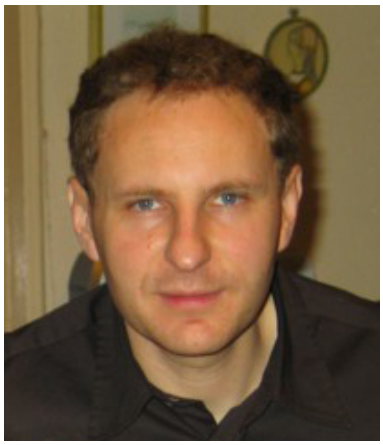
DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING PRESENTS...

Population coding in visual cortical networks



Friday, April 24, 2015, 4:00 p.m. - 5:00 p.m.
Location: CBB Room 104

Valentin Dragoi, Ph.D.
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Dept. of Neurobiology and Anatomy
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Understanding the rules by which brain networks represent incoming stimuli in population activity to influence the accuracy of behavioral responses remains one of the deepest mysteries in neuroscience. We have embarked on a set of projects to investigate the real-time operation of multiple neuronal networks and their capacity to undergo adaptive changes and plasticity. What are the fundamental units of network computation and the principles that govern their relationship with behavior? By employing state-of-the-art electrophysiological techniques we were able to record from large pools of cells in the non-human primate brain while animals performed a fixation task. We found that spatio-temporal correlations between neurons could act as an active 'switch' to control network performance in real time by modulating the communication between neurons. We believe that 'cracking' the mysteries of the population code will offer unique insight into a network-based mechanistic explanation of behavior and new therapeutic solutions to cure brain dysfunction.

Speaker Biosketch

Dr. Dragoi examines how networks of cortical neurons encode information and how the population code influences behavioral decisions. Research in his laboratory combines electrophysiological (multi-electrode recording in restrained and freely moving animals, optical and electrical stimulation), behavioral, and computational methods. He received rigorous training in experimental and theoretical neuroscience. His goals are to understand the neuronal computations and coding principles of cortical circuits and develop new technologies for high-yield neuronal recording technologies for basic and clinical research.

For additional information, please contact Bhavin Sheth at brsheth@uh.edu