

## Distinguished Seminar Series on Data Science & Artificial Intelligence

# Secure and Privacy-preserving Bayesian Evolutionary Optimization

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📅 29 May 2023 (Mon)

🕒 14:30 - 15:30 (HKT, UTC+8)

📍 Online via Zoom / N002

🗣️ English

✍️ Please register at <https://polyu.hk/pgThC>  
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**All are welcome!**

## Abstract

Data-driven optimization relies on data for performing optimization tasks. Similar to machine learning, the data involved in optimization may be subject to privacy concerns. This talk starts with a brief overview of privacy-preserving computing techniques and existing work on privacy-preserving Bayesian optimization. Then, a basic framework for federated optimization will be presented, focusing on the aggregation of surrogate model and the design of a federated acquisition function. To protect both the raw data and newly infilled data, the acquisition function will be solved on a randomly selected client and the objective values are masked with Diffie-Hellmann based noise. Finally, we introduce a federated many-task Bayesian optimization algorithm that enables the sharing of knowledge between different optimization tasks while preserving the data privacy with the help of federated knowledge transfer. The talk is concluded by an outline of future work.

## About the Speaker

Prof. Yaochu JIN is an Alexander von Humboldt Professor for Artificial Intelligence endowed by the German Federal Ministry of Education and Research, with the Faculty of Technology, Bielefeld University, Germany. He is also a Surrey Distinguished Chair, Professor in Computational Intelligence, Department of Computer Science, University of Surrey, Guildford, U.K. He was a "Finland Distinguished Professor" of University of Jyväskylä, Finland, "Changjiang Distinguished Visiting Professor", Northeastern University, China, and "Distinguished Visiting Scholar", University of Technology Sydney, Australia. His main research interests include evolutionary optimization and learning, trustworthy machine learning and optimization, and evolutionary developmental AI.

Prof. JIN is presently the President-Elect of the IEEE Computational Intelligence Society and Editor-in-Chief of Complex & Intelligent Systems. He was named by the Web of Science as "a Highly Cited Researcher" consecutively from 2019 to 2022. He is a Member of Academia Europaea and Fellow of IEEE.