For favour of Posting

THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics /
Department of Industrial Engineering & Decision Analytics

JOINT SEMINAR ON STATISTICS

Online Experimental Design under Network Interference: Pareto Optimality, Valid Inference, and Beyond

By

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Abstract

Online A/B testing under interference faces a fundamental tension between learning optimal decisions and reliably estimating treatment effects from sequential data. We formalize this estimation–regret trade-off, showing that policies optimized for regret can severely distort effect estimation. Moving beyond stochastic bandits, we consider adversarial and nonstationary settings, where classical fixed-horizon inference breaks down and motivates the use of any-time valid confidence sequences for inference under adaptive stopping. We further extend the analysis to settings with treatment propagation, where interventions spread through networked systems and interact with the assignment policy itself. Together, these components reveal intrinsic limits of online experimentation and clarify how sequential uncertainty, adaptivity, and propagation jointly shape what can be learned online.

Bio : Zhiheng Zhang is a tenure-track Assistant Professor in the School of Statistics and Data Science at the Shanghai University of Finance and Economics, starting from 2025.08. Previously, he received his Ph.D. from the Institute for Interdisciplinary Information Sciences, Tsinghua University. Zhiheng Zhang is the co-Principal Investigator of the 2025 CCF-DiDi Gaia Collaborative Research Fund project titled "Sequential Decision-Making for Long-Term Causal Effects Based on Reinforcement Learning" and the area chair of AAAI2025 AICT track. His work focuses on developing principled methods for causal analysis by uncovering underlying structural mechanisms and integrating them with modern learning and decision-making systems in real-world settings. His research has been published in, or is currently under revision at, leading venues including ICML, NeurIPS, UAI, SIGIR, JASA, JMLR, IJO, etc.

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Date : 04 February 2026 (Wednesday)
Time : 11:00a.m.-12:00noon
Venue : Room 3598 (near Lift 27/28)

All are welcome!