Statistical Sciences
UNIVERSITY OF TORONTO

SEMINAR SERIES 2018-2019

When:	**Thursday, September 20, 2018**
Time:	**3:30 – 4:30 pm**
	Refreshments at 3:15 pm
Where:	**Sidney Smith Hall Rm 2105**
Speaker:	**Xin Tong, University of Southern California**
Host:	**Nancy Reid**

Neyman-Pearson Classification

In many binary classification applications, such as disease diagnosis and spam detection, practitioners commonly face the need to limit type I error (that is, the conditional probability of misclassifying a class 0 observation as class 1) so that it remains below a desired threshold.

To address this need, the Neyman-Pearson (NP) classification paradigm is a natural choice; it minimizes type II error (that is, the conditional probability of misclassifying a class 1 observation as class 0) while enforcing an upper bound, alpha, on the type I error. Although the NP paradigm has a century-long history in hypothesis testing, it has not been well recognized and implemented in classification schemes.

Common practices that directly limit the empirical type I error to no more than alpha do not satisfy the type I error control objective because the resulting classifiers are still likely to have type I errors much larger than alpha.

This talk introduces the speaker's work on NP classification algorithms and their applications and raises current challenges under the NP paradigm.