

WILLIAM G. UNDERWOOD

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EDUCATION

PhD, Operations Research & Financial Engineering (ORFE)
Princeton University

Sep 2019 –

- 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)
Princeton University

Sep 2019 – Sep 2021

MMath, Mathematics & Statistics
University of Oxford

Oct 2015 – Jun 2019

- 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

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