Asher Spector

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Biosketch and research interests

I am a fourth-year PhD student in statistics at Stanford University, where I study problems in high-dimensional statistics. I focus on developing methods that provide classical statistical guarantees to modern machine learning algorithms. My work is motivated by applications across many disciplines, including exploratory analysis of clinical trial data, genetic studies, economic applications, and more.

Education

Stanford University — Stanford, CA
Statistics, Ph.D. — September 2021 - June 2026 (expected)
Advisor: Emmanuel Candès

Harvard University — Cambridge, MA
Statistics and Mathematics, B.A, *summa cum laude*. — 2017-2021
Advisor: Lucas Janson

Select Honors

Citadel GQS PhD Fellowship	2024
National Science Foundation GRFP Fellowship	2021
Harvard Sophia Freund Prize[1]	2021
Harvard Department of Statistics Prize[2]	2021
Harvard Phi Beta Kappa, class marshal (one of four)	2020
Distinction in Teaching, Harvard University	2019, 2021
First place, North American Universities Debating Championships	2019

Academic papers

[5] A. Spector, R. F. Barber, T. Hastie, R. N. Kahn, E. Candés. The mosaic permutation test: an exact and nonparametric goodness-of-fit test for factor models. 2024. [arXiv] [python package] [replication]

[4] W. Ji⋆, L. Lei⋆, and A. Spector⋆. Model-Agnostic Covariate-Assisted Inference on Partially Identified Causal Effects. 2023. [arXiv] [python]

[3] A. Spector and W. Fithian. Asymptotically Optimal Knockoff Statistics via the Masked Likelihood Ratio. 2022. [arXiv] [python package]

[2] A. Spector and L. Janson. Controlled Discovery and Localization of Signals via Bayesian Linear Programming. *Journal of the American Statistical Association*, to appear, 2024+. [arXiv] [python package] [R package]

[1] A. Spector and L. Janson. Powerful Knockoffs via Minimizing Reconstructability. *Annals of Statistics*, 50(1):252-276, 2022. [arXiv] [python package]

⋆author order determined alphabetically.

Select talks

Invited talk: Mosaic permutation tests for fundamental factor models. *BlackRock Systematic, November 2024.*

[1] "Awarded annually to highest ranking undergraduate(s) as determined at the final degree meeting of the Faculty."
[2] "Awarded to the graduating senior who has the best overall performance and has contributed significantly to the department."

Topic-contributed session: Covariate-Assisted Inference on Partially Identified Causal Effects. *INFORMS, October 2024.*

Invited talk: Controlled Localization of Signals via Bayesian Linear Programming. *Basel Biometric Society, August 2024.*

Topic-contributed session: Covariate-Assisted Inference on Partially Identified Causal Effects. *Joint Statistical Meetings, August 2024.*

Oral presentation: Model-Agnostic Covariate-Assisted Inference on Partially Identified Causal Effects. *American Causal Inference Conference, May 2024.*

Parallel presentation: Model-Agnostic Covariate-Assisted Inference on Partially Identified Causal Effects. *Conference on Digital Experimentation at MIT, November 2023.*

Invited talk: Asymptotically Optimal Knockoff Statistics via the Masked Likelihood Ratio. *International Seminar on Selective Inference, February 2023.* [recording]

Invited talk: Powerful and efficient knockoffs with knockpy: new knockoffs and feature statistics. *12th International Conference on Multiple Comparison Procedures, August 2022.*

Recent advances in Model-X Methods. *Novartis, Advanced Data Science and Methodology*, July 2021.

Work experience

Novartis AG Remote
External Consultant, Novartis Development Analytics September 2022 - Present
Intern, Advanced Methodology and Data Science Group June 2021 - August 2021
I consult on the statistical methodology used by the Advanced Exploratory Analytics group, which does exploratory analysis of clinical trial and other data for Novartis. As an intern, I developed methods and software for such analyses, using recent advances in statistical machine learning, model-X inference, and multiple testing.

Facebook Menlo Park, CA (Remote)
Data Science Intern, Auction and Delivery Team May 2020 - August 2020
I developed methods to train Facebook's core advertising model using less private user data. This model, when trained on 500 terabytes of data, showed significant improvement over the baseline.

Bridgewater Associates Westport, CT
Investment Associate Intern June 2019 - August 2019
I completed a (confidential) project on the founder's personal research team.

Manhattan Institute for Public Policy Research New York, NY
General Research Intern June 2018 - August 2018
I wrote most of the code underlying the Manhattan Institute's report on housing policy in Texas.

Teaching

As a teaching assistant:

Stanford Teaching Assistant Award (Stanford)	2022,2023
Machine Learning Theory (Stanford Stat 214 / CS 229M)	Fall 2022 and 2023
Introduction to Statistical Inference (Stanford Stat 200)	Winter 2022 and 2023
Statistical Methods in Engineering and the Physical Sciences (Stanford Stat 110)	Fall 2021
Distinction in Teaching (Harvard)	2019, 2021
Introduction to Statistical Inference (Harvard Stat 111)	Spring 2019, 2020, and 2021

Miscellaneous:

Coach, Stanford Debate Society September 2021-present.

Since I began coaching, the Stanford debate team has doubled in size, won the US national championships, and produced the top individual speaker at the world championships, among many other accomplishments.