

Junyu Cao

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Education

University of California, Berkeley

Industrial Engineering and Operations Research

2015 – Present

Ph.D. Candidate, GPA: 3.95/4.00

Advisors: Zuo-Jun (Max) Shen and Mariana Olvera-Cravioto

Xi'an Jiaotong University

B.S. in Mathematics (Elite Program)

2011 – 2015

Major GPA: 3.94/4.00; Overall GPA: 3.85/4.00

Graduated with the highest honor (10/30000)

Research Interests

- Data-driven stochastic modeling and applied probability, with applications to the sharing economy and smart city operations.
- Machine learning and sequential decision making, with applications to recommendation systems and revenue management.

Research Papers

• *Data-Driven Stochastic Modeling & Applied Probability*

1. Junyu Cao, Mariana Olvera-Cravioto, Zuo-Jun (Max) Shen. Last-mile Shared Delivery: A Discrete Sequential Packing Approach. Accepted, *Mathematics of Operations Research*, 2019.
Finalist in INFORMS IBM Service Science Best Student Paper
2. Junyu Cao, Mariana Olvera-Cravioto. Connectivity of a General Class of Inhomogeneous Random Digraphs. Accepted, *Random Structures & Algorithms*, 2019.
3. Junyu Cao*, Danqing Zhang*, Sid Feygin, Dounan Tang, Zuo-Jun (Max) Shen, Alexei Pozdnoukhov. Connected Population Synthesis for Urban Simulation. *Transportation Research Part C: Emerging Technologies*, 2019. (* stands for equal contribution)

• *Machine Learning & Sequential Decision Making*

4. Junyu Cao, Wei Sun, Zuo-Jun (Max) Shen. Sequential Choice Bandits: Learning with Marketing Fatigue, under review in *Management Science*.
Katta Murty Best Paper Prize
5. Junyu Cao, Wei Sun. Dynamic Learning with Frequent New Product Launches: A Sequential Multinomial Logit Bandit Problem. *Thirty-sixth International Conference on Machine Learning (ICML)*, 2019.
6. Junyu Cao, Wei Sun. Dynamic Learning of Sequential Choice Bandit Problem under Marketing Fatigue. *Thirty-third AAAI Conference on Artificial Intelligence (AAAI)*, 2019.
7. Junyu Cao, Wei Sun, Zuo-Jun (Max) Shen, Markus Ettl. Fatigue-aware Bandits for Dependent Click Models. *Thirty-fourth AAAI Conference on Artificial Intelligence (AAAI)*, 2020.

• *Other Topics*

8. Junyu Cao, Alexander B. Herman, Geoffrey B. West, Gina Poe, Van M. Savage. Unraveling Why We Sleep: Quantitative Analysis Reveals Abrupt Transition From Neural Reorganization to Repair in Early Development, under revision in *Science Advances*.
9. Tong Xin, Junyu Cao. Some Discussions About The Best Approximate Element For A Closed Set In Euclidean Space. *Studies In College Mathematics*, 2015, 18(1).
10. Junyu Cao. An Alternative Proof of Cauchy Criterion. *Studies In College Mathematics*, 2012,15(5).

Working Papers

11. Junyu Cao, Wei Sun, Zuo-Jun (Max) Shen. Learning to Rank Cascade Models under Marketing Fatigue, soon to be submitted.
12. Hansheng Jiang, Junyu Cao, Zuo-Jun (Max) Shen. Intertemporal Pricing via Learning Customer Heterogeneity, in preparation.
13. Mengxin Wang, Junyu Cao, Zuo-Jun (Max) Shen. Data-driven Robust Transportation Scheduling for Same-day Delivery, in preparation.
14. Junyu Cao, Wei Sun, Zuo-Jun (Max) Shen. Dynamic Learning with Frequent New Product Launches via Tiered Assortment, in preparation.

Teaching Experience

Graduate Student Instructor, Industrial Engineering & Operations Research, UC Berkeley

- IEOR 263A Applied Stochastic Processes (graduate) 2018 Fall
- IEOR 173 Introduction to Stochastic Processes 2018 Spring
- IEOR 263A Applied Stochastic Processes 2017 Fall
- IEOR 172 Probability and Risk Analysis for Engineers 2016 Fall

Graduate Student Instructor, Haas School of Business, UC Berkeley

- UGBA 103 Introduction to Finance 2016 Summer
- UGBA 131 Corporate Finance and Financial Statement Analysis 2016 Summer

Work Experience

- Research Summer Intern at IBM Thomas J. Watson Research Center 2019 Summer
- Research Summer Intern at IBM Thomas J. Watson Research Center 2018 Summer

Patents

- System and Method for Merchandise Planning with Short Life Cycle Products
Status: submitted to U.S. Patent Office
- System and Method for Automated Discovery of Personalized Offers
Status: submitted to U.S. Patent Office

Academic Honors and Awards

- Finalist in INFORMS IBM Service Science Best Student Paper 2019
- Katta Murty Best Paper Prize 2019
- IBM Ph.D. Fellowship (16 total worldwide) 2019

ICML Travel Award	2019
2nd place at Citadel Datathon Competition	2018
Outstanding Graduate Student Instructor	2018
Summer Research Grant	2017
First Year Department Fellowship	2015
Outstanding Graduates	2015
Research Scholarship at UCLA	2015
Outstanding Student (The highest honor on campus, 10/30000)	2014
National Scholarship (Top 2%)	2014
Microsoft Research Asia Fellowship (39 total in China)	2014
UCLA CSST Scholarship (89 total in China)	2014
National Scholarship (Top 2%)	2012

Invited Talks

INFORMS Annual Conference	Oct. 2019
IBM Thomas J. Watson Research Center	Aug. 2019
Applied Probability Society Conference	July 2019
International Conference on Machine Learning (ICML)	June 2019
POMS Annual Conference	May 2019
IBM Research - Almaden	May 2019
AAAI Conference on Artificial Intelligence (AAAI)	Jan. 2019
INFORMS Annual Conference	Oct. 2018
IBM Thomas J. Watson Research Center	Aug. 2018

Computer Skills

R, Python, Pascal, C, Matlab, Mathematica, Sage, SPSS, Lingo, AMPL