

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



Prior-independent pricing with an informed buyer

By

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Date	:	4 August 2026 (Tuesday)
Time	:	10:30 – 11:45 AM
Venue	:	Case Room 1003, 1/F, LSK Business Building

Abstract:

We study prior-independent pricing for selling a single item to a single buyer when the seller observes only a single sample from the valuation distribution, while the buyer knows the distribution. Classical robust pricing approaches either rely on distributional statistics, which typically require many samples to estimate, or directly use revealed samples to determine prices and allocations. We show that these two regimes can be bridged by leveraging the buyer's informational advantage: pricing policies that conventionally require the seller to know statistics such as the mean, L^η -norm, or superquantile can, in our framework, be implemented using only a single hidden sample.

We introduce sample-contingent mechanisms, in which the seller commits ex ante to a pricing rule based on a single sample that is revealed only after the buyer's participation decision. We show that every concave pricing policy can be implemented in this way. To evaluate performance guarantees, we develop a general reduction for analyzing monotone pricing policies over α -regular distributions, enabling a tractable characterization of worst-case instances. Using this reduction, we characterize the optimal monotone sample-contingent pricing mechanisms and compute their approximation ratios; in particular, we obtain an approximation ratio of approximately 0.79 for monotone hazard rate (MHR) distributions. We further establish impossibility results for general concave pricing policies and for all prior-independent mechanisms. Finally, we show that our framework also applies to statistic-based robust pricing, thereby unifying sample-based and statistic-based approaches.

Bio:

Shixin Wang is an Assistant Professor in the H. Milton Stewart School of Industrial and Systems Engineering (ISyE) at Georgia Institute of Technology. Prior to joining Georgia Tech, she was an Assistant Professor in the Department of Decisions, Operations and Technology at The Chinese University of Hong Kong (CUHK) Business School from 2021 to 2025. Her research interests lie in developing simple and robust pricing policies in revenue management, and designing sparse and reliable networks in supply chain and service systems. She obtained her Ph.D. degree from New York University Stern School of Business (2021), and her Bachelor degree in Industrial Engineering from Tsinghua University (2015).