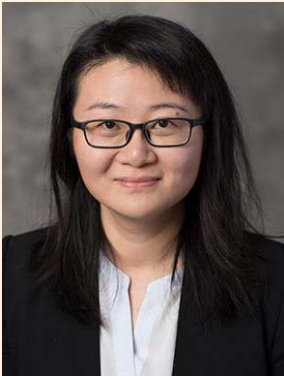# The Hong Kong University of Science and Technology
Dept of Information Systems, Business Statistics and Operations Management
Dept of Industrial Engineering & Decision Analytics
Joint Seminar Announcement

Data-pooling Reinforcement Learning for Personalized Healthcare Intervention
by
Prof Pengyi Shi
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Krannert School of Management
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Date	:	**22 April 2022 (Friday)**
Time	:	**10:30 - 11:45 AM**
Zoom ID	:	**978 2332 0242 (passcode 370129)**

Abstract: Personalized intervention management in healthcare has received a rapidly growing interest in the big-data era yet still is a burgeoning field. A key challenge for personalization in healthcare is data scarcity. This small sample issue makes standard learning methods hard to learn the right policy and/or suffer from large variances. In this research, we extend the data-pooling technique from the bandit setting to the reinforcement learning (RL) context. RL models explicitly account for future cost/reward and are more suitable for healthcare management problems. We develop a novel data-pooling estimator in the RL context, and establish theoretical performance guarantee for RL with data-pooling. We demonstrate its empirical success on a real hospital dataset with an application to reduce 30-day hospital readmission rate. This is a joint work with Xinyun Chen and Xiuwen Wang from CUHK Shenzhen.

Bio: Prof Pengyi Shi is an associate professor at the Krannert School of Management, Purdue University. She received her Ph.D. degree in Industrial Engineering from Georgia Institute of Technology before joining Purdue in 2014. Her research interests include data-driven modeling and decision-making in healthcare and service operations. She has collaborated with practitioners and faculty members from different healthcare organizations, including major hospitals in the US, Singapore, and China. Her research has won the first place of MSOM Responsible Research in OM Award in 2021, the first place of INFORMS Pierskalla Best Paper Award in 2018, and the second place of POMS CHOM Best Paper Award in 2019 and 2020.

All interested are welcome!
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