The Hong Kong University of Science and Technology

Seminar on Business Data Science

Department of ISOM

Inference for ATE & GLM's when $\frac{p}{n} \to \delta \in (0, \infty)$

by
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Date: 12 June 2026 (Friday)
Time: 3:00pm – 4:00pm
Venue: Room 1032, 1/F, LSK Business Building

Abstract

In this talk we will discuss statistical inference of average treatment effect in measured confounder settings as well as parallel questions of inferring linear and quadratic functionals in generalized linear models under high dimensional proportional asymptotic settings i.e. when $\frac{p}{n} \to \delta \in (0, \infty)$ where p, n denote the dimension of the covariates and the sample size respectively . The results rely on the knowledge of the variance covariance matrix Σ of the covariates under study and we show that whereas $\sqrt{n}$-consistent asymptotically normal inference is possible for any δ by using method of moments type estimators that do not rely on estimating high dimensional nuisance parameters followed by a debiasing strategy. Without the knowledge of Σ we first develop $\sqrt{n}$-consistent estimators by using simple estimators of Σ when $\delta < 1$. Subsequently for $\delta \geq 1$ we develop consistent estimators of the quantities of interest and argue that $\sqrt{n}$-consistent estimation might not be possible without further assumptions on Σ. Finally we verify our results in numerical simulations. This talk is based on joint work with Xingyu Chen and Lin Liu from Shanghai Jiao Tong University.

Bio

Rajarshi Mukherjee is an Associate Professor of Biostatistics at the Harvard T.H. Chan School of Public Health. His research focuses on developing statistical methods for high-dimensional data, causal inference, and large-scale datasets, with applications in areas such as environmental health, genetics, and population health. He earned his PhD in biostatistics from Harvard, and previously held academic positions at Stanford University and the University of California, Berkeley. He is recognized for bridging theoretical statistics with real-world public health challenges.

All interested are welcome!
For details, please contact ISOM Department.