Hanzhang Qin

CONTACT INFORMATION

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EDUCATION

Massachusetts Institute of Technology Aug 2018–May 2022
Ph.D. in Computational Science and Engineering

Massachusetts Institute of Technology Aug 2015–May 2018
S.M. in EECS & S.M. in Transportation

Tsinghua University Aug 2011–July 2015
B.S. in Mathematics & B.Eng. in Industrial Engineering

CURRENT EMPLOYMENT

- **Assistant Professor** Starting from July 2023
  Department of Industrial Systems Engineering & Management, National University of Singapore
- **Postdoctoral Scientist** July 2022-present
  Supply Chain Optimization Technologies Group, Amazon, New York, NY
  - Worked on multi-channel inventory optimization and improving sustainability in Amazon's supply chain operations. *First person hired through the postdoctoral program in Amazon's history.*

RESEARCH INTERESTS

Methodologies: Stochastic Control, Statistical Learning, Reinforcement Learning
Applications: Supply Chain Analytics, Revenue Management, Transportation System

PUBLICATIONS

- H. Qin, D. Simchi-Levi, R. Ferer, J. Mays, K. Merriam, M. Forrester, A. Hamrick. "Trading Safety Stock with Service Response Time for Inventory Positioning", *Production and Operations Management*, 2022.
- K. Ledvina, H. Qin, D. Simchi-Levi, Y. Wei, "A New Approach for Vehicle Routing with Stochastic Demand: Combining Route Assignment with Process Flexibility", *Operations Research*, 2022.
- H. Qin, D. Simchi-Levi, L. Wang, ,"Data-Driven Approximation Schemes for Joint Pricing and Inventory Control Models", *Management Science*, 2022.
- H. Qin, Z. Zhang, D. Bai, "Permutation Flowshop Group Scheduling with Position-based Learning Effect", *Computers & Industrial Engineering*, 2016.

WORK IN PROGRESS

- H. Hu, H. Qin, and D. Simchi-Levi. "Solving Large-Scale Vehicle Routing Problems with Unsplittable Demands via Limited Information.", *working paper*.
- L. Chen, R. Jin, H. Qin, D. Simchi-Levi, Z. Zhang, "Distributionally Robust Optimal Omnichannel Stocking Decisions in Quick Fulfilment Systems", *working paper*.
- H. Qin, D. Simchi-Levi, R. Zhu. "Provably Sample-Efficient Inventory Control", *submitted*.

WORK EXPERIENCE

- **Research Intern** June 2018–Sep 2018
  Machine Intelligence Group, Damo Academy, Alibaba Group, Seattle, WA
  - Collaborated with the HEMA Supermarket (part of Alibaba Group) on a robust optimization model for omnichannel stocking decision-making in the

"New Retailing" fashion. For details, see L. Chen et al., "Distributionally Robust Optimal Omnichannel Stocking Decisions in Quick Fulfilment Systems".

- **Research Intern** June 2014–Aug 2014
  Supply Chain and Management Department, Yihaodian, Shanghai, China
  - Implemented an ARIMA-based prediction algorithm for warehouse orders, a workforce planning model and an online SKU-arrangement optimization model in Yihaodian's MIS.

INDUSTRY COLLABORATION

- **Researcher** Sep 2020–August 2021
  Accenture, Atlanda, GA
  - Developed a novel stochastic programming model that trades delivery time for safety stock levels, in collaboration with The Home Depot (project funded by Accenture-MIT Alliance).
- **Researcher** Jan 2020–Sep 2020
  Blue Yonder, Boston, MA
  - Devised a transportation planning solution with limited supply but large and diverse demand.
  - Invented a warehouse workload planning model with labor smoothing constraints, based on a compact linear program with efficient sparse data structure exploitation.

TEACHING EXPERIENCE

- **Teaching Assistant, 1.267 Statistical Learning in Operations (PhD elective)** Spring 2022
  - Delivered two lectures on the foundations of predictive analytics and reinforcement learning, with applications in supply chain and revenue management.
  - Hosted guest lectures by external speakers regarding advanced topics in the intersection of computer science and operations research.
- **Teaching Assistant, 6.246 Reinforcement Learning: Foundations and Methods (EECS PhD core)** Spring 2020
  - Co-developed the course with Cathy Wu and other two student TAs.
  - Held weekly recitations and devised assignment/quiz questions on Markov Decision Process, Finite-Horizon and Infinite-Horizon Dynamic Programming, Stochastic Approximation methods, DQN methods and Policy Gradient methods.
- **Teaching Assistant, 6.431x Probability - The Science of Uncertainty and Data (IDSS MicroMaster core)** Summer 2019
  - Held weekly online recitation classes for a group of students from Booz Allen Hamilton (around 20 attendees).
  - Served as moderator of the edX forum to answer questions from other online learners.
- **Teaching Assistant, 6.86x Machine Learning with Python - From Linear Models to Deep Learning (IDSS MicroMaster core)** Summer 2019
  - Developed supplementary course materials including new assignment problems, exam questions, and additional explanatory videos.

HONORS AND AWARDS

- MIT CCSE MathWorks Prize for Outstanding CSE Doctoral Research 2022
- MIT Robert E. Thurber Fellowship 2018
- Dean's list, Tsinghua University 2012, 2013, 2014

SELECTED INVITED TALKS

- **Sustainable Supply Chain Network Design: The Tradeoff between Economics and Carbon Emissions**
  - SIAM Conference on Optimization (May, 2023)
- **A New Approach for Vehicle Routing with Stochastic Demand: Combining Route Assignment with Process Flexibility**
  - Lee Kong Chian School of Business, Singapore Management University (Oct, 2023)
  - Rideshare Seminar, Lyft (Oct, 2023)
  - Department of Industrial and Systems Engineering, University of Southern California (Oct, 2022)
  - Department of Industrial Engineering, University of Pittsburgh (Feb, 2022)
  - Department of Industrial Systems Engineering and Management, National University of Singapore (Jan, 2022)
  - Department of Management Sciences, University of Waterloo (Jan, 2022)
  - Department of Systems and Industrial Engineering, University of Arizona (Jan, 2022)
  - Nanyang Business School, Nanyang Technological University (Aug, 2021)
  - Rotman School of Management, University of Toronto (June, 2021)
  - M&SOM SIG Meeting, Indiana University (June, 2021)
- **Provably Sample-Efficient Inventory Control**
  - M&SOM Annual Meeting (June, 2021)
  - LIDS Student Conference, MIT (Feb, 2021)
- **Provably Data-Driven Approximation Schemes for Joint Pricing and Inventory Control Models**
  - POMS Annual Meeting (May, 2021)
  - CORMSIS Seminar, University of Southampton (May, 2020)
  - INFORMS Annual Meeting (Oct, 2019)
  - M&SOM Annual Meeting (July, 2019)
- **Distributionally Robust Optimal Omnichannel Stocking Decisions in Quick Fulfilment Systems**
  - INFORMS Annual Meeting (Oct 21, 2019)
  - M&SOM Annual Meeting (July 1, 2019)

PROFESSIONAL SERVICE

Reviewer for Management Science, Operations Research, Mathematics of Operations Research, Naval Research Logistics

SKILLS

Programming: Julia, MATLAB, C/C++, SQL, R, JavaScript, HTML, Python.
Languages: Mandarin Chinese (native), English (fluent), German (elementary).