

Speaker: **Susan Athey** (Stanford)

Title: **The economics of crypto-currencies**

Abstract:

This presentation takes an early look at the economics of Bitcoin and alternative crypto-currencies, with a focus on raising open questions that might be interesting for future research. The talk will provide an overview of the technology and some of its use cases, and present a simple theoretical model of Bitcoin adoption. Empirical results about prices and transactions from the Bitcoin blockchain will also be presented.

Speaker: **Joaquin Candela** (Facebook)

Title: **Machine learning and the Facebook ads auction.**

Abstract: With over 800 million daily active users and over 1 million advertisers, Facebook runs one of the world's largest online advertising marketplaces. Advertisers can choose to bid and pay for ad impressions, for clicks, for conversions or for any combination. The ranking and pricing of ads depends on the predicted probability of clicks and conversions. In this talk we give a brief overview of the Facebook ads auction. We share some lessons learnt from building the scalable machine learning platform we use to tackle the prediction problem, and discuss challenges in optimization and mechanism design.

Authors: Joaquin Quinonero Candela, Mike Bailey and Ewa Dominowska

Speaker: **Jon Kleinberg** (Cornell)

Title: **Computational Problems for Designed Social Systems**

Abstract:

As on-line social media systems become an increasingly central setting for human social interaction, it is important to appreciate the ways in which these are not simply venues for people to come together, but explicitly designed systems whose architectures serve to shape behavior. Developing, analyzing, and refining these designs is an important issue at the interface of computing, economics, and the social sciences. Here we consider several facets of the computational challenges around designed social systems, including the issue of filtering personal information streams -- managing a person's interface to the rest of a large social network -- and the design of complex incentive systems for steering individual and group behavior.

The talk will include joint work with Ashton Anderson, Lars Backstrom, Dan Huttenlocher, and Jure Leskovec.

Speaker: **Tim Roughgarden** (Stanford)

Title: **Approximately Optimal Mechanisms
Motivation, Examples, and Lessons Learned**

Abstract:

The traditional "holy grail" in mechanism design theory is the identification of optimal mechanisms, such as Myerson's mechanism for revenue-maximization and the VCG mechanism for welfare-maximization.

When there are additional computational, informational, or incentive constraints that render an optimal mechanism infeasible, it continues to be a useful benchmark that guides the design of "second-best" mechanisms. We illustrate the methodology of approximately optimal mechanism design through two concrete problems.

First, how much data about bidders' valuations is necessary and sufficient for near-optimal revenue-maximization, and how does the answer depend on the degree of bidder heterogeneity? Second, what is the benefit of complex bidding options (like package bidding) in combinatorial auctions, and how does the answer depend on the structure of bidders' valuations?