NIAN SI

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ACADEMIC EMPLOYMENT

University of Chicago   Illinois, USA
Postdoctoral Principal Researcher, Booth School of Business   *2022 - Present*
Host: Baris Ata

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*

RESEARCH INTERESTS

Applied probability and simulation, experimentation under interference in marketplaces, distributional robustness, optimal transport.

PREPRINTS

1. **Sample Complexity of Variance-reduced Distributionally Robust Q-learning**
   Shengbo Wang, **Nian Si**, Jose Blanchet, Zhengyuan Zhou
   arXiv:2305.18420.

2. **A/B Tests Under a Safety Budget: A Simulation-Optimization Point of View**
   Nian Si, Jose Blanchet, Ramesh Johari, Zeyu Zheng
   preprint.

3. **Optimal Bidding and Experimentation for Multi-layer Auctions in Online Advertising**
   Nian Si, San Gultekin, Jose Blanchet, Aaron Flores
   https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4358914

4. **Selecting the Best Optimizing System**
   Nian Si, Zeyu Zheng
   arXiv:2201.03065.

JOURNAL PUBLICATIONS

5. **Distributional Robust Batch Contextual Bandits**
   Nian Si, Fan Zhang, Zhengyuan Zhou, Jose Blanchet
   Management Science 2022+.
   2021 MSOM Student Paper Prize Finalist

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

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

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

9. **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

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

11. **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.

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

13. **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

14. **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.

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

HONORS, AWARDS, AND FELLOWSHIPS

- MSOM Student Paper Prize Finalist   *2021*
- Two Sigma PhD Fellowship Finalist   *2021*
- Dantzig-Lieberman Operations Research Fellowship   *2019*
- Outstanding Scientific Research Award (the highest prize in School of Economics, PKU)   *2017*

PROFESSIONAL SERVICES

- Journal reviewer for *Mathematics of Operations Research*, *Operations Research*, *Advances in Applied Probability*, *Journal of Machine Learning Research*, and *Operations Research Letters*.

- 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)*, and *International Conference on Algorithmic Learning Theory (ALT)*.

TALKS

- Optimal Transport: Theory and Applications
  - Statistics Seminar, Guanghua School of Management, PKU, virtual *Oct. 2022*
- A/B Tests Under a Safety Budget: A Simulation-Optimization Point of View
  - INFORMS Annual Meeting, Indianapolis, IN *Oct. 2022*
- Distributional Robust Batch Contextual Bandits
  - INFORMS Annual Meeting, Anaheim, CA *Oct. 2021*
  - The Thirteenth International Conference of the Chinese Scholars Association for Management Science and Engineering (CSAMSE), virtual *Jul. 2021*
- Distributionally Robust Policy Evaluation and Learning in Offline Contextual Bandits
  - INFORMS Annual Meeting, virtual *Oct. 2020*
  - International Conference on Machine Learning (ICML), virtual *Jul. 2020*
- Efficient Steady-state Simulation of High-dimensional Stochastic Networks
  - INFORMS Annual Meeting, virtual *Oct. 2020*
- Quantifying the Empirical Wasserstein Distance to a Set of Measures: Beating the Curse of Dimensionality
  - Neural Information Processing Systems (NeurIPS), virtual *Dec. 2020*
- Confidence Regions in Wasserstein Distributionally Robust Estimation
  - INFORMS Annual Meeting, Seattle, WA *Oct. 2019*
  - International Conference on Continuous Optimization (ICCOPT), Berlin, Germany *Aug. 2019*

WORK EXPERIENCES

IBM Thomas J. Watson Research Center New York, USA

Research intern *Jun. 2019 - Sep. 2019*

Conducted research on the statistical properties of optimal transport.

ADDITIONAL INFORMATION

- **Programming skills**: C, Python, SQL, R, Java, Mathematica, and MATLAB.
- **Others**: finisher in half marathon (twice) and Olympic distance triathlon (twice), and silver medalist in 2017 China Junior Bridge Team Championship.