PhD-student / Post-Doc Position for Neural Network Research Using High-density Microelectrode Arrays

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ETH Zurich · Department of Biosystems Science and Engineering (BSSE)

Switzerland, Zürich

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JOB DESCRIPTION

We are looking for highly motivated PhD student or Postdoc with a strong background in informatics or engineering and excellent data analysis skills. The successful applicant will be part of an interdisciplinary research group and conduct and analyze electrophysiological experiments with neuronal networks on high-density microelectrode arrays, see also: https://www.bsse.ethz.ch/bel/research/electrophysiology-and-neuroscience.html

The specific project is centered around employing microtechnology and microelectronics to rigorously study neural networks in vitro **across scales**. Across scales pertains to the spatial domain – correlating details of subcellular neuronal components with network-scale organizational properties - and the temporal domain - observing single action potentials to longer-term developmental processes. Besides our CMOS-based high-density microelectrode arrays for recording and stimulation, the methods will encompass high-resolution optical imaging, genetic methods, large-scale data handling strategies, as well as dedicated data analysis and modeling algorithms. The experimental preparations will include mammalian neuron cultures and brain slices.

DESIRED SKILLS AND EXPERIENCE

Suitable candidates should have experience and interest in evaluating large-scale complex data sets and a background in machine learning, engineering, computer science or related topics. The candidate should be interested in interdisciplinary collaborative work in the area of electronics/neurobiology/data processing. Programming skills (Matlab, Python, R, etc.) and knowledge of mathematics, statistics and data analysis methods are required; prior exposure to biology and cell cultures will be an asset.

The candidate must be able to fluently communicate in English (oral and written) and be willing to work in a highly interactive international team with Postdocs and PhD students. Academic excellence, a professional work attitude, a proactive and self-driven nature, and leadership potential are expected. Appointment duration can vary from 2 to several years (PhD student 4 years).

Interested candidates should submit a complete application package, including a CV, a short motivation statement explaining why you are suited for and interested in this position (half a page), transcripts of records, and 2 letters of recommendation (incomplete application packages will not be considered) **online, by clicking on the "Go to application page" button.**

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