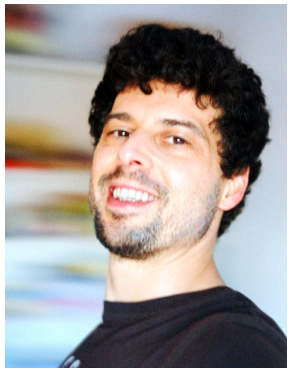
UNIVERSITAT DE BARCELONA

7th Barcelona Lecture Series in

Brain, Cognition & Behavior



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Decision Dynamics in Neural, Social, and Infection Networks

Most of the information processing in the cerebral cortex is based on a unique feature: Discrete action potentials or spikes. Spikes can be understood as a vehicle to inform post-synaptic neurons about the decision (whether to fire or not) of a pre-synaptic neuron. Considering that a neuron will mostly respond to a preferred stimulus feature when presented in its receptive field (e.g. a luminance contrast with a certain orientation, or a know face), spike dynamics therefore represents a cascade of successive decisions in time. Eventually, the outcome of all single-neuron-decisions form the base of the behavior of an organism.
Here I show that such decision spikes can also explain the dynamics of infection networks (e.g. spread of viruses across the world's airports) or social networks (e.g. spread of opinions among people). This suggests that decision spikes can serve as a universal computational feature in order to account for the dynamics of different classes of networks, which until now were described with differing mathematical concepts. In the decision spikes framework, the relative (computational) complexity of neuronal networks is the most sophisticated one, infection networks are intermediate, and social networks have the least complexity. Dynamically speaking, Facebook, Youtube and Co. can thus be seen as strongly simplified versions of brain networks.

Thursday, 21st March 2019 @ 15:00 @ Sala de Graus
Edifici **Ponent**, Facultat de **Psicologia**, Campus **Mundet**, **UB**.

Organized by:

Brainlab — Jordi Costa-Faidella (coordinator), Carles Escera

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