The Daniel Amit Lecture 2013-2014

November 7, 2013

The Annual Lecture in Computational Neuroscience in memory of the late Professor Daniel Amit will be given by Stefano Fusi

DANIEL AMIT MEMORIAL LECTURE 2013-2014

The Annual Lecture in Computational Neuroscience in memory of the late Professor Daniel Amit will be given by

Professor Stefano Fusi
Center for Theoretical Neuroscience ? Columbia University, USA

On the topic of:

"High dimensional neural representations in prefrontal cortex"

Thursday November 7th, 2013

The Daniel Amit Memorial and Prize ceremony

Congratulations to Hanan Shteingart and Tal Neiman for winning the Daniel Amit prize.

will take place at 16:30, Lecture at 17:00 ELSC lecture hall
(Silberman Bldg., Wing 3, 6th floor - Edmond J. Safra Campus)
Light refreshments at 16:15

Lecture abstract:

Single-neuron activity in the prefrontal cortex (PFC) is tuned to mixtures of multiple task-related aspects. Such mixed selectivity is highly heterogeneous, seemingly disordered and therefore difficult to interpret.
We analyzed the neural activity recorded in monkeys during an object sequence memory task to identify a role of mixed selectivity in subserving the cognitive functions ascribed to the PFC. We show that mixed selectivity neurons encode distributed information about all task-relevant aspects. Each aspect can be decoded from the population of neurons even when single-cell selectivity to that aspect is eliminated. Moreover, mixed selectivity offers a significant computational advantage over specialized responses in terms of the repertoire of input?output functions implementable by readout neurons. This advantage originates from the highly diverse nonlinear selectivity to mixtures of task-relevant variables, a signature of high-dimensional neural representations. Crucially, this dimensionality is predictive of animal behaviour as it collapses in error trials. Our findings recommend a shift of focus for future studies from neurons that have easily interpretable response tuning to the widely observed, but rarely analyzed, mixed selectivity neurons.


Previous events:

2012-2013

2011-2012

2009

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The Jerusalem Brain Sciences Building will provide a state-of-the-art research and teaching facility for the Edmond and Lily Safra Center for Brain Sciences.

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