Jie Wang

Ph.D. Student, Georgia Institute of Technology

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EDUCATION

Georgia Institute of Technology, Atlanta, Georgia, USA   2020.08-2024.06 (Expected)

Ph.D. Student in Industrial Engineering at Statistic Track

Advisor: Dr. Yao Xie

The Chinese University of Hong Kong, Shenzhen, China   2016.08-2020.06

B.S in Pure Mathematics

Department: School of Science and Engineering (SSE)

RESEARCH INTERESTS

His research focuses on reliable decision-making under uncertainty, through the lens of statistics and optimization. Especially, he develops robust and computationally efficient methodology with strong performance guarantees for this problem associated with offline/online, noisy, small-sample/ultra-large-sample, and high-dimensional datasets. Moreover, he also explores its practical applications in hypothesis testing, healthcare, and wireless communication.

HONOR & AWARDS

Finalist, Data Challenge Competition on Offline Pricing, 2023 INFORMS Workshop on DMDA

Winner, Data Mining Best Theoretical Paper, 2023 INFORMS Workshop on DMDA

Travel Award, Mixed Integer Programming Workshop 2023

2022 ISyE Robert Goodell Brown Research Excellence award (Data Science and Statistics Track)

Honorable Mention, Best Student Poster Award, Georgia Statistics Day 2022

Winner, 2022 INFORMS Poster Competition

Best Performance Award for Ph.D. Comprehensive Exam in Statistics, 2021

Travel Award, IEEE International Symposium on Information Theory 2019

PUBLICATIONS

Journal Articles Published

1. **J. Wang**, R. Gao and H. Zha. Reliable Off-policy Evaluation for Reinforcement Learning. *Operations Research*, 2022.

2. **J. Wang**, M. Chen, T. Zhao, W. Liao and Y. Xie. A Manifold Two-Sample Test Study: Integral Probability Metric with Neural Networks. *Information and Inference: A Journal of the IMA*, 2023.

3. **J. Wang**, S. Yang, Y. Dong and Y. Zhang. On Achievable Rates of Line Networks with Generalized Batched Network Coding. *Accepted by IEEE Journal on Selected Areas in Information Theory*, 2023.

Journal Articles Submitted

1. **J. Wang**, R. Gao and Y. Xie. Sinkhorn Distributionally Robust Optimization. *Under Reviewed by Operations Research (Current Status: Awaiting Associate Editor's Recommendation)*, 2023.

   - Previous review decision on August 2022: Reject and Resubmit

- Winner of INFORMS 2022 Best Poster Award.

2. Y. Dong, S. Yang, **J. Wang** and F. Cheng. Achievable Rate and Latency of Line Networks with Outage Links. *Submitted to IEEE Journal on Selected Areas in Information Theory*, 2023.

Conference Papers Published

1. Y. Hu, **J. Wang**, Y. Xie, A. Krause and D. Kuhn. Conditional Stochastic Bilevel Optimization. *Neural Information Processing Systems (NeurIPS) 2023*. (Journal version to be submitted to Operations Research)

2. **J. Wang**, T. Bozkus, Y. Xie and U. Mitra. Reliable Adaptive Recoding for Batched Network Coding with Burst-Noise Channels. *Asilomar Conference on Signals, Systems, and Computers 2023*. (Journal version to be submitted to IEEE Transactions on Signal Processing)

3. **J. Wang**, R. Moore, R. Kamaleswaran and Y. Xie. Improving Sepsis Prediction Model Generalization With Optimal Transport. *Machine Learning for Health (ML4H) 2022*.

4. **J. Wang** and Y. Xie. A Data-Driven Approach to Robust Hypothesis Testing Using Sinkhorn Uncertainty Sets. *IEEE International Symposium on Information Theory (ISIT), 2022*.

5. **J. Wang**, R. Gao and Y. Xie. Two-sample Test with Kernel Projected Wasserstein Distance. *Artificial Intelligence and Statistics, 2022*.
   - Oral Presentation, acceptance rate $44/1685 = 2.6\%$.

6. **J. Wang**, R. Gao and Y. Xie. Two-sample Test using Projected Wasserstein Distance. *IEEE International Symposium on Information Theory (ISIT), 2021*.

7. **J. Wang**, Z. Jia, H. H. Yin and S. Yang. Small-Sample Inferred Adaptive Recoding for Batched Network Coding. *IEEE International Symposium on Information Theory (ISIT), 2021*.

8. S. Yang and **J. Wang**. Upper Bound Scalability on Achievable Rates of Batched Codes for Line Networks. *IEEE International Symposium on Information Theory (ISIT), 2020*.

9. S. Yang, **J. Wang**, Y. Dong and Y. Zhang. On the Capacity Scalability of Line Networks with Buffer Size Constraints. *IEEE International Symposium on Information Theory (ISIT), 2019*.

10. **J. Wang**, S. Yang and C. Li. On the Tightness of a Cut-Set Bound on Network Function Computation. *IEEE International Symposium on Information Theory (ISIT), 2018*.

11. **J. Wang**, J. Ma, J. Yang and S. Yang. Efficient Underwater Sensor Network Data Collection Employing Unmanned Ships. *The 14th ACM International Conference on Underwater Networks & Systems (wuwnet), 2019*.

Working Papers/Preprints

1. **J. Wang**, S. Dey and Y. Xie. Variable Selection for Kernel Two-Sample Testing.
   - Selected for Poster Presentation at Mixed Integer Programming (MIP) Workshop 2023.
   - In preparation to submit to Operations Research.

2. **J. Wang**, Y. Lin, S. Wei, R. Gao and Y. Xie. Entropic Regularization for Adversarial Robust Learning.
   - Winner of 18th INFORMS DMDA Workshop Best Paper Competition - Theoretical Track.
   - In preparation to submit to Operations Research.

3. Y. Hu, **J. Wang**, X. Chen, and N. He. Bias, Variance, and Costs Tradeoff in Multi-level Monte-Carlo for Stochastic Optimization with Biased Oracles.
   - In preparation to submit to Operations Research.

4. H. H. Yin and **J. Wang**. Sparse Degree Optimization for BATS Codes.
   - Submitted to 2024 IEEE International Symposium on Information Theory.

5. H. H. Yin, **J. Wang** and S. S. Chow. Distributionally Robust Degree Optimization for BATS Codes.
   - Submitted to 2024 IEEE International Symposium on Information Theory.
6. **J. Wang**, R. Gao and Y. Xie. Non-Convex Robust Hypothesis Testing using Sinkhorn Uncertainty Sets.
   - Submitted to 2024 IEEE International Symposium on Information Theory.

TEACHING

Instructor at Georgia Tech (In-person)   Spring 2024

Statistics and Applications (ISYE 3770)

Teaching Assistant at Georgia Tech (In-person)   Fall 2021

Design and Analysis of Experiments (ISYE 6413)

Median Score of Overall Evaluation: 4.7 out of 5.0

Teaching Assistant at Georgia Tech (Online)   Fall 2020 - Spring 2021

Engineering Optimization (ISYE 3133)

PROFESSIONAL SERVICE

Journal Referee for:

- IEEE Transactions on Signal Processing
- IEEE Journal on Selected Areas in Information Theory
- IEEE Transactions on Information Theory
- Mathematical Programming
- Journal of Global Optimization
- Optimization Letters
- Systems & Control Letters

Conference Reviewer for:

- AISTATS 2020, 2021, 2022, 2023, 2024.
- ICLR 2024.
- NeurIPS 2022, 2023.
- ICML 2023, 2024

PRESENTATIONS

2024 International Symposium on Mathematical Programming

2024 INFORMS Optimization Society Conference

2023 INFORMS Annual Meeting, oral talk and poster presentation

2023 INFORMS Workshop on DMDA

2023 SIAM Conference on Optimization

2023 Mixed Integer Programming (MIP) Workshop

2023 ICERM Linear and Non-Linear Mixed Integer Optimization Workshop

2022 INFORMS Annual Meeting, oral talk and poster presentation

2022 SIAM Seminar at University of Washington

2022 SIAM Conference on Mathematics of Data Science

2022 International Conference on Continuous Optimization

2022 North American School of Information Theory, poster presentation

2022 Artificial Intelligence and Statistics, virtual

2021 INFORMS Annual Meeting, virtual

2021 IEEE International Symposium on Information Theory (ISIT), virtual

2020 ISIT, virtual

2019 ISIT, Paris, France

2019 International Conference on Underwater Networks & Systems, Atlanta, Georgia, USA

2018 ISIT, Vail, Colorado, USA