Speaker: Jose Blanchet, *Stanford MS&E*

**Title:** Distributionally Robust Optimization via Optimal Transport and Applications

**Abstract:**

Optimal mass transportation is a powerful tool in probability, with well-documented applications spanning a wide range of areas, including economics, operations research, and statistics. In this talk, we focus on data-driven distributionally robust optimization, that is, a class of perfect-information games in which an optimizer selects an action and an adversary chooses a model within a region around a baseline distribution, which we often take to be an empirical measure. We show that many machine learning algorithms (including sqrt-Lasso and support vector machines) can be retrieved as special cases of this type of formulation. We establish connections to regularized portfolio optimization strategies that are common in practice. These connections provide a rich intuition which allows interpreting various regularization parameters which are typically chosen in practice via cross-validation. Owing to the game interpretation that we expose, we are able to define a reasonable optimization criterion for choosing regularization parameters via pivotal statistics, thereby avoiding time-consuming cross-validation.

This talk is based on joint work with Yang Kang, Karthyek Murthy, and Fan Zhang.