

The newly established Professorship for Computational Neuroengineering at the Department of Electrical and Computer Engineering is looking for a

## **Senior Research Associate (f/m), Postdocs/Data-Scientists (f/m), and Graduate Students (f/m).**

**About us:** We perform research at the intersection of computational neuroscience and machine learning: We build computational tools to study, improve, and interact with biological and artificial neural systems. Using these tools, we investigate how populations of neurons collectively process sensory input and guide complex behaviour. We closely collaborate with clinical and experimental groups performing measurements of neural activity, connectivity and behavior.

### **Research topics of interest include:**

- Probabilistic deep learning, in particular simulation-based inference
- Machine-learning tools for analyzing population recordings
- Statistical tools for behavioural data
- Analyzing computations in artificial and biological neural networks

We are situated in the Department of the Electrical and Computer-Engineering at Technical University of Munich (TUM) in downtown Munich, and are part of the Center of Competence Neuroengineering, the 'Elite Masters in Neuroengineering' (MSNE) and the Bernstein Center for Computational Neuroscience Munich. Munich is one of the most beautiful and attractive cities in Germany, and TUM is consistently ranked amongst the best research universities in Germany.

### **Positions:**

#### **1) Research Associate (f/m, E14):**

The research associate will play a senior and central role in the group: She/he will be given opportunities to propose, initiate and supervise research projects. She/he will be expected to contribute to graduate teaching in the recently established 'Elite Master Program' in Neuroengineering' <https://www.msne.ei.tum.de>.

The Position is funded at grade "E14 TVL" until 31/08/2021.

#### **2) Graduate Student (f/m): Probabilistic inference in early visual cortex**

The goal of this project is to investigate representations of uncertainty in early visual cortex and their effect on behavior in perceptual decision making tasks. This project is a collaboration with Hendrikje Nienborg and Felix Wichmann (Tübingen) and Ralf Haefner (Rochester), and funded through the SFB 1233 'Robust Vision' by the German Research Foundation, until 31/12/2020.

#### **3) Graduate Student (or Postdoc), (f/m): Analysis of population recordings**

This position is part of the HFSP-funded project "Remembering the future" with Aman Saleem (UCL) and Gordon Berman (Emory). The successful application will develop statistical tools for analyzing long-term multi-electrode recordings, and for linking them with statistical models describing behavior of freely moving animals. The position is funded for three years.

#### **4) Graduate Student/Postdoc/Data-Scientist (f/m): Likelihood-free inference**

We are also expecting funding notification for a collaborative, three-year project on developing likelihood-free algorithms for Bayesian inference on numerical simulation models via probabilistic neural networks, and using them to perform statistical inference on neurophysiological data. More details to be announced soon.

**To apply:**

Applicants should have a strong background in a quantitative discipline (e.g. electrical engineering, maths, statistics, physics, computer science, neuroscience) and a genuine interest in understanding neural computation and strong programming skills. Prior exposure to machine learning is advantageous.

To apply, please submit your application materials to [jobs@cne.ei.tum.de](mailto:jobs@cne.ei.tum.de), ideally before 31/08/18. Please include a CV, a brief statement of research interests, contact details of two referees and one or two work samples-- anything that is genuinely your own work, e.g. a thesis, computer code, a research manuscript, an essay, or a publication. For research associate and postdocs, we expect relevant prior publications. Please indicate which position(s) you would be interested in.

We particularly encourage female students and researchers to apply. TUM is an equal opportunity employer committed to excellence through diversity. In case of equivalent qualification, preference will be given to disabled applicants.

Information about our research and recent publications is also available through our old website from Bonn, [www.mackelab.org](http://www.mackelab.org).

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