WILLIAM G. UNDERWOOD

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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.

RESEARCH AND PUBLICATIONS

Articles

- Motif-based spectral clustering of weighted directed networks, with A. Elliott and M. Cucuringu. *Applied Network Science*, 5(62), September 2020. doi:10.1007/s41109-020-00293-z
- 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. doi:10.1007/s00180-019-00903-0

Preprints

- Yurinskii's coupling for martingales, with M. D. Cattaneo and R. P. Masini, *Annals of Statistics*, reject and resubmit, 2023. 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*, revise and resubmit, 2023. arXiv:2201.05967

Works in progress

- Inference with Mondrian random forests, with M. D. Cattaneo and J. M. Klusowski.
- 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

- Two Sigma PhD Symposium, June 2022
- Princeton Statistics Laboratory, Princeton University, September 2021

Software

- DyadicKDE: dyadic kernel density estimation in Julia, 2022. GitHub: WGUNDERWOOD/DyadicKDE.jl
- motifcluster: motif-based spectral clustering of weighted directed networks in R, Python and Julia, 2020. GitHub: 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

PROFESSIONAL EXPERIENCE

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

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

REFERENCES

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