

Huajie Qian

CONTACT INFORMATION

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EMPLOYMENT

Alibaba Group (US) Inc., Bellevue, WA July 2020-present

RESEARCH INTERESTS

Statistical uncertainty quantification, data-driven simulation, stochastic and robust optimization

EDUCATION

Columbia University, New York, NY Jan 2018-May 2020

Ph.D. in Operations Research

Advisor: Henry Lam

University of Michigan, Ann Arbor, MI Sept 2014-Dec 2017

M.S. in Applied and Interdisciplinary Mathematics

Overall GPA: 4.00/4.00

Fudan University, Shanghai, China Sept 2010-July 2014

B.S. in Mathematics, Outstanding Graduate of Shanghai (top 5%)

Major GPA: 3.87/4.00, Class Rank 1/53

PUBLICATIONS

Journal Articles

- H. Lam and H. Qian, Subsampling to enhance efficiency in input uncertainty quantification, *Operations Research*, 70(3):1891-1913, 2022.
- A. Goeva, H. Lam, H. Qian and B. Zhang, Optimization-based calibration of simulation input models, *Operations Research*, 67(5):1362-1382, 2019.
- H. Lam and H. Qian, Optimization-based quantification of simulation input uncertainty via empirical likelihood, under revision in *Management Science*, URL: <https://arxiv.org/abs/1707.05917>.
- H. Lam and H. Qian, Combating conservativeness in data-driven optimization under uncertainty: A solution path approach, under revision in *Management Science*, URL: <https://arxiv.org/abs/1909.06477>.
- H. Lam and H. Qian, Bounding optimality gap in stochastic optimization via bagging: Statistical efficiency and stability, under revision in *Operations Research*, URL: <https://arxiv.org/abs/1810.02905>.
- X. Wang, H. Qian and S. Zhang, Discovery of significant pathways in breast cancer metastasis via module extraction and comparison, *IET Systems Biology* 8(2):47-55, 2014.

Refereed Conference Proceedings

- Z. Chen, J. Lu, H. Qian, X. Wang and W. Yin, HeterSGD: Tackling heterogeneous sampling costs via

optimal reweighted stochastic gradient descent, *Proceedings of the 26th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2023.

- Z. Zhou, C. Zhang, L. Ma, J. Gu, H. Qian, Q. Wen, L. Sun, P. Li and Z. Tang, AHPA: Adaptive horizontal pod autoscaling systems on Alibaba Cloud Container Service for Kubernetes, *AAAI/IAAI/EAAI*, 2023.
- H. Qian, Q. Wen, L. Sun, J. Gu, Q. Niu and Z. Tang, RobustScaler: QoS-aware autoscaling for complex workloads, *Proceedings of the 38th International Conference on Data Engineering (ICDE)*, 2022.
- Y. Zhang, Z. Guan, H. Qian, L. Xu, H. Liu, Q. Wen, L. Sun, J. Jiang, L. Fan and M. Ke, CloudRCA: A root cause analysis framework for cloud computing platforms, *Proceedings of the 30th ACM International Conference on Information and Knowledge Management (CIKM)*, 2021.
- H. Chen, Z. Huang, H. Lam, H. Qian and H. Zhang, Learning prediction intervals for regression: Generalization and calibration, *Proceedings of the 24th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2021.
- H. Lam and H. Qian, Validating optimization with uncertain constraints, *Proceedings of the 2019 Winter Simulation Conference (WSC)*.
- H. Lam and H. Qian, Random perturbation and bagging to quantify input uncertainty, *Proceedings of the 2019 Winter Simulation Conference (WSC)*.
- H. Lam and H. Qian, Assessing solution quality in stochastic optimization via bootstrap aggregating, *Proceedings of the 2018 Winter Simulation Conference (WSC)*, 2061-2071.
- H. Lam and H. Qian, Subsampling variance for input uncertainty quantification, *Proceedings of the 2018 Winter Simulation Conference (WSC)*, 1611-1622.
- H. Lam and H. Qian, The empirical likelihood approach to simulation input uncertainty, *Proceedings of the 2016 Winter Simulation Conference (WSC)*, 791-802.

HONORS & AWARDS

AAAI/IAAI Deployed Application Award	2023
Winter Simulation Conference Travel Scholarship, WSC Foundation	2018
Rackham Conference Travel Grant, University of Michigan	2016-2017
Funding from the organizers of the 26 th IAS(Institute for Advanced Study)/PCMI (Park City Mathematics Institute) Graduate Summer School	2016
Mathematics Department Graduate Fellowship, University of Michigan	2015-2017
Chia-Chiao Lin Bronze Medal (ranked 5 th nationwide), the 4 th Shing-Tung Yau College Math Contests	2013
Team Bronze Medal (ranked 6 th nationwide), the 4 th Shing-Tung Yau College Math Contests	2013
First-Class (ranked 18 th nationwide), the 4 th China College Math Contests	2013
China National Scholarship (top 2%), Ministry of Education of China	2013

TALKS

HeterSGD: Tackling Heterogeneous Sampling Costs via Optimal Reweighted Stochastic Gradient Descent

- International Conference on Artificial Intelligence and Statistics (AISTATS), Valencia, Spain, April 2023

Robust QoS-Aware Autoscaling for Complex Workloads in Cloud Computing

- International Conference on Data Engineering (ICDE), Kuala Lumpur, Malaysia, May 2022

Random Perturbation to Quantify Input Uncertainty

- Winter Simulation Conference (WSC), National Harbor, MD, Dec 2019

Combating Conservativeness in Optimization under Uncertain Constraints

- Workshop on Optimization, Probability, and Optimization (WOPS), Shenzhen, China, Dec 2020
- INFORMS Annual Meeting, virtual, Nov 2020
- Winter Simulation Conference (WSC), National Harbor, MD, Dec 2019
- INFORMS Annual Meeting, Seattle, WA, Oct 2019
- Cornell Young Researchers Workshop, Ithaca, NY, Oct 2019
- International Conference on Continuous Optimization, Berlin, Germany, Aug 2019
- Mostly OM Workshop, Shenzhen, China, June 2019
- International Symposium on Mathematical Programming (ISMP), Bordeaux, France, July 2018

Subsampling Estimation of Simulation Input Uncertainty

- INFORMS Applied Probability Society Conference (APS), Brisbane, Australia, July 2019
- Winter Simulation Conference (WSC), Gothenburg, Sweden, Dec 2018
- INFORMS Annual Meeting, Houston, TX, Oct 2017

Assessing Solution Quality in Stochastic Optimization via Bootstrap Aggregating

- INFORMS Applied Probability Society Conference (APS), Brisbane, Australia, July 2019
- Winter Simulation Conference (WSC), Gothenburg, Sweden, Dec 2018
- PhD Student Presentation, Columbia University, Oct 2018
- Joint Statistical Meeting, Vancouver, Canada, Aug 2018

The Empirical Likelihood Approach to Simulation Input Uncertainty

- INFORMS Annual Meeting, Houston, TX, Oct 2017
- INFORMS Applied Probability Society Conference (APS), Evanston, IL, July 2017
- Winter Simulation Conference (WSC), Washington, D.C., Dec 2016
- INFORMS Annual Meeting, Nashville, TN, Nov 2016

Optimization-Based Calibration of Simulation Input Models

- Joint Statistical Meeting, Vancouver, Canada, Aug 2018

Discovery of Significant Pathways in Breast Cancer Metastasis via Module Extraction and Comparison

- The 12th Asian Pacific Bioinformatics Conference, Shanghai, China, Jan 2014

TEACHING EXPERIENCE

At University of Michigan

Lecturer, Calculus I, Winter 2015, and Pre-Calculus, Fall 2014

- Deliver four and a half hours of lectures per week to 25-30 students
- Collaborate with other instructors in developing grading rubrics for two midterms and one final
- Design and grade weekly quizzes

Lab Instructor, Introduction to Differential Equations, Fall 2015, Spring 2016

- Hold four hours of recitation/computer lab meetings per week
- Instruct 100 students to solve differential equations using MATLAB and Maple

Tutor in Math Lab, Department of Mathematics, Fall 2014, Winter 2015, Fall 2015

- Answer math questions from undergraduates of all levels for one hour per week

PROFESSIONAL SERVICES

Student Co-organizer, Columbia IEOR-DRO Seminar Spring 2019

Treasurer, SIAM Student Chapter at University of Michigan Jan 2015-Dec 2017

Co-organizer, The 5th University of Michigan SIAM Student Conference April 2015

Referee for: *KDD*, *CIKM*, *PAKDD*, *AISTATS*, *SIAM Journal on Control and Optimization*, *SIAM/ASA Journal on Uncertainty Quantification*, *European Journal of Operational Research*

COMPUTER SKILLS

Python, C++, MATLAB, R, L^AT_EX