Sentao Miao

Leeds School of Business, 995 Regent Dr, Boulder, Colorado 80309

Email: sentao.miao@colorado.edu

Webpage: https://sites.google.com/umich.edu/sentaomiao

ACADEMIC APPOINTMENT University of Colorado, Boulder, Colorado, USA

Assistant Professor of Operations Management.

Leeds School of Business.

2023 - Present

McGill University, Montreal, Quebec, Canada

Adjunct Professor of Operations Management. Assistant Professor of Operations Management. 2023 - Present 2020 - 2023

Bensadoun School of Retail Management & Desautels Faculty of Management.

EDUCATION

University of Michigan, Ann Arbor, MI, USA

Doctor of Philosophy, Industrial and Operations Engineering.

May 2020

Advisor: Prof. Xiuli Chao.

Dissertation: Data-Driven Algorithms in Revenue Management: Pricing, Assortment Optimiza-

tion, and Demand Learning.

Jacobs University Bremen, Bremen, Germany

Bachelor of Science, Mathematics.

Jun 2014

Advisor: Prof. Peter Oswald.

Dissertation: The Wavelet Tensor Train Transform and its Applications.

RESEARCH & TEACHING INTERESTS

Research: retail analytics; supply chain management; revenue management; machine learning; online optimization; approximation algorithm.

Teaching: business analytics & statistics; operations & supply chain management; (omnichannel) retail analytics; revenue management & pricing; digital privacy.

Published & Forthcoming Papers

- [1] Demand Learning for One-Warehouse Multi-Store Inventory System with Censored Demand
 - forthcoming at *Operations Research*, 2023, https://papers.ssrn.com/abstract=3952925
 - with Recep Yusuf Bekci and Mehmet Gumus (McGill University)
- [2] Privacy-Preserving Personalized Decision-Making
 - forthcoming at Management Science, 2023, https://papers.ssrn.com/abstract=3704446
 - with Yanzhe Murray Lei (Queen's University) and Ruslan Momot (University of Michigan)
 - spotlight presentation at Revenue Management and Pricing Conference 2021
- [3] Differential Privacy in Personalized Pricing with Nonparametric Demand Models
 - Operations Research, 2023, 71(2), 581-602, https://papers.ssrn.com/abstract=3919807
 - with Xi Chen (New York University) and Yining Wang (UT Dallas)
- [4] Online Personalized Assortment Optimization in a Big Data Regime
 - M&SOM, 2022, 24(5), 2741-2760, https://papers.ssrn.com/abstract=3432574
 - with Xiuli Chao (University of Michigan)
- [5] Context-Based Dynamic Pricing with Online Clustering

- Production and Operations Management, 2022, 31(9), 3559-3575, https://arxiv.org/abs/1902.06199
- with Xiuli Chao (University of Michigan), Xi Chen (New York University), Jiaxi Liu and Yidong Zhang (Alibaba Group)
- collaborated work with Alibaba Group
- [6] Asymptotically Optimal Lagrangian Policies for Multi-Warehouse Multi-Store System with Lost Sales
 - Operations Research, 2022, 70(1), 141-159, https://papers.ssrn.com/abstract=3552995
 - with Stefanus Jasin and Xiuli Chao (University of Michigan)
 - presented at MSOM SIG 2021
- [7] Dynamic Joint Assortment and Pricing Optimization with Demand Learning
 - M&SOM, 2020, 23(2), 525-545, https://papers.ssrn.com/abstract=3173267
 - with Xiuli Chao (University of Michigan)
 - received Richard C. Wilson Prize at University of Michigan
- [8] Road to micro-celebration: The role of mutation strategy of micro-celebrity in digital media
 - New Media & Society, 2021, https://journals.sagepub.com/doi/full/10.1177/14614448211045664
 - with Xinyu Chen (Shenzhen University), Ling Jiang (York University), and Cong Shi (University of Michigan)
- [9] Superfast Wavelet Transform Using Quantics-TT Approximation. I. Application to Haar Wavelets
 - Computational Methods in Applied Mathematics, 2015, 14(4), 537-553, https://www.degruyter.com/document/doi/10.1515/cmam-2014-0016/html
 - with Boris Khoromskij (Max Planck Institute)

WORKING PAPERS & PAPERS UNDER REVIEW

- [10] Dynamic Learning Policy for Multi-Warehouse Multi-Store Systems with Censored Demands
 - under review at Management Science, 2023, https://papers.ssrn.com/sol3/papers.cfm? abstract_id=4617620
 - with Yining Wang (UT Dallas) and Renbo Zhao (University of Iowa)
- [11] A Lagrangian Policy for a Multi-Warehouse Multi-Store Inventory System with Lost Sales and Fixed Cost
 - under review at Operations Research, 2023, https://papers.ssrn.com/sol3/papers.cfm? abstract_id=4648338
 - with Xiuli Chao and Stefanus Jasin (University of Michigan)
- [12] E-commerce Order Fulfillment Problem with Limited Time Window
 - under review at Operations Research, 2023, https://papers.ssrn.com/sol3/papers.cfm? abstract_id=4556309
- [13] E-commerce Order Fulfillment Problem with Limited Time Window
 - major revision at *Operations Research*, 2023, https://papers.ssrn.com/sol3/papers.cfm? abstract_id=4547699
 - with Quan Zhou and Mehmet Gumus (McGill University)
- [14] Dynamic Pricing with Fairness Constraints

- major revision at Operations Research, 2022, https://papers.ssrn.com/abstract=3930622
- with Maxime Cohen (McGill University) and Yining Wang (UT Dallas)
- [15] A General Framework for Resource Constrained Revenue Management with Demand Learning and Large Action Space
 - major revision at *Operations Research*, 2021, https://papers.ssrn.com/abstract=3841273
 - with Jiawei Zhang (New York University) and Yining Wang (UT Dallas)
- [16] Adaptive Lagrangian Policies for Multi-Warehouse Multi-Store Inventory System with Lost Sales
 - major revision at Operations Research, 2022, https://papers.ssrn.com/abstract=3888794
 - with Xiuli Chao and Stefanus Jasin (University of Michigan)
- [17] Network Revenue Management with Nonparametric Demand Learning: \sqrt{T} -regret and Polynomial Dimension Dependency
 - major revision at Mathematics of Operations Research, 2022, https://papers.ssrn.com/abstract=3948140
 - with Yining Wang (UT Dallas)
 - presented at MSOM SIG 2022

Work in Progress

- [18] Locally Private Clustering and Bandit Optimization in Personalized Revenue Management
 - preliminary results are available upon request
 - with Yanzhe Murray Lei (Queen's University), Ruslan Momot (University of Michigan), and Yining Wang (UT Dallas)
- [19] Managing the Inventory of Perishable Product in Omnichannel Retailing
 - with Jinzhi Bu (Hong Kong PolyU), Yin Pan, and Mingzheng Wang (Zhejiang University)
- [20] Joint Inventory, Pricing, and Fulfillment Control for a Multi-Warehouse Multi-Store Problem: An Asymptotically Optimal Lagrangian Policy
 - https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4298794
 - with Stefanus Jasin (University of Michigan), Yanzhe Murray Lei (Queen's University), Debjit Roy (Indian Institute of Management), and Zhiyuan Sun (UCLA)
- [21] More Bang for Your Buck: Effective KOL Marketing Campaign in Brazil Short-Video Emerging Markets
 - https://papers.ssrn.com/abstract=3655819
 - with Xinyu Chen, Li Ji (Shenzhen University), Ling Jiang (York University), and Cong Shi (University of Michigan)
- [22] Time to Leave Your Comfort Zone? Optimal Variation-Seeking Strategies for Social Media Influencers on Streaming Media Platforms
 - https://papers.ssrn.com/abstract=3655848
 - with Xinyu Chen (Shenzhen University), Ling Jiang (York University), and Cong Shi (University of Michigan)

TEACHING EXPERIENCES

Omnichannel Retailing, McGill University

2022

Develop a new senior undergraduate level core course for retail management major (topics include inventory, logistics, revenue management, and data analytics in omnichannel retailing), 8 students, $24 \text{ sessions} \times 1.5 \text{h}$

Evaluation: (max 5.0)

- Q: Overall, this was an excellent course. 4.3
- Q: Overall, the instructor was an excellent teacher 4.7

Business Statistics, McGill University

2020-2022

First year undergraduate level core course, 75 students per section, 26 sessions \times 1.5h

Evaluation: (max 5.0)

Q: Overall, this is an excellent course.

2020 - 3.5, 3.7 (COVID-19: remote class; taught second half of semester due to visa issue)

2021 - **4.1**, **3.9**, **4.0** (COVID-19: remote class)

2022 - **3.6**, **3.6**

Q: Overall, this instructor is an excellent teacher.

2020 - 4.2, 4.4 (COVID-19: remote class; taught second half of semester due to visa issue)

2021 - **4.4**, **4.3**, **4.1** (COVID-19: remote class)

2022 - **3.5**, **4.2**

Operations Analysis and Management, University of Michigan

2017

Senior undergraduate level core course, 95 students, 24 sessions \times 1.5h

Evaluation: (max 5.0)

- Q: Overall, this was an excellent course. 3.95
- Q: Overall, the instructor was an excellent teacher 4.19

Graduate Student Instructor, University of Michigan

2015-2018

Graduate student instructor (GSI) for various courses: Operations Analysis and Management, Probability and Statistics for Engineers, Linear Programming

Industry Experiences

Co-PI of Collaborated Research, Flipkart

May 2021 - Present

- Working on project related to supply chain management of Flipkart's e-commerce business.

Research Assistant, Johnson & Johnson

Jan 2019 - May 2020

- Worked on project about product scheduling and value of information sharing.

Research Assistant, Alibaba Group

May 2018 - Jul 2019

- Developed machine learning algorithms to solve the pricing problem of low-sales products. Improved the average revenue by more than 10%, and increased their purchasing probability by more than 15% in a field experiment.

Research Scientist Intern, Amazon.com

May - Aug 2017

- Worked on the project of problematic ordering detection and auto-correlation.

Research Assistant, Ford Motor Company

Jun 2015 - Apr 2017

- Worked on the project of capacity planning for transportation and electricity generator industry under various environmental policies

Research Summer Intern, Max Planck Institute

Jun - Aug 2013

- Work on the project of high-dimensional computing and data compression using quantized tensor train method.

Grants	\cdot NSERC Discovery Grant (CAD\$147,500), McGill University	2022-2028
	· Start-Up Fund (CAD\$45,000), McGill University	2020-2023
Honors & Awards	· Richard C. Wilson Prize (\$500), University of Michigan	2018
	· Rackham Travel Grant (\$800), University of Michigan	2017, 2018
	- Ford-Poling Challenge Award (\$24,696), Ford Motor Company	2016
	- Rackham First-Year Ph D Fellowship (\$62,000), University of Michigan	2014-2015
	\cdot Meritorious Winner of MCM, Jacobs University Bremen	2013
	\cdot Honor on the President List, Jacobs University Bremen	2011-2014
	\cdot China Scholarship (\$30,000), Jacobs University Bremen	2011-2014
Invited Talks	· Alberta School of Business, University of Alberta	Sep 2023
	· Rotman School of Business, University of Toronto	Jun 2023
	· GERARD, University of Montreal	Jun 2023
	· Sauder School of Business, University of British Columbia	Feb 2023
	· Jindal School of Management, University of Texas, Dallas	Jan 2023
	· Leeds School of Business, University of Colorado, Boulder	Dec 2022
	· University of Electronic Science and Technology of China	Apr 2022
	· Nanjing University	Mar 2022
	· Leeds School of Business, University of Colorado, Boulder	Mar 2022
	· Rotman School of Business, University of Toronto	Nov 2021
	· IDDA, Chinese University of Hong Kong (Shenzhen)	Dec 2019
	· CUHK Business School, Chinese University of Hong Kong	Dec 2019
	· Sauder School of Business, University of British Columbia	Dec 2019
	· Desautels Faculty of Management, McGill University	Dec 2019
	· Department of Management Science, University of Waterloo	Nov 2019
	· Kelley School of Business, Indiana University	Nov 2019
	· University of Electronic Science and Technology of China	Jun 2019
Conference	INFORMS A LIM 4: DI : USA	0 1 2026
Presentations	· INFORMS Annual Meeting, Phoenix, USA	Oct 2023
	· MSOM Annual Meeting (SIG), Montreal, Canada	Jun 2025
	· POMS Annual Meeting, Orlando, USA	May 2023
	· INFORMS Annual Meeting, Indianapolis, USA	Oct 2022
	· MSOM Annual Meeting (SIG), Munich, Germany	Jun 2022
	CSAMSE Appual Meeting, Online	Jun 2022
	· CSAMSE Annual Meeting, Online MSOM Approxi Meeting (SIC) Online	Aug 2021
	MSOM Annual Meeting (SIG), Online BMB Sector Annual Meeting (Specifical Procentation), Online Online	Jun 2021
	RMP Sector Annual Meeting (Spotlight Presentation), Online	Jun 2021
	· CORS Annual Meeting, Online	Jun 2021
	· INFORMS Annual Meeting, Online	Oct 2020

 \cdot INFORMS Annual Meeting, Seattle, USA

Oct 2019

	 INFORMS Annual Meeting, Phoenix, USA INFORMS Annual Meeting, Houston, USA SAE 2017 World Congress, Detroit, USA SAE 2016 World Congress, Detroit, USA 	Nov 2018 Oct 2017 Apr 2017 Apr 2016
ROFESSIONAL	· Institute for Operations Research and the Management Sciences (INFORMS)	

P_{R} Affiliations

- · INFORMS Manufacturing & Service Operations Management (MSOM)
- · INFORMS Revenue Management and Pricing (RMP)
- · Canadian Operational Research Society (CORS)

SERVICES AND Professional ACTIVITIES

- · Organizing Committee of MSOM 2023 2022-2023
- · PhD Candidate Recruiting Committee of Desautels Faculty of Management 2021
- · Referee for Special Interest Group, MSOM 2021
- · Faculty Search Committee of Desautels Faculty of Management 2020
- · Undergraduate Scholarship Committee of Desautels Faculty of Management 2020,2021
- · Session chair, INFORMS Annual Meeting
- · Ad-hoc reviewer for Operations Research, Management Science, Manufacturing and Service Operations Management, Product and Operations Management, Naval Research Logistics, and Operations Research Letters.
- · Volunteer for department (graduation banquet, PhD recruiting, etc.) activities at University of Michigan.

PUBLICATIONS FROM INDUSTRY **PROJECTS**

Sentao Miao, Yan Fu, Margaret Strumolo, Boxiao Chen, Xiuli Chao, Erica Klampfl, Michael Tamor. (2016) "Pricing of Renewable Gasoline and Its Impact on Greenhouse Gas Emission Reduction Planning for Automakers and Electricity Generators". (No. 2016-01-0295). SAE Technical Paper.

Sentao Miao, Xiuli Chao, Michael Tamor, Yan Fu, Margaret Strumolo. (2017) "Cost-Effective Reduction of Greenhouse Gas Emissions via Cross-Sector Purchases of Renewable Energy Certificates". SAE International Journal of Materials and Manufacturing, 10(3), 338-350.

MENTORING

PhD Students

- Recep Yusuf Bekci, McGill University, (2020-2023); First appointment: Assistant Professor, University of Waterloo
- Quan Zhou, McGill University (2021-Present)
- Zichun Liu, McGill University (2022-Present)
- Yan Zhang, McGill University (2022-Present)

Master Students

- Wang Xiang, University of Michigan (2020)
- Sharat Subraya Hegde, University of Michigan (2019-2020)
- Mitali Linge, University of Michigan (2019-2020)
- Zongyang Hu, University of Michigan (2019)

Undergraduate Students

- Jiaxin Yang, University of Michigan (2019-2020)

MISCELLANEOUS Language Skill

- Chinese (native)
- English (proficient)
- French (limited working proficiency)
- German (elementary)
- Japanese (elementary)

Software Skill

- Advanced: Python, Matlab, SQL
- Intermediate: C/C++, Linux, R, Mathematica