

William G. Underwood

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Employment

Postdoctoral Research Associate in Statistics <i>University of Cambridge</i>	Jul 2024 – Jul 2026
<ul style="list-style-type: none">• Advisor: Richard Samworth, Department of Pure Mathematics and Mathematical Statistics• Funding: European Research Council Advanced Grant 101019498• Consultant, Cambridge Statistics Clinic	
Lecturer and Supervisor in Statistics <i>University of Cambridge</i>	
<ul style="list-style-type: none">• Part III Essay on Score Matching and Diffusion Models, Lent 2026• Part III Statistical Learning in Practice, Lent 2026• Part II Probability & Measure, Michaelmas 2025• Part IB Statistics, Lent 2025• Part III Essay on Inference with Random Forests, Lent 2025• Part III Modern Statistical Methods, Lent 2025• Part III Topics in Statistical Theory, Lent 2025• Part III Concentration Inequalities, Lent 2025	

Assistant in Instruction <i>Princeton University</i>	Sep 2020 – May 2024
<ul style="list-style-type: none">• ORF 499: Senior Thesis, Spring 2024• ORF 498: Senior Independent Research Foundations, Fall 2023• SML 201: Introduction to Data Science, Fall 2023• ORF 363: Computing and Optimization, Spring 2023, Fall 2020• ORF 524: Statistical Theory and Methods, Fall 2022, Fall 2021• ORF 526: Probability Theory, Fall 2022• ORF 245: Fundamentals of Statistics, Spring 2021	

Education

PhD in Operations Research & Financial Engineering <i>Princeton University</i>	Sep 2019 – May 2024
<ul style="list-style-type: none">• Dissertation: Estimation and Inference in Modern Nonparametric Statistics• Advisor: Matias Cattaneo, Department of Operations Research & Financial Engineering	
MA in Operations Research & Financial Engineering <i>Princeton University</i>	
MMath in Mathematics & Statistics <i>University of Oxford</i>	

Research & publications

Articles

- Sharp anti-concentration inequalities for extremum statistics via copulas, with M. D. Cattaneo and R. P. Masini. *Bernoulli*, forthcoming, 2025. arXiv:2502.07699.
- Yurinskii's coupling for martingales, with M. D. Cattaneo and R. P. Masini. *Annals of Statistics* 53(5): 2179–2203, 2025. arXiv:2210.00362.
- Uniform inference for kernel density estimators with dyadic data, with M. D. Cattaneo and Y. Feng. *Journal of the American Statistical Association* 119(548): 2695–2708, 2024. arXiv:2201.05967.
- Motif-based spectral clustering of weighted directed networks, with A. Elliott and M. Cucuringu. *Applied Network Science* 5(62), 2020. arXiv:2004.01293.
- Simple Poisson PCA: an algorithm for (sparse) feature extraction with simultaneous dimension determination, with L. Smallman and A. Artemiou. *Computational Statistics* 35: 559–577, 2019.

Preprints

- Upgrading survival models with CARE, with H. W. J. Reeve, O. Y. Feng, S. A. Lambert, B. Mukherjee and R. J. Samworth. *Preprint*, 2025. arXiv:2506.23870.
- Inference with Mondrian random forests, with M. D. Cattaneo and J. M. Klusowski. *Submitted*, 2025. arXiv:2310.09702.

Working papers

- Higher-order Yurinskii coupling, with M. D. Cattaneo and R. P. Masini.
- Manifold testing with diffusion models, with S. Kotekal and R. J. Samworth.
- Optimal polyadic estimation.

Presentations & conferences

- International Conference on Statistics and Data Science, Seville, December 2025.
- GSEM Statistics Seminar, Université de Genève, November 2025.
- MRC Biostatistics Unit Armitage Workshop, University of Cambridge, October 2025.
- Economics Seminar, University of York, October 2025.
- MRC Biostatistics Unit Seminar, University of Cambridge, September 2025.
- StatMathAppli, Fréjus, September 2025.
- London Symposium on Information Theory, Cambridge, May 2025.
- International Conference on Statistics and Data Science, Nice, December 2024.
- Statistics Seminar, University of Pittsburgh, February 2024.
- Statistics Seminar, University of Illinois Urbana-Champaign, January 2024.
- Statistics Seminar, University of Michigan, January 2024.
- Eighth Princeton Day of Statistics, Princeton University, November 2023.
- PhD Poster Session, Two Sigma Investments, New York, July 2023.
- Statistical Foundations of Data Science and their Applications, Princeton University, May 2023.
- Research Symposium, Two Sigma Investments, New York, June 2022.
- Seventh Princeton Day of Statistics, Princeton University, October 2021.
- Statistics Laboratory, Princeton University, September 2021.

Software

- care-survival: upgrading survival models with CARE in Python, 2025.
GitHub: [wgunderwood/care-survival](https://github.com/wgunderwood/care-survival)
- tex-fmt: LaTeX formatter written in Rust, 2024. GitHub: [wgunderwood/tex-fmt](https://github.com/wgunderwood/tex-fmt)
- MondrianForests: Mondrian random forests in Julia, 2023.
GitHub: [wgunderwood/MondrianForests.jl](https://github.com/wgunderwood/MondrianForests.jl)
- DyadicKDE: dyadic kernel density estimation in Julia, 2022.
GitHub: [wgunderwood/DyadicKDE.jl](https://github.com/wgunderwood/DyadicKDE.jl)
- motifcluster: motif-based spectral clustering in R, Python and Julia, 2020.
GitHub: [wgunderwood/motifcluster](https://github.com/wgunderwood/motifcluster)

Awards & funding

- Early Career Researcher Grant, G-Research 2025
- School of Engineering and Applied Science Award for Excellence, Princeton University 2022
- Francis Robbins Upton Fellowship in Engineering, Princeton University 2019
- Royal Statistical Society Prize, Royal Statistical Society & University of Oxford 2019
- Gibbs Statistics Prize, University of Oxford 2019
- James Fund for Mathematics Research Grant, St John's College, University of Oxford 2017
- Casberd Scholarship, St John's College, University of Oxford 2016

Professional experience

Quantitative Research Intern <i>Two Sigma Investments</i>	Jun 2023 – Aug 2023
Machine Learning Consultant <i>Mercury Digital Assets</i>	Oct 2018 – Nov 2018
Educational Consultant <i>Polaris & Dawn</i>	Feb 2018 – Sep 2018
Premium Tutor <i>MyTutor</i>	Feb 2016 – Oct 2018
Statistics and Machine Learning Researcher <i>Cardiff University</i>	Aug 2017 – Sep 2017
Data Science Intern <i>Rolls-Royce</i>	Jun 2017 – Aug 2017

Service

Peer review

Annals of Statistics; Bernoulli; Econometric Theory; Information Theory, Probability and Statistical Learning; Journal of the American Statistical Association; Journal of Business & Economic Statistics; Journal of Causal Inference; Journal of Econometrics; Journal of Machine Learning Research; Journal of Nonparametric Statistics; Journal of the Royal Statistical Society, Series B; Journal of Statistical Computation and Simulation; Operations Research; SIAM Journal on Mathematics of Data Science; Statistical Science.

References

- Richard Samworth, Professor, Statistical Laboratory, University of Cambridge
- Matias Cattaneo, Professor, ORFE, Princeton University
- Jianqing Fan, Professor, ORFE, Princeton University