

Sequential Recommendation under Mixed Cascade Model



Dr. Pin Gao

The Chinese University of Hong Kong, Shen Zhen

Venue: LAU-14-222

Date: 03 November 2022 (Thursday)

Time: 11: 00 - 12: 30

Abstract:

In many recommender systems, customers will make purchasing decisions in multiple stages. Complementing previous research, we employ a mixed cascade model to describe customers' sequential decision-making process. Using a real-world dataset, we find that the proposed model generally outperforms other multi-stage choice models in predicting customer decisions, which motivates us to study the corresponding assortment optimization problem. Given the difficulty of estimating the distribution of different cascade models, we investigate the following two research questions: 1. How should we make a worst-case assortment decision when the distribution is unknown? 2. Compared with the known distribution, what fraction of expected revenue can the proposed algorithm guarantee at least? We develop several algorithms to solve these two problems under different types of constraints. Finally, we study the joint pricing and assortment optimization problem under our proposed model. Even though the problem is NP-hard, with some mild assumptions, we also develop some approximation algorithms that provide constant-ratio performance guarantees in the worst case.

Biography:

Gao Pin is currently an assistant professor at the School of Data Science, The Chinese University of Hong Kong, Shenzhen. He received a B.S. in physics from Wuhan University in 2013 and a M.Phil. in physics from Hong Kong University of Science and Technology (HKUST) in 2015, after which he worked in industry for two years. In 2021, he received a Ph.D. in Industry Engineering and Decision Analytics from HKUST. Dr. Gao's current research interests include revenue management and socially responsible operations.

Your attendance is most welcome!

