

Dear Connectionists,

We are seeking applicants for 3 postdoctoral jobs at the interface of computational and experimental neuroscience, working with Profs. Kenneth Harris and Matteo Carandini.

The closing date for all positions is June 14 2014. For details on how to apply, please see <https://www.ucl.ac.uk/cortexlab/positions>.

Position 1: Large-scale analysis of neocortical activity

Modern experimental methods allow for simultaneous recording of thousands of neurons. These methods provide an unprecedented opportunity to study how neuronal populations process information. However, turning this data into concrete conclusions about brain function raises a twofold challenge. First, statistical methods required to characterize, visualize, and test hypotheses about neural data must be developed; second, the data sets involved are so large that they require advanced computational techniques for their efficient processing. We are seeking a postdoctoral scientist to study population coding and circuit function in cortex, by working with data from large-scale electrophysiological and optical recordings. This position would suit an individual with strong quantitative skills together with good knowledge of neurobiology.

Position 2: Large-scale simulation of cortical circuits

Recent years have seen the development of techniques for rapid simulation of neural circuits, making it at last possible to model how cellular and synaptic properties determine cortical activity in circuits of realistic size. We are seeking a postdoctoral scientist to build large-scale models of recurrent spiking cortical networks, using hardware systems such as large-scale GPGPU clusters or specialized chips such as spiNNaker. Close interaction with experimental neuroscience will be a key part of the project, and the models will be constrained by their ability to both reproduce patterns of population activity measured in vivo, and to perform real-world visual classification tasks. This project involves the use of specialized hardware, and would suit a candidate with strong programming ability as well as neuroscience knowledge.

Position 3: Experimental study of cortical population activity

Developments in electrophysiology, microscopy, and genetics now make it possible to measure the activity of thousands of neurons simultaneously, while identifying and controlling specific cell classes in real time with light.

Combining these experimental technologies with large-scale informatics and computational analysis provides a tremendous tool to understand the function of cortical circuits. We are seeking a postdoctoral scientist to apply these tools to study network activity during a visual discrimination task in behaving mice. This project involves integrating multiple techniques currently in use in our lab including large-scale electrophysiological recordings, optogenetics, two-photon microscopy, and mouse behaviour. This position would suit a candidate with a background in experimental neurobiology, engineering, or experimental physics.

Kenneth D. Harris

Professor of Quantitative Neuroscience

Institute of Neurology, Department of Neuroscience, Physiology, and Pharmacology

University College London

21 University Street

London WC1E 6DE

Phone: [+44 \(0\)20 3108 2410](tel:+442031082410)