

Seminar Talk

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Tuesday, April 03, 2018
3:00 p.m. KH 224

Title: Large Scale Neural Recordings and Functional Imaging of Dynamic and Networked Neural Activity in the Brain

Abstract:

Recent neural sensing and imaging technologies have allowed the exploration of the brain at the molecular-cell-biological level for the understanding of the mechanisms of mentation and brain diseases. Group cellular events are associated with the global brain function and the local neuro-physiological changes. Despite various advances, understanding and interfacing molecular and cellular events with neural network functions is still quite challenging. To address the challenge, large-scale recordings and imaging of neural activity are critically important. The integrative sensing and functional imaging can lead to radical advances in understanding brain function and will enable quantitative mathematical modeling and analysis of neural systems. This presentation introduces neurochemical and electrophysiological sensing in molecular and cellular levels of dynamic neural activity using nanotechnology. This presentation also discusses fast neural imaging technology using electrical impedance tomography to illustrate functional neuronal networks in the mesoscale level of cell populations, especially in deep brain structures.

Bio:

Dr. Hargsoon is an Associate Professor of the Engineering Department, the Director of Nano-Electronics and Neural Engineering Laboratory at the Norfolk State University, and the Adjunct Professor of Anatomy and Pathology Department at the Eastern Virginia Medical School. He earned his Ph.D. degree in Engineering Science from Pennsylvania State University in 2003. He has developed several nanoelectrodes and optical devices for neural recordings and functional imaging in the brain. His research works have been funded by NSF, NASA, DoD and NIH in external funding and led to the publications in many journals and conferences. He is serving as a review panel of the NIH BRAIN Initiative Grant Program in 2015-2018. He also serves as a Guest Editor in a journal Biosensors, an editorial board member of a journal The Scientific Pages of Translational Medicine, and as a program committee member of the SPIE International Conference for Nano-, Bio-, Info-Tech Sensors and Systems. He is also involved in the peer-review processes

of several internationally reputed journals in addition to holding membership in the Society for Neuroscience and the IEEE Engineering in Medicine and Biology Society as a Senior Member.