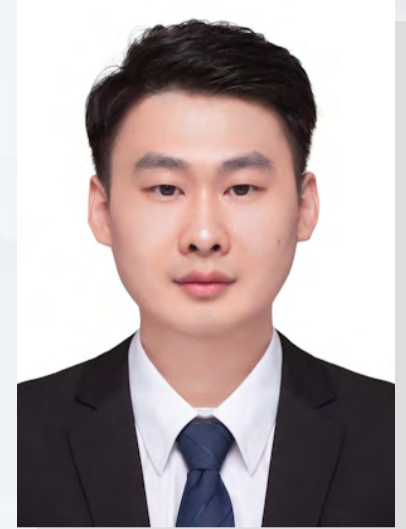




Department of
Systems Engineering

香港城市大學
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Sample-Efficient Decision-Making Algorithms in Complex Environments



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Seminar Link: <https://cityu.zoom.us/j/93971426950>

Abstract

Data-driven decision-making has gained significant attention lately due to its impressive performance in various fields like intelligent control, human-machine games, operations research, large language models, etc. Within the decision-making framework, agents interact with the environment to collect data following certain policies and then aim to improve the policies to reach a specific goal by utilizing the collected data. However, the real-world environment is highly uncertain and complex, which poses several challenging issues, including unknown environments, large state spaces, and risk concerns. It thus necessitates developing sample-efficient algorithm design to learn target policies in such complex environments. In this talk, I will present a series of my works on efficient decision-making method design that considers these practical factors, with provable guarantees. In addition, I would like to discuss some potential research directions in decision-making, such as its application in the prevailing large language models.

About the Speaker

Shuang Qiu is currently a Research Assistant Professor at the Department of Mathematics at the Hong Kong University of Science and Technology. He received his Ph.D. degree in Computer Science and Engineering at the University of Michigan, Ann Arbor in 2021. From 2021 to 2023, he worked as a postdoctoral researcher at the Booth School of Business, University of Chicago and the Department of Mathematics, the Hong Kong University of Science and Technology. His research is primarily focused on developing sequential decision-making methods for a complex environment, which lies at the intersection of reinforcement learning, game theory, optimization, and statistical learning. He is also interested in the real-world application of decision-making methods to various research fields.