

# Mo LIU

PhD Candidate | Department of Industrial Engineering and Operations Research

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## EDUCATION

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**Department of Industrial Engineering and Operations Research, UC Berkeley, CA** Aug 2019 - Present

PhD Candidate, Major in Industrial Engineering and Operations Research, GPA: 3.976

Master of Science in Industrial Engineering and Operations Research July 2020

Advisor: Prof. Zuo-Jun (Max) Shen

**Department of Industrial Engineering, Tsinghua University, Beijing, China** Aug 2015 - Jul 2019

Bachelor of Engineering with Honor, Major in Industrial Engineering, GPA: Top 2%

## RESEARCH INTERESTS

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My research interests include *data-driven decision making* and *machine learning*. Specifically, I am interested in *decision-focused learning*: settings where a machine learning model is built to make decisions in the downstream optimization problem. In this setting, the prediction models are evaluated by the cost of the downstream problem, instead of the prediction errors.

- In methodologies, I am interested in statistical learning, active learning, and predict-then-optimize approach.
- In applications, I am interested in revenue management, pricing, and supply chain management.

## RESEARCH

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[1] **Mo Liu**, Junyu Cao, Zuo-Jun Max Shen, “Pricing under the Generalized Markov Chain Choice Model: Learning through Large-scale Click Behaviors”, under review at *Operations Research*, 2023

**2023 Service Science Student Competition Finalist**

[2] **Mo Liu**, Paul Grigas, Heyuan Liu, Zuo-Jun Shen, “Active Learning in the Predict-then-Optimize Framework: A Margin-Based Approach”, under review at *Management Science*, 2023

[3] **Mo Liu**, Junyu Cao, Zuo-Jun Max Shen, “Active Label Acquisition with Personalized Incentives in Assortment Optimization”, under review at *Management Science*, 2023

[4] **Mo Liu**, Meng Qi, Zuo-Jun Shen, “End-to-End Deep Learning for Automatic Inventory Management with Fixed Ordering Cost”, under review at *Production and Operations Management*, 2022

[5] **Mo Liu**, Paul Grigas, Zuo-Jun Max Shen, “Importance Weighted Active Learning in the Predict-then-Optimize Framework”, *working paper*

## INDUSTRY EXPERIENCES

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**IBM, AI for transportation, Yorktown Heights, NY**

**Research Intern, Manager: Markus Ettl**

May 2022 - Aug 2022

- Designed pricing strategies for the logistic network using a time-series demand model
- Verified the proposed pricing strategies using airline booking data

*Amazon, Department of Supply Chain Optimization Technology, Seattle, WA, (Virtual)*

*Research Scientist Intern, Manager: Jingchen Wu*

June 2020 - Aug 2020

- Developed the pricing strategy for used items with different conditions at Amazon Warehouse using MNL model
- Justified the multi-period pricing strategy using historical data

## TEACHING EXPERIENCES

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*Graduate Student Instructor* (Latest Teaching Score 6.56 / 7)

<i>IEOR 250</i> Introduction to Production Planning and Logistics Models	Fall 2020
<i>IEOR 142</i> Introduction to Machine Learning and Data Analytics	Spring 2021
<i>IEOR 240</i> Optimization Analytics	Fall 2022
<i>IEOR 242</i> Introduction to Machine Learning and Data Analytics	Spring 2023
<i>IEOR 240</i> Optimization Analytics	Fall 2023

## SELECTED TALKS

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INFORMS Annual Meeting, End-to-End Deep Learning for the Inventory Management with Fixed Ordering Cost	2020
INFORMS Annual Meeting, Pricing under the Generalized Markov Chain Choice Model: Learning through Large-scale Click Behaviors	2022
MSOM Conference, Personalized Incentive for Active Label Acquisition in the Assortment Optimization	2023
ICSP, Active Learning in the Predict-then-Optimize Framework: A Margin-Based Approach	2023

## PATENT IN APPLICATION

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Machine learning and optimization with partially observable time series data	2022
Zachary Xue, <b>Mo Liu</b> , Markus Ettl, Shivaram Subramanian	

## HONORS AND AWARDS

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Duryea Fellows, IEOR department, UC Berkeley	2021
First Year Fellowship, IEOR department, UC Berkeley	2019
Outstanding Graduate in Beijing (top 1%)	2019
Excellent Graduate in Tsinghua University (top 5%)	2019
Outstanding Undergraduate Thesis Award in Tsinghua University	2019
National Scholarship in China (top 1%)	2018
Principal Jiang Nanxiang Scholarship (top 1%)	2017

## ACTIVITIES AND SERVICES

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- Reviewer for *Production and Operations Management*, *IEEE Transactions on Information Theory*
- Session chair of INFORMS annual meeting 2023

## SKILLS

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## Programming Languages & Software

- Python, R, JAVA, HTML, Cplex, Gurobi, MySQL, Latex

## REFERENCES

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- Prof. Zuo-Jun Max Shen  
Professor Emeritus at Industrial Engineering and Operations Research  
University of California, Berkeley  
Vice-President and Pro-Vice-Chancellor at Hong Kong University  
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