



## SEMINAR SERIES 2018-2019

**When:** Thursday, October 18, 2018  
**Time:** 3:30 – 4:30 pm  
Refreshments at 3:15 pm  
**Where:** Sidney Smith Hall Rm TBA  
**Speaker:** Peter Song, University of Michigan  
**Host:** Radu Craiu

### Method Of Contraction-Expansion (MOCE) For Simultaneous Inference in Linear Models

Simultaneous inference after model selection is of critical importance to address scientific hypotheses involving a set of parameters. We consider high-dimensional linear regression model in which a regularization procedure such as LASSO is applied to yield a sparse model.

To establish a simultaneous post-model selection inference, we propose a method of contraction and expansion (MOCE) along the line of de-biasing estimation that enables us to balance the bias-and-variance trade off so that the super-sparsity assumption may be relaxed.

We establish key theoretical results for the proposed MOCE procedure from which the expanded model can be selected with theoretical guarantees and simultaneous confidence regions can be constructed by the joint asymptotic normal distribution.

In comparison with existing methods, our proposed method exhibits stable and reliable coverage at a nominal significance level with substantially less computational burden, and thus it is trustworthy for its application in solving real-world problems. This is a joint work with Wang, Zhou and Tang.

