

The Hong Kong University of Science and Technology

Dept of Information Systems, Business Statistics and Operations Management
Dept of Industrial Engineering & Decision Analytics
Joint Seminar Announcement



Randomly Wrong Signals: Bayesian Auction Design with ML Predictions By Professor Ilan LOBEL New York University

Date : **11 September 2026 (Friday)**
Time : **2:30 – 3:45 PM**
Venue : **Room G003, G/F, LSK Business Building**

Abstract:

We study auction design when a seller relies on machine-learning predictions of bidders' valuations that may be unreliable. Motivated by modern ML systems that are often accurate but occasionally fail in a way that is essentially uninformative, we model predictions as randomly wrong: with high probability the signal is informative of the bidder's true value, and otherwise it is a hallucination independent of the value. We analyze revenue-maximizing auctions when the seller publicly reveals these signals. A central difficulty is that the resulting posterior belief combines a continuous distribution with a point mass at the signal, so standard Myerson techniques do not directly apply. We provide a tractable characterization of the optimal signal-revealing auction by providing a closed-form characterization of the appropriate ironed virtual values. This characterization yields simple and intuitive implications. With a single bidder, the optimal mechanism reduces to a posted-price policy with a small number of regimes: the seller ignores low signals, follows intermediate signals, caps moderately high signals, and may again follow very high signals. With multiple bidders, we show that a simple eager second-price auction with signal-dependent reserve prices performs nearly optimally in numerical experiments and substantially outperforms natural benchmarks that either ignore the signal or treat it as fully reliable. Joint work with Humberto Moreira (FGV Brazil) and Omar Mouchtaki (NYU Stern).

Bio:

Ilan Lobel is the Fauvelais Family Professor of Data-Driven Operations at New York University's Stern School of Business. His work sits at the intersection of artificial intelligence, data science, economics, and operations, with a particular focus on how data, algorithms, and AI shape digital marketplaces. Professor Lobel serves as the director of the Andre Koo Technology and Entrepreneurship MBA Program and as the coordinator of the MBA AI specialization. His research has received the 2018 MSOM Young Scholar Prize, the 2021 INFORMS TIMES Award, and the INFORMS Revenue Management and Pricing Section Prize in both 2014 and 2024. He currently serves as area editor of Operations Research. His teaching has been recognized by the 2017 Poets & Quants Top 40 MBA Professors Under 40 list and the 2018 Stern Distinguished Teaching Award.