



AMA Seminar Series on Young Scholars in Optimization and Data Science

Dr Niao HE

ETH Zurich, Switzerland

Topic

The Puzzle of Adaptive Gradient Methods for Machine Learning

Date | Time 19th January 2024 (Friday) | 4:00 pm – 5:00pm (HK Time)

Venue

Y301, Main Campus

Abstract

A central optimization challenge in machine learning is parameter-tuning. Adaptive gradient methods, such as AdaGrad and Adam, are ubiquitously used for training machine learning models in practice, owing to their ability to adjust the stepsizes without granular knowledge of the loss functions. While these methods have shown remarkable empirical success in training deep neural networks for supervised learning tasks, they often struggle in more challenging scenarios involving adversarial learning, such as adversarial training and generative adversarial networks. In this talk, we will explore some of the most pressing questions regarding adaptive gradient methods: What are the provable benefits of adaptive methods? How can we improve their robustness and effectiveness for adversarial learning?

Biography

Niao He is an Assistant Professor in the Department of Computer Science at ETH Zurich, where she leads the Optimization and Decision Intelligence (ODI) Group. She is also an ELLIS Scholar and a core faculty member of ETH AI Center, ETH-Max Planck Center of Learning Systems, and ETH Foundations of Data Science. Previously, she was an assistant professor at the University of Illinois at Urbana-Champaign from 2016 to 2020. Before that, she received her Ph.D. degree in Operations Research from Georgia Institute of Technology in 2015. Her research interests lie in large-scale optimization and reinforcement learning, with a primary focus on theoretical and algorithmic foundations for principled, scalable, and trustworthy decision intelligence. She is a recipient of AISTATS Best Paper Award, NSF CRII Award, SNSF Starting Grant, etc.

ALL ARE WELCOME