Hongseok Namkoong

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Employment

Assistant Professor, Decision, Risk, and Operations Division, Columbia Business School, 2020—Present

LinkedIn Scholar, Trust & Responsible AI, LinkedIn, 2022–Present

Research Scientist, Core Data Science, Facebook, 2019–2020

Research Assistant, Peter W. Glynn and John C. Duchi, Stanford University, 2014–2019

Education

Ph.D. Management Science and Engineering, Stanford University, 2019
Advisors: John C. Duchi and Peter W. Glynn

M.S. Statistics, Stanford University, 2017

B.S. Summa Cum Laude. Industrial Engineering and Mathematics, KAIST, 2013

Teaching

B8103: Business Analytics II (MBA, MS), Columbia University, 2021-2025

B9145: Reliable Statistical Learning (PhD), Columbia University, 2020, 2023, 2025

Papers under review

Second+ round

P1 E. Che and H. Namkoong. Adaptive experimentation at scale: A computational framework for flexible batches. *arXiv:2303.11582 [cs.LG]*, 2023. Major revision in Operations Research.

P2 T. Cai, H. Namkoong, and S. Yadlowsky. Diagnosing model performance under distribution shift. *arXiv:2303.02011 [stat.ML]*, 2023. Minor revision in Operations Research; Conference version appeared Symposium on Foundations of Responsible Computing 2023

P3 S. Jeong and H. Namkoong. Robust causal inference under covariate shift via worst-case subpopulation treatment effect. *arXiv:2007.02411 [stat.ML]*, 2022. Second round review in Management Science. Short version appeared in Conference on Learning Theory 2020.

P4 H. Namkoong, S. Daulton, and E. Bakshy. Distilled thompson sampling: Practical and efficient thompson sampling via imitation learning. *arXiv:2011.14266 [cs.LG]*, 2024. Major revision in Manufacturing & Service Operations Management. Selected for an oral presentation at the Neurips 2020 OfflineRL Workshop.

P5 J. Liu*, T. Wang*, P. Cui, and H. Namkoong. Rethinking distribution shifts: Empirical analysis and inductive modeling for tabular data. *arXiv:2307.05284 [cs.LG]*, 2024. Major revision in Management Science; Conference version appeared in NeurIPS 2023.

First round

P6 D. Mittal*, Y. Ma*, S. Joshi, and H. Namkoong. A planning framework for adaptive labeling. *arXiv:2502.06076 [cs.LG]*, 2025. Conference version appeared in NeurIPS 2024.

P7 E. Che, J. Dong, and H. Namkoong. Differentiable discrete event simulation for queuing network control. *arXiv:2409.03740 [cs.LG]*, 2024.

P8 T. Cai, H. Namkoong, D. Russo, and K. Zhang. Active exploration via autoregressive generation of missing data. *arXiv:2405.19466 [cs.LG]*, 2024. Selected for presentation at the Econometric Society Interdisciplinary Frontiers: Economics and AI+ML conference.

P9 E. Che, D. Jiang, H. Namkoong, and J. Wang. Optimization-driven adaptive experimentation. *arXiv:2408.04570 [cs.LG]*, 2024. Selected for oral presentations at the Econometric Society Interdisciplinary Frontiers: Economics and AI+ML conference and Conference on Digital Experimentation.

P10 N. Ye and H. Namkoong. Exchangeable sequence models quantify uncertainty over latent concepts. *arXiv:2408.03307 [stat.ML]*, 2024.

P11 T. Cai*, Y. Fonseca*, K. Hou, and H. Namkoong. Constrained learning for causal inference and semiparametric statistics. *arXiv:2405.09493 [stat.ML]*, 2024.

P12 J. Lee, H. Namkoong, and Y. Zeng. Design and scheduling of an AI-based queueing system. *arXiv:2406.06855 [math.OC]*, 2024.

P13 M. Li, H. Namkoong, and S. Xia. Evaluating model performance under worst-case subpopulations. *arXiv:2407.01316 [cs.LG]*, 2025. Short version appeared in NeurIPS 2021.

ML conferences

P14 J. Wang, T. Zollo, R. Zemel, and H. Namkoong. Adaptive elicitation of latent information using natural language. *arXiv:2504.04204 [cs.CL]*, 2025.

P15 T. Yen, A. W. T. Siah, H. Chen, T. Peng, D. Guetta, and H. Namkoong. Data mixture optimization: A multi-fidelity multi-scale bayesian framework. *arXiv:2503.21023 [cs.LG]*, 2025.

P16 A. Li, H. Chen, H. Namkoong, and T. Peng. Llm generated persona is a promise with a catch. *arXiv:2503.16527 [cs.CL]*, 2025.

P17 D. Mittal*, A. Li*, T.-C. Yen*, D. Guetta, and H. Namkoong. Architectural and inferential inductive biases for exchangeable sequence modeling. *arXiv:2503.01215 [cs.LG]*, 2025.

P18 K. Zhang, T. Cai, H. Namkoong, and D. Russo. Contextual thompson sampling via generation of missing data. *arXiv:2502.07064 [cs.LG]*, 2025.

P19 Y. Zeng*, J. Liu*, H. Lam, and H. Namkoong. LLM embeddings improve test-time adaptation to tabular $Y|X$-shifts. *arXiv:2410.07395 [cs.LG]*, 2024.

Working papers not yet submitted

P20 J. Wang, E. Che, D. Jiang, and H. Namkoong. AExGym: Benchmarks and environments for adaptive experimentation. *arXiv:2408.04531 [cs.LG]*, 2024.

P21 H. Namkoong, Y. Xu, and S. Zheng. Triply robust causal estimation for continuous treatments. *Working Paper*, 2025.

P22 D. Mittal, S. Zheng, J. Dong, and H. Namkoong. Data-driven stochastic modeling using autoregressive sequence models. *Working Paper*, 2025.

P23 Y. Ma and H. Namkoong. A practical minimax approach to causal inference with limited overlap. *Working Paper*, 2025. Conference version presented in CODE 2024.

P24 A. Boyarsky, N. Egami, and H. Namkoong. Sensitivity analysis for external validity. *Working Paper*, 2025. Conference version presented in ACIC 2024.

Publications

Journal publications

J1 H. Namkoong*, Y. Ma*, and P. W. Glynn. Minimax optimal estimation of stability under distribution shift. *Operations Research*, 2025.

J2 S. Yadlowsky, H. Namkoong, S. Basu, J. Duchi, and L. Tian. Bounds on the conditional and average treatment effect with unobserved confounding factors. *Annals of Statistics*, 50(5):2587–2615, 2022.

J3 J. C. Duchi, T. Hashimoto, and H. Namkoong. Distributionally robust losses against mixture covariate shifts. *Operations Research*, 2022.

J4 J. C. Duchi and H. Namkoong. Learning models with uniform performance via distributionally robust optimization. *Annals of Statistics*, 49(3):1378–1406, 2021.

J5 J. C. Duchi, P. W. Glynn, and H. Namkoong. Statistics of robust optimization: A generalized empirical likelihood approach. *Mathematics of Operations Research*, 46(3):946–969, 2021.

J6 J. C. Duchi and H. Namkoong. Variance-based regularization with convex objectives. *Journal of Machine Learning Research*, 2019.

Refereed conference proceedings[1]

C1 T. Zollo*, A. Siah*, N. Ye, A. Li, and H. Namkoong. PersonalLLM: Tailoring LLMs to individual preferences. In *Proceedings of the Thirteenth International Conference on Learning Representations*, 2024.

C2 B. Hsu, C. DiCiccio, N. Pillai, and H. Namkoong. From models to systems: A comprehensive fairness framework for compositional recommender systems. In *Proceedings of Machine Learning Research*, 2024.

C3 D. Mittal*, Y. Ma*, S. Joshi, and H. Namkoong. Adaptive labeling for efficient out-of-distribution model evaluation. In *Advances in Neural Information Processing Systems 37*, 2024.

C4 H. Chen, A. Li, E. Che, T. Peng, J. Dong, and H. Namkoong. QGym: Scalable simulation and benchmarking of queuing network controllers. In *Advances in Neural Information Processing Systems 37, Datasets and Benchmark Track*, 2024.

C5 J. Liu*, T. Wang*, P. Cui, and H. Namkoong. On the need for a language describing distribution shifts: Illustrations on tabular datasets. In *Advances in Neural Information Processing Systems 36*, 2023.

C6 A. Boyarsky, H. Namkoong, and J. Pouget-Abadie. Modeling interference via experiment rollout. In *Proceedings of the 24th ACM conference on Economics and Computation*, 2023.

C7 T. Cai, H. Namkoong, and S. Yadlowsky. Diagnosing model performance under distribution shift. In *Symposium on Foundations of Responsible Computing*, 2023.

[1]Papers displayed in gray are superseded by long versions.

C8 M. Wortsman, G. Ilharco, S. Y. Gadre, R. Roelofs, R. Gontijo-Lopes, A. S. Morcos, H. Namkoong, A. Farhadi, Y. Carmon, S. Kornblith, and L. Schmidt. Model soups: averaging weights of multiple fine-tuned models improves accuracy without increasing inference time. In *Proceedings of the 39th International Conference on Machine Learning*, 2022

C9 M. Wortsman, G. Ilharco, J. W. Kim, M. Li, S. Kornblith, R. Roelofs, R. Gontijo-Lopes, H. Hajishirzi, A. Farhadi, H. Namkoong, and L. Schmidt. Robust fine-tuning of zero-shot models. In *Proceedings of the 32nd IEEE Conference on Computer Vision and Pattern Recognition*, 2022. Selected for a full oral presentation

C10 M. Li, H. Namkoong, and S. Xia. Evaluating model performance under worst-case subpopulations. In *Advances in Neural Information Processing Systems 34*, 2021.

C11 H. Namkoong*, R. Keramati*, S. Yadlowsky*, and E. Brunskill. Off-policy policy evaluation for sequential decisions under unobserved confounding. In *Advances in Neural Information Processing Systems 33*, 2020.

C12 S. Jeong and H. Namkoong. Robust causal inference under covariate shift via worst-case subpopulation treatment effect. In *Conference on Learning Theory*, 2020.

C13 M. O'Kelly*, A. Sinha*, H. Namkoong*, J. Duchi, and R. Tedrake. Scalable end-to-end autonomous vehicle testing via rare-event simulation. In *Advances in Neural Information Processing Systems 31*, 2018.

C14 R. Volpi*, H. Namkoong*, J. Duchi, V. Murino, and S. Savarese. Generalizing to unseen domains via adversarial data augmentation. In *Advances in Neural Information Processing Systems 31*, 2018.

C15 T. Hashimoto, M. Srivastava, H. Namkoong, and P. Liang. Fairness without demographics in repeated loss minimization. In *International Conference on Machine Learning*, 2018. Best Paper Runner-up Award.

C16 A. Sinha*, H. Namkoong*, and J. Duchi. Certifiable distributional robustness with principled adversarial training. In *International Conference on Learning Representations*, 2018. Selected for a full oral presentation; 2% of submissions.

C17 H. Namkoong and J. C. Duchi. Variance regularization with convex objectives. In *Advances in Neural Information Processing Systems 30*, 2017. Best Paper Award.

C18 H. Namkoong, A. Sinha, S. Yadlowsky, and J. C. Duchi. Adaptive sampling probabilities for non-smooth optimization. In *International Conference on Machine Learning*, pages 2574–2583, 2017.

C19 H. Namkoong and J. C. Duchi. Stochastic gradient methods for distributionally robust optimization with f-divergences. In *Advances in Neural Information Processing Systems 29*, 2016.

Technical reports & software

T1 G. Ilharco, M. Wortsman, N. Carlini, R. Taori, A. Dave, V. Shankar, H. Namkoong, J. Miller, H. Hajishirzi, A. Farhadi, and L. Schmidt. Openclip: Open-sourced implementation of clip, Jul 2021. URL `https://doi.org/10.5281/zenodo.5143773`

T2 A. Sinha*, H. Namkoong*, R. Volpi, and J. Duchi. Certifying some distributional robustness with principled adversarial training. *Technical Report*, 2020.

T3 H. Namkoong, J. C. Duchi, and P. W. Glynn. Proofs for empirical likelihood with general f-divergences. *Technical Report*, 2018.

Honors & Awards

Interdisciplinary Seed Grant Program Competition Award, Columbia University, 2024

Amazon Research Award, 2022

Best Paper Finalist for "Robust fine-tuning of zero-shot models", *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022

Best Student Paper Award for "Statistics of Robust Optimization: A Generalized Empirical Likelihood Approach", *INFORMS Applied Probability Society*, 2018

Best Paper Runner Up Award for "Fairness Without Demographics in Repeated Loss Minimization", *International Conference on Machine Learning (ICML)*, 2018

Best Paper Award for "Variance Based Regularization with Convex Objectives", *Neural Information Processing Systems (NeurIPS)*, 2017

Samsung Fellowship, 2013–2018

Department Fellowship, Management Science and Engineering, Stanford, 2013–2018

KAIST President's Award (graduated top of class in the School of Engineering), 2013

Undergraduate Research Award, First Place, Department of Industrial and Systems Engineering, 2012

Professional Service

Senior Program Committee

2021-25	Area chair, NeurIPS
2023-25	Area chair, ICML

Reviewing

Journals *Operations Research*, *Management Science*, *Journal of the American Statistical Association*, *Journal of the Royal Statistical Society: Series B*, *Mathematical Programming*, *SIAM Journal on Mathematics of Data Science*, *Journal of Machine Learning Research*, *Transactions on Pattern Analysis and Machine Intelligence*, *Automatica*.

Conferences *Neural Information Processing Systems*, *International Conference on Machine Learning*, *Conference on Learning Theory*, *Conference on Algorithmic Learning Theory*, *MSOM Special Interest Group*

Workshop Organization

2025	Co-organizer, Columbia Catalyst Workshop, Data Science Institute
2024	Co-Organizer, four INFORMS invited sessions on AI-driven decision-making
2024	Co-organizer, ACIC Invited Session on "External Validity"
2023	Co-organizer, NeurIPS workshop on "Distribution shifts (DistShift)"
2023	Co-Organizer, three INFORMS invited sessions on experimentation
2023	Organizer, Digital Future Initiative workshop on "Challenges in Operationalizing Responsible AI"
2023	Organizer, INFORMS APS invited session "Frontiers in Sequential Learning"
2022	Co-organizer, NeurIPS workshop on "Distribution shifts: connecting methods and applications (DistShift)"
2022	Organizer, INFORMS invited session "Causality & Robustness"
2022	Co-organizer, INFORMS invited session "Experimentation Design"
2022	INFORMS HAS Pierskalla Award committee member

2022 Co-organizer, ICDM workshop on "Algorithms Towards Ethical and Privacy Challenges in Social Media Recommendation Systems (AESM)"

2021 Organizer, mentoring program for PhD students at the Neurips workshop on "Distribution shifts: connecting methods and applications (DistShift)"

2021 Co-organizer, NeurIPS workshop on "Distribution shifts: connecting methods and applications (DistShift)"

2021 Co-organizer, JSM invited session on "distributional robustness, validity, causality, and generalizability"

2019 Co-organizer, INFORMS invited session on "AI and machine learning"

Academic Committees

Member, Ph.D. Admissions Committee, Columbia University, 2020–current

Member, Faculty Hiring Committee, Columbia University, 2021-22, 2023-24

Member, Ph.D. Program Review Committee, Columbia University, 2021

External Service

NSF panel, 2024

Ad hoc reviewer, Methodology, Measurement, and Statistics Program, NSF, 2024

Research Supervision

Ph.D. Advising

Ari Boyarsky (DRO), Tiffany Cai (Statistics), Ethan Che (DRO, co-advised with Jing Dong), Yuanzhe Ma (IEOR, co-advised with Garud Iyengar and Jay Sethuraman), Daksh Mittal (DRO, co-advised with Jing Dong), Naimeng Ye (DRO), Isaac Scheinfeld (DRO, co-advised with Hannah Li)

Alumni Yibo Zeng (Ph.D., 2024, co-advised with Henry Lam, at Meta Virtual Reality Labs)

Student collaborators Sam Deng, Yuri Fonseca, Nicholas Galbraith, Yian Huang, Mike Li, Jiashuo Liu, Tianyu Wang, Shawn Xia, Yunbei Xu, Tom Zollo.

Postdocs

Yanlin Qu (co-advised with Assaf Zeevi).

Alumni Kelly Zhang (postdoc, 2023-24, co-advised with Dan Russo, Assistant Professor at Imperial College London)

Undergraduates and MS students

Current:
Tony Chen (CS), Elise Han (CS), Leon Li (CS), Andrew Siah (CS), Jimmy Wang (CS), Shunri Zheng (Statistics)

Ph.D. Thesis Committee

Samuel Deng (CS), Nicholas Galbraith (Statistics), Yuanling (Judy) Gan (DRO), Yian Huang (Statistics), Luofeng Liao (IEOR), Yookoon Park (CS), Sudeep Raja Putta (IEOR), Claudia Shi (CS), Shangzhou (Shawn) Xia (DRO), Yunbei Xu (DRO), Yibo Zeng (IEOR), Junzhe Zhang (CS)

Invited Talks

2025 Department of Industrial Engineering and Operations Research, University of California, Berkeley
2025 Operations and Logistics Division, University of British Columbia
2024 Domain Adaptation and Related Areas, Simons Institute
2024 Political Science Methods Workshop, UC Berkeley
2024 Central Applied Sciences, Meta
2024 TOPS Department Seminar, Stern School of Business, New York Unviersity
2024 INFORMS Annual Meetings
2024 Econometric Society Interdisciplinary Frontiers: Economics and AI+ML, Cornell
2024 Deployable RL Workshop Keynote, RL Conference, Amherst, MA
2024 International Symposium on Mathematical Programming, Montreal
2024 INFORMS Optimization Society Conference, Houston, TX
2024 Workshop on Optimal Transport: Theory to Applications, Humboldt University, Germany
2023 IMS International Conference on Statistics and Data Science, Lisbon, Portugal
2023 NeurIPS Tutorial "Modeling and Exploiting Data Heterogeneity under Distribution Shifts", New Orleans, LA
2023 Stochastic Networks and Applied Probability, and Performance Seminar
2023 Management Sciences and Information Systems, Rutgers Business School
2023 Invited Session, INFORMS Annual Meeting , Phoenix, AZ
2023 Department of Industrial Engineering and Management Science, Northwestern University
2023 Big Data and Machine Learning in Econometrics, Finance, and Statistics, University of Chicago
2023 IBM Watson, NY
2023 Joint Statistical Meetings, Toronto
2023 New England Statistics Symposium
2023 INFORMS Revenue Management & Pricing Conference, London, United Kingdom
2023 INFORMS Applied Probability Society Conference, Nancy, France
2023 Panelist, Showcase on Large Language Models, Columbia Center of AI Technology
2023 Department of Management Science and Engineering, Stanford University
2023 AI Matrix Seminar, UT San Antonio
2023 Moderator, Bernstein Center for Leadership and Ethics, Columbia Business School
2023 Operations Research Center, MIT
2022 Conference on Digital Experimentation, Cambridge
2022 INFORMS Annual Meeting, Indianapolis
2022 IFDS Workshop on Distributional Robustness in Data Science, University of Washington
2022 International Conference on Continuous Optimization (Bethlehem, PA)
2022 Department of Industrial & Systems Engineering and Computer Science, KAIST
2022 College of Business and AI, KAIST
2022 International Conference on Econometrics and Statistics, Kyoto
2022 Data Science Lab, MIT
2022 Department of Economics, Columbia University
2022 Workshop on Foundations of Stable, Generalizable and Transferable Statistical Learning, Mathematical Sciences Research Institute
2021 Department of Statistics, Columbia University
2021 LinkedIn

2021 Workshop on "distributional robustness, validity, causality, and generalizability", Joint Statistical Meetings
2021 Empirical Inference Department, Max Planck Institute for Intelligent Systems
2021 Department of Mathematics, KAIST
2021 School of Data Science, Seoul National University
2021 Data Science Institute, Columbia University
2021 Decision Science Group, McCombs School of Business, UT Austin
2020 Samsung Advanced Institute of Technology, Seoul
2020 Google Brain, Cambridge
2020 Cancelled due to COVID-19: Conference on Information Sciences and Systems, American Causal Inference Conference, SIAM Conference on Mathematics of Data Science
2019 Uber Marketplace and Uber Eats, San Francisco
2019 OIT Division, Graduate School of Business, Stanford University
2019 INFORMS Annual Meeting, Seattle
2019 Stitchfix, San Francisco
2019 Department of Computer Science, University of Wisconsin-Madison
2019 Department of Industrial and Systems Engineering, University of Wisconsin-Madison
2019 School of Operations Research and Industrial Engineering, Cornell Tech
2019 Machine Learning and Statistics Group, Microsoft Research New England
2019 Operations and Statistics Group, MIT Sloan School of Management
2019 Department of Operations Research and Industrial Engineering, UT Austin
2019 Machine Learning Department, Carnegie Mellon University
2019 Heinz College, Carnegie Mellon University
2019 Department of Industrial Engineering and Operations Research, Columbia University
2019 Decisions, Risk and Operations Division, Columbia Business School
2019 Department of Electrical and Computer Engineering, Purdue University
2019 Operations Management Division, Booth School of Business, University of Chicago
2019 Data Sciences and Operations, Marshall School of Business, University of Southern California
2018 Department of Industrial and Operations Engineering, University of Michigan
2018 Three invited talks, INFORMS Annual Meeting (Phoenix, AZ)
2018 Oral Presentation, International Conference on Learning Representations (Vancouver, Canada)
2017 Oral Presentation, Neural Information Processing Systems (Long Beach, CA)
2016 Department of Industrial and Systems Engineering, KAIST
2016 Young Researchers Workshop, School of ORIE, Cornell University

Outside Activities

Columbia Business School requires faculty members to disclose any activities that might present a real or apparent conflict of interest. I consult at LinkedIn, serving as a LinkedIn Scholar.