University of Zurich[UZH]

Department of Psychology

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Department of Psychology
Methods of Plasticity Research
Andreasstrasse 15
CH-8050 Zurich
Phone +41 44 635 34 14
www.psychology.uzh.ch

UZH, Department of Psychology, Andreassstrasse 15 CH-8050 Zurich

Prof. Nicolas Langer
Phone +41 44 635 34 14
nicolas.langer@uzh.ch

Postdoctoral Researcher in multimodal Cognitive Neuroscience

Department:
Department of Psychology at the University of Zurich (UZH), Methods of Plasticity Research (http://www.psychology.uzh.ch/en/chairs/plafor.html)

Position:
Postdoctoral Researcher (salary 98'000 USD/year; funding up to 6 years)

Description of UZH unit:
Our lab designs and implements novel multimodal paradigms (e.g. combined EEG and eye-tracking) to study variations in cognitive performance across the continuum from healthy to pathological functioning. This innovative approach allows us to extract and analyze a wealth of multivariate parameters using state-of-the-art neuroscientific methods, such as functional network models, machine learning, longitudinal analyses and computational modeling. These paradigms can also be used to decompose performance into interpretable components of cognitive and perceptual processing of cognitive tests that are used routinely in clinical diagnosis. To investigate those research objectives, we are using a variety of psychological and neuroscientific methods, such as EEG, eye-tracking, structural MRI, DTI and behavioural testing.

Responsibilities:
The successful candidate will work on research in large scale multimodal projects in the field of aging (predictors of healthy aging and biomarkers for dementia) and developmental disorders (see project descriptions below). Main responsibilities include the analysis of EEG and eye-tracking data, dissemination of study results in peer reviewed journals, and the supervision of PhD and Master students. The candidate will take part in ongoing projects and initiate new research within the team of Prof. Nicolas Langer, who is also a Neuroscience Center Zurich (ZNZ) group leader (https://www.neuroscience.uzh.ch/en.html), closely collaborating with the University Research Priority Programme from the University of Zurich "Dynamics of Healthy Aging" (https://www.dynage.uzh.ch/en.html), the Healthy Brain Network of the Child Mind Institute, New York (http://fcon_1000.projects.nitrc.org/indi/cmi_healthy_brain_network/) and the Department of Computer Science at ETH Zurich (https://www.systems.ethz.ch/).

Workload %:
80 - 100%

Qualifications:
- PhD degree in a field related to cognitive neuroscience (e.g., cognitive neuroscience, neuroscience, (neuro-)psychology, developmental psychology, medicine, electrical engineering, biomedical engineering or computer science)
- Expertise in EEG analyses is a must
- Proficiency in programming in Matlab (e.g., EEGLAB, brainstorm) or R and Python
- Solid knowledge about statistical methods (knowledge in machine learning is a plus)
- Research background in the design of neurophysiological experiments

- Excellent verbal and written English skills
- Previous experience in developing analysis methods for sMRI and DTI data is desirable
- Interest in teaching about methods (e.g. analysis of EEG data, or applications of machine learning in neuroscience)

Language requirements:
English

We offer:
- To work in a team of highly motivated young researchers who are passionate about neuroscience, psychology and computer science
- A very competitive salary (98'000 USD/year) and generous social benefits
- Employment up to 6 years with possibility to continue as senior scientist
- Generous support for professional travel and research needs (~5'000 USD/year)
- An inspiring work environment within the Department of Psychology and the University of Zurich and part of the Neuroscience Center Zurich (ZNZ) with many high-caliber collaborations (Child Mind Institute, ETH) and scientific exchange
- The opportunity to live in Zurich, one of the world's most attractive cities

Please visit https://www.pa.uzh.ch/en/Willkommen-an-der-UZH.html) for further information.

This position opens on:
1.3.2020

More information:
Prof. Nicolas Langer, n.langer@psychologie.uzh.ch

Application

To be considered please stick to the following application format:
- CV including publication list and contact details of two referees (max. 3 pages)
- Statement describing motivations, personal qualifications and research interests (max. 2 pages)
- Save application in one single pdf file with the file name "Methlab_[SURNAME]_[name].pdf"
- Send application by email to

n.langer@psychologie.uzh

Applications will be considered until the position is filled.

Currently funded projects:

A "Neurometric" Approach to Cognitive Aging

The aim of the project is to study individual differences of cognitive functioning in ageing. We developed a multimodal test battery that assesses key domains of cognitive aging and offers temporally proximal EEG-, eye-tracking-, and behavioral-measures. Over the last two years, the test battery was collected on more than 200 healthy elderly subjects and 100 healthy young subjects. For a subset of the data, we have additionally acquired neuroimaging (sMRI and DTI) and

smartphone data (GPS and social activity). Currently, the existing data set will be extended with 100 mildly cognitively impaired (MCI) elderly individuals.

Multi-Dimensional Phenotyping in Health and Disease:

The present project offers a unique large-sample dataset (Healthy Brain Network) that provides a wide array of different psychiatric developmental disorders (>2000 subjects already collected; target: 10'000 subjects). The goal is to classify the multimorbidity of children and adolescents based on resting-state and task-related EEG, eye-tracking, neuroimaging (sMRI and DTI), demographics, and cognitive behavioral data. Most of the previous studies employ traditional univariate statistics on relatively small samples. Multivariate machine learning approaches have a great potential to overcome the limitations of this approach and can help to improve the more accurate diagnosis of psychiatric developmental disorders. Our lab is closely working together with Prof. Michael Milham (Healthy Brain Network &Child Mind Institute, New York, USA) and Prof. Simon Kelly (University College Dublin, Ireland).