# NIAN SI

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## ACADEMIC EMPLOYMENT

**Hong Kong University of Science and Technology** — Hong Kong, China
*Assistant Professor, Industrial Engineering and Decision Analytics* — *2024 - Present*

**University of Chicago** — Illinois, USA
*Postdoctoral Principal Researcher, Booth School of Business* — *2022 - 2024*

## EDUCATION

**Stanford University** — California, USA
*Ph.D. in Operations Research, Department of Management Science and Engineering* — *2017 - 2023*
*Ph.D. minor in Computer Science, Computer Science Department* — *2021 - 2023*
*M.S. in Statistics, Department of Statistics* — *2020 - 2021*
Advisor: Jose H. Blanchet

**Peking University** — Beijing, China
*B.A. in Economics, School of Economics* — *2013 - 2017*
*B.S. in Mathematics and Applied Mathematics, School of Mathematical Sciences* — *2014 - 2017*

## JOURNAL PUBLICATIONS

J10. **Bellman Optimality of Average-Reward Robust Markov Decision Processes with a Constant Gain**
Shengbo Wang, **Nian Si**
*Operations Research* 2026+.

J9. **Dynamic Programming–Compatible Uncertainty Sets in Robust Markov Decision Processes**
Julien Grand-Clément, **Nian Si**, Shengbo Wang
*Mathematics of Operations Research* 2026+.

J8. **Drift Control of High-Dimensional RBM: A Computational Method Based on Neural Networks**
Baris Ata, Michael Harrison, **Nian Si**
*Stochastic Systems* 15.2 (2025): 111-146.

J7. **Sample Complexity of Variance-reduced Distributionally Robust Q-learning**
Shengbo Wang, **Nian Si**, Jose Blanchet, Zhengyuan Zhou
*Journal of Machine Learning Research* 25.341 (2024): 1-77.

J6. **Singular Control of (Reflected) Brownian Motion: A Computational Method Suitable for Queueing Applications**
Baris Ata, Michael Harrison, **Nian Si**
*Queueing Systems: Theory and Applications (QUESTA)* 108.3 (2024): 215-251.

J5. **Distributional Robust Batch Contextual Bandits**
**Nian Si**, Fan Zhang, Zhengyuan Zhou, Jose Blanchet
*Management Science* 69.10 (2023): 5772-5793.
**2021 MSOM Student Paper Prize Finalist**

J4. **Confidence Regions in Wasserstein Distributionally Robust Estimation**
Jose Blanchet, Karthyek Murthy, **Nian Si**
*Biometrika* 109.2 (2022): 295-315.

J3. **Efficient Steady-state Simulation of High-dimensional Stochastic Networks**
Jose Blanchet, Xinyun Chen, Peter Glynn, **Nian Si**
*Stochastic Systems* 11.2 (2021): 174-192.

J2. **Optimal Uncertainty Size in Distributionally Robust Inverse Covariance Estimation**
Jose Blanchet, **Nian Si**
*Operations Research Letters* 47.6 (2019): 618-621.

J1. **Efficient Computation of the Likelihood Expansions for Diffusion Models**
Chenxu Li, Yu An, Dachuan Chen, Qi Lin, **Nian Si**
*IISE Transactions* 48.12 (2016): 1156-1171.
**2018 Operations Engineering & Analytics Best Paper Award**

## CONFERENCE PROCEEDINGS

C16. **A Queueing-Theoretic Framework for Stability Analysis of LLM Inference with KV Cache Memory Constraints**
Chengyi Nie, **Nian Si**, Zijie Zhou
*International Conference on Machine Learning (ICML)* 2026.

C15. **Experimental Designs for Multi-Item Multi-Period Inventory Control**
Xinqi Chen, Xingyu Bai, Zeyu Zheng, **Nian Si**
*ACM Conference on Economics and Computation (EC)* 2026.

C14. **Causal Estimation of Share-Induced Engagement with Flywheel Effects**
Weitao Cheng, Yilin Li, Yong Wang, **Nian Si**
*ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)* 2026.

C13. **Experimentation for Different Scheduling Policies on Queues: Mixed Differences-in-Q Estimators Based on Little's Law**
Nanshan Jia, Ramesh Johari, **Nian Si**, Zeyu Zheng
*ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)* 2026.

C12. **Near-Optimal Sample Complexities of Divergence-based S-rectangular Distributionally Robust Reinforcement Learning**
Zhenghao Li, Shengbo Wang, **Nian Si**
*Artificial Intelligence and Statistics Conference (AISTATS)* 2026.
**Spotlight presentation; top 3% of submissions**

C11. **Sample Complexity of Distributionally Robust Average-Reward Reinforcement Learning**
Zijun Chen, Shengbo Wang, **Nian Si**
*Neural Information Processing Systems (NeurIPS)* 2025.

C10. **Knowledge-Guided Wasserstein Distributionally Robust Optimization**
Zitao Wang, Ziyuan Wang, Molei Liu, **Nian Si**
*International Conference on Machine Learning (ICML)* 2025.

C9. **Statistical Learning of Distributionally Robust Stochastic Control in Continuous State Spaces**
Shengbo Wang, **Nian Si**, Jose Blanchet, Zhengyuan Zhou
*Artificial Intelligence and Statistics Conference (AISTATS)* 2025.
**Oral presentation; top 2% of submissions**

C8. **ScoreFusion: Fusing Score-based Generative Models via Kullback-Leibler Barycenters**
Hao Liu, Junze (Tony) Ye, Jose Blanchet, **Nian Si**
*Artificial Intelligence and Statistics Conference (AISTATS)* 2025.
**Oral presentation; top 2% of submissions**

C7. **Calibration Matters: Tackling Maximization Bias in Large-scale Advertising Recommendation Systems**
Yewen Fan, **Nian Si**, Kun Zhang
*International Conference on Learning Representations (ICLR)* 2023.

C6. **A Finite Sample Complexity Bound for Distributionally Robust Q-learning**
Shengbo Wang, **Nian Si**, Jose Blanchet, Zhengyuan Zhou
*Artificial Intelligence and Statistics Conference (AISTATS)* 2023.

C5. **A Preliminary Study of Regularization Framework for Constructing Task-Specific Simulators**
Dilara Aykanat,Zeyu Zheng, **Nian Si**
*Winter Simulation Conference (WSC)* 2023.

C4. **Testing Group Fairness via Optimal Transport Projections**
**Nian Si**, Karthyek Murthy, Jose Blanchet, Viet Anh Nguyen
*International Conference on Machine Learning (ICML)* 2021.

C3. **Quantifying the Empirical Wasserstein Distance to a Set of Measures: Beating the Curse of Dimensionality**
**Nian Si**, Jose Blanchet, Soumyadip Ghosh, Mark Squillante
*Neural Information Processing Systems (NeurIPS)* 2020.
**Spotlight presentation; top 4% of submissions**

C2. **Distributionally Robust Policy Evaluation and Learning in Offline Contextual Bandits**
**Nian Si**, Fan Zhang, Zhengyuan Zhou, Jose Blanchet
*International Conference on Machine Learning (ICML)* 2020.

C1. **Robust Bayesian Classification Using an Optimistic Score Ratio**
Viet Anh Nguyen, **Nian Si**, Jose Blanchet
*International Conference on Machine Learning (ICML)* 2020.

## RESEARCH GRANTS

- General Research Fund (GRF) Research Grant, Hong Kong Research Grants Council (RGC), 2027-2029.
- Early Career Scheme (ECS) Research Grant, Hong Kong Research Grants Council (RGC), 2026-2028.
- ANR/RGC Joint Research Scheme, Hong Kong Research Grants Council (RGC) and French National Research Agency (ANR), 2026-2028.
- Young Scientist Fund (C Class), National Natural Science Foundation of China (NSFC), 2026-2028.
- Tencent Weixin Rhino-Bird Focused Research Program, Tencent, 2025-2026
- HKUST-WeBank Joint Laboratory Project, WeBank, 2025-2026
- HKUST Li & Fung Supply Chain Institute Research Grant, HKUST Li & Fung Supply Chain Institute 2025-2027
- HKUST-UNSW Global Research Impact Program, HKUST, 2025

## HONORS, AWARDS, AND FELLOWSHIPS

- Meritorious Service Awards for *Manufacturing & Service Operations Management* *2025*
- Meritorious Service Awards for *Operations research* *2024*
- Meritorious Service Awards for *Mathematical Programming* *2024*
- MSOM Student Paper Prize Finalist *2021*
- Two Sigma PhD Fellowship Finalist *2021*
- Dantzig-Lieberman Operations Research Fellowship *2019*
- Outstanding Scientific Research Award *2017*

## PROFESSIONAL SERVICES

- Journal reviewer for *Mathematics of Operations Research (MOR)*, *Management Science (MS)*, *Operations Research (OR)*, *Manufacturing & Service Operations Management (MSOM)*, *Mathematical Programming (MP)*, *Annals of Statistics (AOS)*, *Journal of the American Statistical Association (JASA)*, *Advances*

*in Applied Probability*, *Journal of Machine Learning Research (JMLR)*, *IEEE Transactions on Signal Processing (TSP)*, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)* and *Operations Research Letters (ORL)*.

- Conference reviewer for *International Conference on Machine Learning (ICML)*, *International Conference on Learning Representations (ICLR)*, *Neural Information Processing Systems (NeurIPS)*, *Artificial Intelligence and Statistics (AISTATS)*, *ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)* and *International Conference on Algorithmic Learning Theory (ALT)*.