

## **About Xiaoming Yuan's work**

Yuan specialises in optimisation theory and algorithm design, developing fast solvers for complex mathematical problems in data science, scientific computing, and various domains. His work spans applications from large language models and live streaming to optimal control, imaging processing, and networks.

As data volumes and computational complexity escalate, Yuan's research addresses critical optimisation challenges in artificial intelligence and cloud computing—areas where conventional problem-solving methods are reaching their limits.

His innovative approach focuses on creating scalable solutions that not only outperform traditional methods but also bridge the gap between theoretical advances and practical applications. His methodology integrates classical optimisation tools (variational inequalities, the augmented Lagrangian method, the proximal point method, and operator splitting methods such as the ADMM and primal-dual methods) with modern machine learning approaches (deep learning and operator learning), creating algorithms that harness both mathematical model structures and data patterns. His work has significant implications for both academic research and industry implementation, particularly in managing large-scale data processing and complex computational tasks.

## **Biography**

Xiaoming Yuan is a professor in the Department of Mathematics at the University of Hong Kong. He studied his BSc and then MPhil in mathematics at Nanjing University. He then completed his PhD at City University of Hong Kong.

Throughout his career, Yuan has received numerous accolades. In 2018, he was granted the Higher Education Outstanding Scientific Research Output Award by the Chinese Ministry of Education. In 2021, he was named a Highly Cited Researcher by Clarivate Analytics, and in 2023, he was a finalist for the Franz Edelman Award, presented by INFORMS, a leading professional body in the field. His current research endeavours are supported by a Croucher Senior Research Fellowship.