Causal Inference Program Opening Workshop
December 9-11, 2019

SPEAKER TITLES/ABSTRACTS

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"Designing Experiments on Social and Information Networks"

Classical approaches to causal inference largely rely on the assumption of "lack of interference", according to which the outcome of an individual does not depend on the treatment assigned to others, as well as on many other simplifying assumptions, including the absence of strategic behavior. In many applications, however, such as evaluating the effectiveness of health-related interventions that leverage social structure, assessing the impact of product innovations and ad campaigns on social media platforms, or experimentation at scale in large IT companies, several common simplifying assumptions are untenable. Moreover, the effect of interference itself is often an inferential target of interest, rather than a nuisance. In this talk, we will formalize issues that arise in estimating causal effects when interference can be attributed to a network among the units of analysis, within the potential outcomes framework. We will introduce and discuss several strategies for experimental design in this context centered around a useful role for statistical models. In particular, we wish for certain finite-sample properties of the estimator to hold even if the model catastrophically fails, while we would like to gain efficiency if certain aspects of the model are correct. We will then contrast design-based, model-based and model-assisted approaches to experimental design from a decision theoretic perspective.