Theoretical modeler

Postdoctoral and/or PhD position

The MTA Wigner Research Centre for Physics (Wigner) in partnership with MTA Institute for Experimental Medicine (KOKI) invites application for a postdoctoral or for a PhD position in modelling neural population activity. The applicant will join the newly formed Neural activity research unit that is sponsored by a prestigious National Brain Research Program (NAP) grant and will be co-supervised by Attila Gulyás and András Telcs. The primary focus of the research group is the characterization of activity patterns of large-scale neural populations in the hippocampus and the understanding of computational principles underlying its dynamically changing states.

The unparalleled performance of the nervous system is due to the fast and parallel processing of information that is achieved by the coherent activity of networks of neurons. Recent revolutional evolution of recording techniques provides us with access to high temporal resolution data from hundreds of identified neurons during task performance of animals. Understanding the organizational principles underlying the high-dimensional activity patterns has become a fundamental challenge of neurobiology. We are seeking highly motivated candidates with strong analytical background to take part of this challenge and to work on a project that is based on a strong collaboration between neurophysiology and theoretical neuroscience.

The ideal candidate has a strong mathematical background, preferably with a PhD in physics, computer science, or mathematics or other quantitative disciplines. Besides mathematical skills, the position requires competence in programming (e.g. matlab, R, python, or C++). Training or research experience in statistics, machine learning, data mining, dynamical systems is a plus. Training in neuroscience is not required but the candidate has to demonstrate his/her willingness to acquire the necessary background for the project. The project is theoretical and is based on a close collaboration between experimentalists (Attila Gulyás, KOKI) and theoreticians, which include both the involvement in the design of experiments and the analysis of the recordings. The position provides an opportunity to get experience with cutting-edge experimental techniques, including two-photon microscopy, calcium imaging, and optogenetics.

Beside the theoretic research, mentoring talented student and shaping and running a student’s EEG lab curriculum is open for the position holder at Budapest Univ. of Technology and Economics (BME).

The work is primarily performed at the lab at the MTA Wigner Institute but requires regular interactions with collaborating partners at the KOKI and BME.

The official starting date of the project is 1 February 2015 but the start date of the position is negotiable. Initial appointment is made for one year but can be extended to three years upon successful evaluation.
For further information please visit the project website, http://pattern.wigner.mta.hu. For informal inquiries please contact Gergő Orbán (orban.ergo@wigner.mta.hu) or András Telcs (telcs.szit.bme@gmail.com).

Please send your applications and two letter of recommendations to András Telcs preferably by 15 February. Applications will be considered until the position is filled. Early applicants have advantage.