



香港中文大學統計學系

Department of Statistics

THE CHINESE UNIVERSITY OF HONG KONG

SEMINAR

DEPARTMENT OF STATISTICS

THE CHINESE UNIVERSITY OF HONG KONG

**PDA: Privacy-preserving Distributed Algorithms and
statistical inference in the era of real-world data networks**

INVITED SPEAKER

Yong Chen

Professor

Department of Biostatistics, Epidemiology, and Informatics

The University of Pennsylvania

TIME

July 16, 2024 (Tue) · 10:30 am - 11:30 am

VENUE

LSB LT2 · Lady Shaw Building - LT2 · CUHK

ABSTRACT

With the increasing availability of electronic health records (EHR) data, it is important to effectively integrate evidence from multiple data sources to enable reproducible scientific discovery. However, we are still facing practical challenges in data integration, such as protection of data privacy, the high dimensionality of features, and heterogeneity across different datasets. Aim to facilitate efficient multi-institutional data analysis without sharing individual patient data (IPD), we developed a toolbox of Privacy-preserving Distributed Algorithms (PDA) that conduct distributed learning and inference for various models, such as association analyses, causal inference, cluster analyses, counterfactual analyses, and beyond. Our algorithms do not require iterative communication across sites and are able to account for heterogeneity across different hospitals. The validity and efficiency of PDA are also demonstrated with real-world use cases in Observational Health Data Sciences and Informatics (OHDSI), PCORnets including PEDSnet and OneFlorida, and Penn Medicine Biobank (PMBB).