Western
The Brain and Mind Institute

Visiting Speaker

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"A framework for modeling neural response to continuous stimuli"

Understanding how brains process sensory signals in natural environments is one of the key goals of 21st century neuroscience. While brain imaging and invasive electrophysiology will play key roles in this endeavor, there is also an important role to be played by noninvasive, macroscopic techniques with high temporal resolution such as electro- and magnetoencephalography. But challenges exist in determining how best to analyze such complex, time-varying neural responses to complex, time-varying and multivariate natural sensory stimuli. There has been a long history of applying system identification techniques to relate the firing activity of neurons to complex sensory stimuli and such techniques are now seeing increased application to EEG and MEG data. One particular example involves fitting a filter – often referred to as a temporal response function – that describes a mapping between some feature(s) of a sensory stimulus and the neural response. In this talk, I will describe a specific technique for deriving temporal response functions known as regularized linear regression. I will describe how this approach can be used to derive multivariate, bidirectional mappings between stimulus and response and, by example, how these mappings can be used in cognitive and clinical neuroscience research. Finally, I will consider some of the limitations of the approach, how the approach relates to other techniques aimed at the same goals, and opportunities for future development.

Date: Wednesday, November 22, 2017

Time: 11:00 am

Location: Room 245A,
Brain and Mind Institute

If you require information in an alternate format or if any other arrangements can make this event accessible to you, please contact Denise Soanes at dsoanes4@uwo.ca