

# William G Underwood

Centre for Mathematical Sciences, Wilberforce Road, Cambridge, CB3 0WB, UK

wgu21@cam.ac.uk

wgunderwood.github.io

## Employment

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### Postdoctoral Research Associate in Statistics

Jul 2024 – Jul 2026

*University of Cambridge*

- Advisor: Richard Samworth, Department of Pure Mathematics and Mathematical Statistics
- Funding: European Research Council Advanced Grant 101019498

### Assistant in Instruction

Sep 2020 – May 2024

*Princeton University*

- 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

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### PhD in Operations Research & Financial Engineering

Sep 2019 – May 2024

*Princeton University*

- Dissertation: Estimation and Inference in Modern Nonparametric Statistics
- Advisor: Matias Cattaneo, Department of Operations Research & Financial Engineering

### MA in Operations Research & Financial Engineering

Sep 2019 – Sep 2021

*Princeton University*

### MMath in Mathematics & Statistics

Oct 2015 – Jun 2019

*University of Oxford*

- Dissertation: Motif-Based Spectral Clustering of Weighted Directed Networks
- Supervisor: Mihai Cucuringu, Department of Statistics

## Research & publications

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### Articles

- Uniform inference for kernel density estimators with dyadic data, with M D Cattaneo and Y Feng. *Journal of the American Statistical Association*, forthcoming, 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

- Inference with Mondrian random forests, with M D Cattaneo and J M Klusowski, 2023. [arXiv:2310.09702](#).
- Yurinskii's coupling for martingales, with M D Cattaneo and R P Masini. *Annals of Statistics*, reject and resubmit, 2023. [arXiv:2210.00362](#).

## Works in progress

- Higher-order extensions to the Lindeberg method, with M D Cattaneo and R P Masini.
- Adaptive Mondrian random forests, with M D Cattaneo, R Chandak and J M Klusowski.

## Presentations

- Statistics Seminar, University of Pittsburgh, February 2024
- Statistics Seminar, University of Illinois, January 2024
- Statistics Seminar, University of Michigan, January 2024
- PhD Poster Session, Two Sigma Investments, July 2023
- Research Symposium, Two Sigma Investments, June 2022
- Statistics Laboratory, Princeton University, September 2021

## Software

- MondrianForests: Mondrian random forests in Julia, 2023.  
GitHub: [wgunderwood/MondrianForests.jl](#)
- DyadicKDE: dyadic kernel density estimation in Julia, 2022.  
GitHub: [wgunderwood/DyadicKDE.jl](#)
- motifcluster: motif-based spectral clustering in R, Python and Julia, 2020.  
GitHub: [wgunderwood/motifcluster](#)

## Awards & funding

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| • 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

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

## Peer review

*Econometric Theory, Journal of the American Statistical Association, Journal of Business & Economic Statistics, Journal of Causal Inference, Journal of Econometrics, Operations Research.*

## References

- Matias Cattaneo, Professor, ORFE, Princeton University
- Jason Klusowski, Assistant Professor, ORFE, Princeton University
- Jianqing Fan, Professor, ORFE, Princeton University
- Ricardo Masini, Assistant Professor, Statistics, University of California, Davis