Ruijiang Gao

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EDUCATION

- PhD in Information, Risk and Operation Management, University of Texas at Austin 2018 - 2024
- Master of Statistics, University of Michigan 2016-2018
- B.S. Statistics, University of Science and Technology of China 2012-2016

SELECTED PUBLICATIONS[1] (MANUSCIPTS WILL BE SHARED UPON REQUEST)

Machine Learning / Artificial Intelligence Conference Proceedings

1. Ruijiang Gao and Himabindu Lakkaraju. Long-Term Effect of Algorithmic Recourse on Social Segregation. In *International Conference on Machine Learning (ICML)*, 2023
2. Zhendong Wang*, Ruijiang Gao*, Mingzhang Yin*, Mingyuan Zhou, and David M Blei. Probabilistic Conformal Prediction Using Conditional Random Samples. In *Artificial Intelligence and Statistics Conference (AISTATS) 2023, ICML 2022 DFUQ Spotlight presentation*, 2022
3. Ruijiang Gao, Maytal Saar-Tsechansky, Maria De-Arteaga, Ligong Han, Min Kyung Lee, and Matthew Lease. Human-AI Collaboration with Bandit Feedback. In *International Joint Conferences on Artificial Intelligence (IJCAI) (**Acceptance Rate: 13.9%**)*, 2021
4. Ruijiang Gao, Max Biggs, Wei Sun, and Ligong Han. Enhancing Counterfactual Classification via Self-Training. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI) (**Acceptance Rate: 15%**)*, 2022
5. Ligong Han, Martin Renqiang Min, Anastasis Stathopoulos, Yu Tian, Ruijiang Gao, Asim Kadav, and Dimitris N Metaxas. Dual Projection Generative Adversarial Networks for Conditional Image Generation. In *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*, 2021
6. Ruijiang Gao and Maytal Saar-Tsechansky. Cost-Accuracy Aware Adaptive Labeling for Active Learning. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*, 2020
7. Ligong Han, Ruijiang Gao, Mun Kim, Xin Tao, Bo Liu, and Dimitris N Metaxas. Robust Conditional GAN from Uncertainty-Aware Pairwise Comparisons. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*, 2020
8. Ligong Han, Yang Zou, Ruijiang Gao, Lezi Wang, and Dimitris Metaxas. Unsupervised Domain Adaptation via Calibrating Uncertainties. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, 2019

Journals

1. Ruijiang Gao, Mingzhang Yin, James McInerney, and Nathan Kallus. Training Uncertainty-Aware Regression Models. *Machine Learning (Special Issue on Uncertainty Quantification)*, 2024

Under Review at Journals

1. Ruijiang Gao, Maytal Saar-Tsechansky, Maria De-Arteaga, Ligong Han, Min Kyung Lee, Wei Sun, and Matthew Lease. Learning Complementary Policies for Human-AI Teams. 2022. Under Review at **Management Science - Reject and Resubmit**. **Best Student Paper (1 out of ∼200)** at Conference on Information Systems and Technology (CIST), 2022
2. Max Biggs*, Ruijiang Gao*, and Wei Sun*. Loss Functions for Discrete Contextual Pricing with Observational Data. *arXiv preprint arXiv:2111.09933*. Under Review at **Operations Research - Major Revision**, INFORMS Revenue Management and Pricing Spotlight presentation, 2022, ADA Special Recognition Award Finalist, 2022

Working Journal Papers

1. Ruijiang Gao and Maytal Saar-Tsechansky. Active Incentive Learning. In preparation for Information Systems Research. Preliminary version Accepted at CIST, 2022
2. Ruijiang Gao and Mingzhang Yin. Confounding-Robust Policy Improvement with Human-AI Teams. In preparation for Management Science. Preliminary version Accepted at INFORMS Data Science Workshop, 2023
3. Junyu Cao*, Ruijiang Gao*, and Esmaeil Keyvanshokooh*. Contextual Recourse Bandits: Optimizing Decisions through Counterfactual Explanations. In preparation for Management Science. Preliminary version Accepted at CIST, 2023

Selected IS / Business Conference Presentations

1. Learning Complementary Policies for Human-AI Teams - CIST (**Best Student Paper**), INFORMS Data Science Workshop 2022; SCECR 2021.
2. Active Incentive Learning - CIST 2022, INFORMS Data Science Workshop 2022.
3. Loss Functions for Discrete Contextual Pricing with Observational Data - INFORMS Revenue Management and Pricing Conference (Spotlight Presentation), INFORMS Advances in Decision Analysis Conference (Special Recognition Award Finalist), 2022; INFORMS 2021.

[1] *: Equal Contribution

Patent

1. Ruijiang Gao, Wei Sun, Max Biggs, Markus Ettl, Youssef Drissi. Counterfactual Self-Training. U.S. Patent Application No. 17/402,367, 2023
2. Ruijiang Gao, Wei Sun, Max Biggs, Youssef Drissi, Markus Ettl. Imputing counterfactual data to faciltiate machine learning model training. US Patent App. 17/654,617, 2023

PROFESSIONAL EXPERIENCE

- **UT Dallas: Assistant Professor in Information Systems** Richardson, TX, 2024/08-Present
- **Netflix: ML Research Intern (advised by James Mclnerney and Nathan Kallus)** Los Gatos, CA, 2023/05-2023/08
  - Studied how to improve the conditional coverage for modern uncertainty quantification algorithms.
  - Proposed novel regularization that can efficiently improve conditional coverage performance.
- **Harvard Business School: Visiting Researcher (advised by Himabindu Lakkaraju)** Boston, MA, 2022/05-2022/08
  - Studied long-term effect of algorithmic recourse algorithms.
  - Showed existing counterfactual explanation methods may lead to increase in social segregation.
  - Proposed balanced recourse algorithms based on implicit and explicit conditional generative models to reduce social segregation while still providing realistic recourses.
- **IBM: Research Intern (advised by Wei Sun, Max Biggs, and Markus Ettl)** Yorktown Heights, NY, 2021/06-2021/08
  - Bridged gap between causal inference, learning from noisy supervision theoretically.
  - Proposed new minimum variance estimators for contextual / personalized pricing.
- **IBM: Research Intern (advised by Wei Sun, Max Biggs, and Markus Ettl)** Yorktown Heights, NY, 2020/06-2020/08
  - Developed novel algorithm based on self-training for counterfactual inference given only observational data for applications like pricing, precision medicine and ads placement.
  - Used theoretical analysis to demonstrate how self-training helps counterfactual learning.
  - Showed state-of-the-art performance on synthetic and real datasets.
- **Tencent: Data Scientist Intern** Shenzhen, China, 2018/04-2018/07
- **Amazon: Business Intelligence Engineer Intern** Seattle, WA, 2017/06-2017/09

FELLOWSHIP AND AWARDS

- Best Student Paper Award at CIST (1 out of $\sim$ 200) 2022
- INFORMS ADA PhD Incubator Special Recognition Award Finalist 2022
- UT Austin Graduate School Continuing Fellowship 2022
- UT Austin Graduate School (OGS) Professional Development Award, Good Systems Student Conference Grant 2020
- UT Austin Graduate School (OGS) Provost Fellowship 2018
- Outstanding Applied Masters Student. 2017

TEACHING EXPERIENCE

- Instructor for INFORMATION TECHNOLOGY MANAGEMENT. Spring 2022
- Teaching Assistant for INTRODUCTION TO DATA SCIENCE. Fall 2020, Spring 2021
- Teaching Assistant for DATABASE MANAGEMENT. Spring, 2020
- Teaching Assistant for PREDICTIVE ANALYSIS AND DATA MINING. Spring, 2019
- Teaching Assistant for STRATEGIC INFORMATION TECHNOLOGY MANAGEMENT. Fall, 2018