Kyra (Jingyi) Gan

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EMPLOYMENT

Assistant Professor, **Cornell Tech**, ORIE, NYC, NY — 2023-

Postdoctoral Fellow, **Harvard University**, Statistics, Cambridge, MA — 2022-2023

- Under the supervision of Susan A. Murphy

EDUCATION

Carnegie Mellon University, Tepper School of Business, Pittsburgh, PA — 2017–2022

- Ph.D. in Operations Research (Minor in Machine Learning)
- Thesis: *Modern Methods in Precision Medicine*
- Committee: Sridhar Tayur (Co-chair), Andrew A. Li (Co-chair), Zachary Lipton, Alan Scheller-Wolf, Tinglong Dai

Smith College, Northampton, MA. — 2014–2017

- B.A.s, Mathematics, Economics
- Honors: Dean's List 2014 – 2017, Elected Sigma Xi 2017, Ann Kirsten Pokora Prize (excellence in mathematics)

University of California, San Diego, La Jolla, CA. — 2013–2014

- Honors: Provost Honors 2013—2014

AWARDS

- Finalist, 2023 INFORMS DMDA Workshop Best Paper Competition – Theoretical Track
- Winner, 2021 INFORMS Pierskalla Best Paper Award
- Winner, 2021 CHOW Best Student Paper in the Category of Operations Research and Management Science
- Finalist, 2019 INFORMS IBM Service Science Best Student Paper Award
- Tata Consultancy Services Fellowship, 2020
- William Larimer Mellon PhD Fellowship, 2017-2019, 2021, 2022

GRANTS

- AWS Credit Grants – Cornell's Center for Data Science for Enterprise and Society, 2024-2025

PREPRINTS

Unless otherwise mentioned, authors are listed following standard **computer science** practice.
Author contribution markers:
♣: Lead junior author (among junior faculty authors); ♦: Authors ordered by contributions;
_: Student and postdoc authors at the time of completion; *: Equal contributions.

- **Federated Causal Inference in Healthcare: Methods, Challenges, and Application**
  Haoyang Li, Jie Xu, Kyra Gan, Fei Wang, Chengxi Zang

- **When Additive Noise Meets Unobserved Mediators: Bivariate Denoising Diffusion for Causal Discovery** Dominik Meier*, Sujai Hiremath*, Promit Ghosal, and **Kyra Gan**

- **Optimal Adjustment Sets for Nonparametric Estimation of Weighted Controlled Direct Effect** Ruiyang Lin, Yongyi Guo, and **Kyra Gan**

- **MOSIC: Model-Agnostic Optimal Subgroup Identification with Multi-Constraint for Improved Reliability** Wenxin Chen, Weishen Pan, **Kyra Gan**♣, and Fei Wang

- **From Restless to Contextual: A Thresholding Bandit Approach to Improve Finite-horizon Performance** Jiamin Xu, Ivan Nazarov, Aditya Rastogi, Africa Parianez, and **Kyra Gan**

- **Online Uniform Sampling: Randomized Learning-Augmented Approximation Algorithms with Application to Digital Health** Xueqing Liu, **Kyra Gan**♣, Esmaeil Keyvanshokooh, and Susan A. Murphy

- **LoSAM: Local Search in Additive Noise Models with Mixed Mechanisms and General Noise for Global Causal Discovery**
  Uncertainty in Artificial Intelligence (UAI) 2025
  Sujai Hiremath, Promit Ghosal, and **Kyra Gan**

- **Reward Maximization for Pure Exploration: Minimax Optimal Good Arm Identification for Nonparametric Multi-Armed Bandits**
  Artificial Intelligence and Statistics Conference (AISTATS) 2025
  Brian Cho, Dominik Meier, **Kyra Gan**♣, and Nathan Kallus

- **CSPI-MT: Calibrated Safe Policy Improvement with Multiple Testing for Threshold Policies**
  ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2025
  Brian Cho, Ana-Roxana Pop, **Kyra Gan**♣, Sam Corbett-Davies, Israel Nir, Ariel Evnine, and Nathan Kallus

- **Local Causal Discovery for Structural Evidence of Direct Discrimination**
  The AAAI Conference on Artificial Intelligence 2025
  Jacqueline Maasch, **Kyra Gan**♣, Violet Chen, Agni Orfanoudaki, Nil-Jana Akpinar, and Fei Wang

- **Hybrid Top-Down Global Causal Discovery with Local Search for Linear and Nonlinear Additive Noise Models**
  Conference on Neural Information Processing Systems (NeurIPS) 2024
  Sujai Hiremath, Jaqueline Maasch, Mengxiao Gao, Promit Ghosal, and **Kyra Gan**

- **Peeking with PEAK: Sequential, Nonparametric Composite Hypothesis Tests for Means of Multiple Data Streams**
  International Conference on Machine Learning (ICML) 2024
  Brian Cho, **Kyra Gan**♣, and Nathan Kallus

- **Local Causal Discovery by Partitioning: Polynomial-Time Causal Discovery around Exposure-Outcome Pairs**
  Uncertainty in Artificial Intelligence (UAI) 2024
  Jacqueline Maasch, Weishen Pan, Shantanu Gupta, Volodymyr Kuleshov, **Kyra Gan**♣, and Fei Wang
  A preliminary version appeared in the Causal Representation Learning Workshop (Neurips 2023)

- **Kernel Debiased Plug-in Estimation: Simultaneous, Automated Debiasing without Influence Functions for Many Target Parameters**
  International Conference on Machine Learning (ICML) 2024
  Finalist, 2023 INFORMS DMDA Workshop Best Paper Competition – Theoretical Track
  Brian Cho, Yaroslav Mukhin, **Kyra Gan**♦, and Ivana Malenica

- **Anytime-Valid Inference in N-of-1 Trials**
  Machine Learning for Health (ML4H) symposium 2023
  Ivana Malenica, Yongyi Guo, **Kyra Gan**, and Stefan Konigorski

- **Contextual Bandits with Budgeted Information Reveal.**
  Artificial Intelligence and Statistics Conference (AISTATS) 2024
  Kyra Gan, Esmaeil Keyvanshokooh, Xueqing Liu, and Susan A. Murphy

- **Greedy Approximation Algorithms for Active Sequential Hypothesis Testing.**
  Conference on Neural Information Processing Systems (NeurIPS) 2021
  Kyra Gan*, Su Jia*, and Andrew Li

- **Causal Inference with Selectively Deconfounded Data.**
  Artificial Intelligence and Statistics Conference (AISTATS) 2021
  Kyra Gan, Andrew Li, Zachary Lipton, and Sridhar Tayur

- **Data Visualization of Agent-Based Modeling of Virus Spread.**
  International Conference on Advanced Communications and Computation (INFOCOMP) 2017
  Jingyi Gan and Dominique Thiébaut.

- **Improving Treatment Responses through Limited Nudges: A Data-Driven Learning and Optimization Approach.**
  Esmaeil Keyvanshokooh, **Kyra Gan**, Yongyi Guo, Xueqing Liu, Anna L. Trella, and Susan A. Murphy

- **Toward a Liquid Biopsy: Greedy Approximation Algorithms for Active Sequential Hypothesis Testing.**
  2024. Forthcoming *Management Science*
  Winner, 2021 INFORMS Pierskalla Best Paper Award
  Kyra Gan*, Su Jia*, Andrew Li, and Sridhar Tayur

- **Awarding Additional MELD Points to the Shortest Waitlist Candidates Improves Sex Disparity in Access to Liver Transplant in the United States.**
  American Journal of Transplant 2022
  Sarah Bernards, Eric Lee, Ngai Leung, Mustafa Akan, Kyra Gan, Huan Zhao, Monika Sarkar, Sridhar Tayur, Neil Mehta

- **Machine Learning Algorithms for Predicting Hospital Readmissions in Sickle Cell Disease.**
  British Journal of Haematology 2020
  Arisha Patel*, **Kyra Gan***, Andrew A. Li, Jeremy Weiss, Seyed Mehdi Nouraie, Sridhar Tayur, and Enrico M Novelli.
  Extended abstract appeared in ASH Annual Conference 2019.

- **Causal Inference with Selectively Deconfounded Data.**
  Management Science 2nd round: major revision
  Kyra Gan, Andrew Li, Zachary Lipton, and Sridhar Tayur.

- **Optimizing Wearable Devices in Personalized Opioid Use Disorder Treatments Under Budget Constraints.**
  2021 CHOW Best Paper in the Category of Operations Research and Management Science
  Finalist, 2019 IBM Service Science Best Student Paper Award
  Kyra Gan, Yanhan (Savannah) Tang, Alan Scheller-Wolf, and Sridhar Tayur.

- 8th Rotman Annual Research Roundtable, *Local Causal Discovery for Structural Evidence of Direct Discrimination for Liver Transplant*, Toronto, May 23, 2025

- Cornell AI Seminar, *Efficient Local and Global Causal Discovery: Methods Leveraging Causal Substructures for Improved Finite Sample Performance*, Virtual, Feb 14, 2025

- Workshop on Individualized Decision Making, panelist on implementation challenges of individualized decisions, Berkeley, July 18-19, 2024

- Conference on Health, Inference, and Learning (CHIL), moderator, the panel on behavioral health and economics, New York, June 27-28, 2024

- Pre-Enar Workshop on Statistical Methods for Digital Health Technologies data, *Online Uniform Risk Times Sampling*, Baltimore, March 2024

- Learning on Graphs New York, *A Gentle Introduction to Causal Discovery and Local Discovery*, Jersey City, March 2024

- Information Theory and Applications Workshop, *Online Uniform Risk Times Sampling*, San Diego, Feb 2024

- Cornell Center for Applied Mathematics Colloquium, *Kernel Debiased Plug-in Estimation*, Ithaca, Feb 2024

- Workshop on Quantifying Uncertainty: Stochastic, Adversarial, and Beyond, Simons Institute for the Theory of Computing, *Greedy Approximation Algorithms for Active Sequential Hypothesis Testing*, September 2022

- Harvard Statistics Colloquium, *Greedy Approximation Algorithms for Active Sequential Hypothesis Testing*, October 2022

- IMSI workshop on Machine Learning and Artificial Intelligence for Personalized Medicine, *Contextual Bandits with Budgeted Information Reveal*, April 2023

TEACHING AT CORNELL TECH	• **ORIE 5217: Digital N-of-1 Trials and Their Applications**	Spring 2025
	• **ORIE 7790: Selected topics in Applied Statistics – Statistical and Optimization Methods for Decision-Making in Healthcare**	Spring 2024
	• **CS 5785/ORIE 5750/ECE 5414, Applied Machine Learning**	Fall 2023, 2024
TEACHING AT CMU	• **Mathematical Modeling for Consulting, Instructor**	Jan - May 2021

COMMUNITY SERVICE

- Co-chairing 2022 INFORMS Pierskalla Award Competition

- PhD student admission committee: 2023 ORIE, 2024 CAM

- Serving as a reviewer for Transactions on Machine Learning Research, Management Science, Manufacturing & Service Operations Management, Production and Operations Management, INFORMS Journal of Computing, International Conference of Machine Learning, Conference on Neural Information Processing Systems, European Journal of Operational Research, Statistical Methods in Medical Research