WILLIAM G. UNDERWOOD

ORFE Department, Princeton University, Sherrerd Hall, Charlton Street, Princeton, NJ 08544, USA
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EDUCATION

PhD, Operations Research & Financial Engineering (ORFE) **Sep 2019 –**
Princeton University

- Advisor: Matias Cattaneo, ORFE Department.
- Research interests: statistical methodology, data science and mathematical statistics, with a focus on modern methodology for statistical inference, nonparametric estimation and random forest procedures.

MA, Operations Research & Financial Engineering (ORFE) **Sep 2019 – Sep 2021**
Princeton University

MMath, Mathematics & Statistics **Oct 2015 – Jun 2019**
University of Oxford

- Dissertation: Motif-Based Spectral Clustering of Weighted Directed Networks.
- Supervisor: Mihai Cucuringu, Department of Statistics.
- Graduated with first-class honors and ranked top of the class.

PUBLICATIONS

Articles

- W. G. Underwood, A. Elliott, and M. Cucuringu. Motif-based spectral clustering of weighted directed networks. *Applied Network Science*, 5(62), September 2020. doi:10.1007/s41109-020-00293-z.
- L. Smallman, W. G. Underwood, and A. Artemiou. Simple Poisson PCA: an algorithm for (sparse) feature extraction with simultaneous dimension determination. *Computational Statistics*, 35:559–577, June 2019. doi:10.1007/s00180-019-00903-0.

Preprints

- M. D. Cattaneo, R. P. Masini, and W. G. Underwood. Yurinskii's coupling for martingales. arXiv:2210.00362, October 2022. Annals of Statistics, reject and resubmit.
- M. D. Cattaneo, Y. Feng, and W. G. Underwood. Uniform inference for kernel density estimators with dyadic data. arXiv:2201.05967, January 2022. Journal of the American Statistical Association, revise and resubmit.

Working papers

- M. D. Cattaneo, J. M. Klusowski, and W. G. Underwood. Inference with Mondrian random forests. *Working paper*, 2023.

Presentations

- M. D. Cattaneo, Y. Feng, and W. G. Underwood. Uniform inference for kernel density estimators with dyadic data, June 2022. Two Sigma PhD Research Symposium.
- M. D. Cattaneo, Y. Feng, and W. G. Underwood. Uniform approximation and inference with dyadic kernel density estimation, September 2021. Princeton Statistics Laboratory, Princeton University.
- W. G. Underwood and M. Cucuringu. Motif-based spectral clustering of weighted directed networks, December 2019. The 8th International Conference on Complex Networks and their Applications. Presented by M. C. Extended abstract available at 2019.complexnetworks.org.

Software

- W. G. Underwood. DyadicKDE: dyadic kernel density estimation in Julia, January 2022. GitHub: `https://github.com/WGUNDERWOOD/DyadicKDE.jl`.
- W. G. Underwood and A. Elliott. motifcluster: motif-based spectral clustering of weighted directed networks in R, Python and Julia, May 2020. GitHub: `https://github.com/WGUNDERWOOD/motifcluster`.

AWARDS & FUNDING

- 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 for outstanding academic achievement, University of Oxford 2019
- Research grant, James Fund for Mathematics, St John's College, University of Oxford 2017
- Casberd Scholarship for performance in exams, St John's College, University of Oxford 2016

EMPLOYMENT

Assistant in Instruction, Princeton University **Sep 2020 –**

- ORF 498: Senior Independent Research Foundations, Fall 2023
- SML 201: Introduction to Data Science, Fall 2023
- ORF 363: Computing and Optimization, Spring 2023
- ORF 524: Statistical Theory and Methods, Fall 2022
- ORF 526: Probability Theory, Fall 2022
- ORF 524: Statistical Theory and Methods, Fall 2021
- ORF 245: Fundamentals of Statistics, Spring 2021
- ORF 363: Computing and Optimization, Fall 2020

Quantitative Research Intern, Two Sigma Investments **Jun 2023 – Aug 2023**

Machine Learning Consultant, Mercury Digital Assets **Oct 2018 – Nov 2018**

Educational Consultant, Polaris & Dawn **Feb 2018 – Sep 2018**

Premium Tutor, MyTutor **Feb 2016 – Oct 2018**

Statistics and Machine Learning Research Intern **Aug 2017 – Sep 2017**

Data Science Intern, Rolls-Royce **Jun 2017 – Aug 2017**

PEER REVIEW

Journal of the American Statistical Association, Econometric Theory, Journal of Business and Economic Statistics.

TECHNOLOGIES

Python, R, Julia, Latex, Git, Rust, Bash, Unix, Matlab, HTML, CSS.

REFERENCES

- Matias D. Cattaneo, Professor, ORFE, Princeton University
- Jason M. Klusowski Assistant Professor, ORFE, Princeton University
- Jianqing Fan, Professor, ORFE, Princeton University