

NYU Stern School of Business
Department of Information, Operations & Management Sciences
OPERATIONS MANAGEMENT RESEARCH SEMINAR

TOPIC: A tractable combinatorial market maker using constraint generation

SPEAKER: David Pennock (Microsoft Research)

DATE: Wednesday, November 28, 2012

TIME: 11:00 AM-12:00PM

PLACE: 5-90 KMC

ABSTRACT

I will describe a new automated market maker for providing liquidity across multiple logically interrelated securities. Our approach lies somewhere between the industry standard -- treating related securities as independent and thus not transmitting any information from one security to another -- and a full combinatorial market maker for which pricing is computationally intractable. Our market maker, based on convex optimization and constraint generation, is tractable like independent securities yet propagates some information among related securities like a combinatorial market maker, resulting in more complete information aggregation. We prove several favorable properties of our scheme and evaluate its information aggregation performance on survey data involving hundreds of thousands of complex predictions about the 2008 U.S. presidential election. I'll describe PredictWiseQ, our fully-functional alpha implementation of the market maker attracting over a thousand participants for the 2012 election. Joint work with Miroslav Dudik and Sebastien Lahaie.

PDF: <http://research.microsoft.com/pubs/167977/DudikLaPe12.pdf>

Bio

David Pennock is a Principal Researcher and Assistant Managing Director of Microsoft Research in New York City, focusing on algorithmic economics. He has over sixty academic publications relating to computational issues in electronic commerce and the web, including papers in PNAS, Science, IEEE Computer, Theoretical Computer Science, Algorithmica, AAI, EC, KDD, UAI, SIGIR, ICML, NIPS, and WWW. He has authored three patents and thirteen patent applications. In 2005, he was named to MIT Technology Review's list of 35 top technology innovators under age 35. Prior to his current position, David worked as a Principal Research Scientist at Yahoo! Research, a Research Scientist at NEC Laboratories America, a research intern at Microsoft Research, and in 2001 served as an adjunct professor at Pennsylvania State University. He received a Ph.D. in Computer Science from the University of Michigan, an M.S. in Computer Science from Duke University, and a B.S. in Physics from Duke. His work has been featured in Discover Magazine, New Scientist, CNN, the New York Times, the Economist, Surowiecki's "The Wisdom of Crowds", and other publications.