> June 2019

Starting date: 1<sup>st</sup> August 2019