Ian Waudby-Smith

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Academic positions

University of California, Berkeley — **Berkeley, CA**
Miller Postdoctoral Fellow in Statistics — *2024–present*
Host: Michael I. Jordan

Education

Carnegie Mellon University — **Pittsburgh, PA**
PhD, Statistics — *2019–24*
Advisor: Aaditya Ramdas
Umesh K. Gavaskar Best Dissertation Award

University of Waterloo — **Waterloo, ON**
BMath, Pure Mathematics & Statistics — *2013–18*
5-year co-op program
Dean's Honours List

Papers

Johannes Ruf[αβ] and **Ian Waudby-Smith**[αβ]. Concentration inequalities for strong laws and laws of the iterated logarithm.

Ian Waudby-Smith, Ricardo Sandoval, and Michael I. Jordan. Universal log-optimality for general classes of e-processes and sequential hypothesis tests. *arXiv preprint*, 2025+.

Ian Waudby-Smith, Martin Larsson, and Aaditya Ramdas. Nonasymptotic and distribution-uniform Komlós-Major-Tusnády approximation. *arXiv preprint*, 2025+.

Ian Waudby-Smith, Martin Larsson, and Aaditya Ramdas. Distribution-uniform strong laws of large numbers. *arXiv preprint*, 2024+.

Ian Waudby-Smith, Edward H Kennedy, and Aaditya Ramdas. Distribution-uniform anytime-valid sequential inference. *arXiv preprint*, 2023+.

Ian Waudby-Smith, David Arbour, Ritwik Sinha, Edward H Kennedy, and Aaditya Ramdas. Time-uniform central limit theory and asymptotic confidence sequences. *The Annals of Statistics*, 52(6):2613–2640, 2024.

Ian Waudby-Smith, Lili Wu, Aaditya Ramdas, Nikos Karampatziakis, and Paul Mineiro. Anytime-valid off-policy inference for contextual bandits. *ACM/JMS Journal of Data Science*, 1(3):1–42, 2024.

Ian Waudby-Smith and Aaditya Ramdas. Estimating means of bounded random variables by betting. *Journal of the Royal Statistical Society Series B: Statistical Methodology* (***Discussion paper***), 86(1):1–27, 2024.

Ian Waudby-Smith, Zhiwei Steven Wu, and Aaditya Ramdas. Extensions of randomized response for private confidence sets. *International Conference on Machine Learning* (***Oral presentation***), 2023.

Akash V. Maharaj, Ritwik Sinha, David Arbour, **Ian Waudby-Smith**, Simon Z. Liu, Moumita Sinha, Raghavendra Addanki, Aaditya Ramdas, Manas Garg, and Viswanathan Swaminathan. Anytime-valid confidence sequences in an enterprise A/B testing platform. *The ACM World Wide Web Conference*, 2024.

Ian Waudby-Smith, Philip B Stark, and Aaditya Ramdas. RiLACS: Risk limiting audits via confidence sequences. In *International Joint Conference on Electronic Voting* (***Best paper award***), pages 124–139. Springer, 2021.

Ian Waudby-Smith and Aaditya Ramdas. Confidence sequences for sampling without replacement. *Advances in Neural Information Processing Systems* (***Spotlight***), 33:20204–20214, 2020.

Ian Waudby-Smith, A Simon Pickard, Feng Xie, and Eleanor M Pullenayegum. Using both time tradeoff and discrete choice experiments in valuing the EQ-5D: Impact of model misspecification on value sets. *Medical Decision Making*, 2020.

Ian Waudby-Smith, Nam Tran, Joel A Dubin, and Joon Lee. Sentiment in nursing notes as an indicator of out-of-hospital mortality in intensive care patients. *PloS one*, 13(6), 2018.

[α,β] Alphabetical ordering.

Teaching Experience

Carnegie Mellon University — **Pittsburgh, PA**
Graduate Teaching Assistant — *2019–22*
- 36-708: Statistical Methods in Machine Learning (x2)
- 36-462: Data Mining
- 36-401: Modern Regression
- 36-731: Foundations of Causal Inference
- 36-732: Modern Causal Inference
- 10-880: Game-theoretic Probability, Statistics, and Learning

Other experience

Google Research — **New York, NY**
Student Researcher — *Jun–Aug 2023*
Mentors: Jean Pouget-Abadie & Jennifer Brennan

Microsoft Research — **New York, NY & Redmond, WA**
Research Intern — *May–Aug 2022*
Mentor: Paul Mineiro
- Anytime-valid off-policy inference for contextual bandits — link to paper.

Adobe Research — **San Jose, CA**
Research Intern — *Jun–Aug 2020*
Mentors: David Arbour & Ritwik Sinha
- Asymptotic confidence sequences and anytime-valid causal inference — link to paper.

The Hospital for Sick Children (SickKids) — **Toronto, ON**
Research Student — *Apr–Aug 2019*
Mentor: Eleanor Pullenayegum
- Understanding model misspecification in quality-of-life surveys — link to paper.

Health Data Science Lab, University of Waterloo — **Waterloo, ON**
Research Assistant — *2016–18*
Mentors: Joel Dubin & Joon Lee
- Sentiment analysis and mortality in intensive care patients — link to paper.

Department of Statistics, University of Waterloo — **Waterloo, ON**
Research Assistant — *Apr–Aug 2017*
Mentor: Pengfei Li
- Robust statistical tests for zero-inflated data — link to R package.

Department of Pure Mathematics, University of Waterloo — **Waterloo, ON**
Research Assistant — *Jan - Apr 2017*
Mentor: Yu-Ru Liu
- Sieve methods in analytic number theory.

Cancer Care Ontario — **Toronto, ON**
Student Analyst — *Jan–Apr 2016*
Mentor: Zhihui (Amy) Liu
- Multi-state models for forecasting chronic kidney disease progression.

Service

Thesis committee member: Tyron Lardy (PhD, Leiden University).

Reviewer: The Annals of Statistics, Journal of the Royal Statistical Society (Series B), Bernoulli, Biometrika, The Electronic Journal of Statistics, The Journal of the American Statistical Association, STOC, Information and Inference,

The New England Journal of Data Science, Sankhya A.

University of California, Berkeley **Berkeley, CA**
Volunteer
- Miller symposium organizing committee

Carnegie Mellon University **Pittsburgh, PA**
Volunteer
- Organizer of the Statistical Machine Learning Reading Group (SMLRG)
- Women in Data Science (WiDS) conference volunteer
- Computing committee student representative
- Incoming PhD student mentor

Awards

Miller Institute for Basic Research in Science **Berkeley, CA**
Miller fellowship *2024–'27*

Carnegie Mellon University Department of Statistics and Data Science **Pittsburgh, PA**
Umesh K. Gavaskar Best Dissertation Award *2024*

Statistical Society of Canada **St. John's, NL**
Probability Section Student Research Presentation Award *2024*

Amazon Science **Pittsburgh, PA**
Graduate Research Fellowship *2023*

University of Waterloo **Waterloo, ON**
Waterloo Statistics Student Conference Presentation Award *2022*

Carnegie Mellon University Department of Statistics and Data Science **Pittsburgh, PA**
Teaching Assistant of the Year *2021*

Adobe Research **Pittsburgh, PA**
PhD Research Gift *2020*

University of Waterloo **Waterloo, ON**
David Johnston International Experience Award *2018*

The Natural Sciences and Engineering Research Council of Canada **Waterloo, ON**
NSERC Undergraduate Student Research Award *2017*

University of Waterloo **Waterloo, ON**
President's Research Award *2016–17*

University of Waterloo **Waterloo, ON**
University of Waterloo President's Scholarship of Distinction *2014*

Presentations

National University of Singapore Young Mathematical Scientists Forum **Singapore**
Log-optimality of e-processes and sequential tests *2025*

Berkeley Biostatistics Seminar **Berkeley, CA**
Anytime-valid off-policy inference for contextual bandits *2025*

Stanford Data Driven Seminar **Stanford, CA**
Log-optimality of e-processes and sequential tests *2025*

MBZUAI-Berkeley Workshop **Abu Dhabi, UAE**
Anytime-valid off-policy inference for contextual bandits *2025*

MBZUAI — **Abu Dhabi, UAE**
A brief introduction to game-theoretic, safe, anytime-valid inference — *2025*
Mini course consisting of 4 lectures

Inria/Sierra Seminar — **Paris, France**
Anytime-valid inference and uniform central limit theory — *2025*

Stanford Statistics Seminar — **Stanford, CA**
Anytime-valid inference and uniform central limit theory — *2025*

International Seminar on Selective Inference — **Virtual**
$\mathcal{P}$-uniform anytime-valid inference and conditional independence testing without Model-X — *2024*

CLIMB Workshop — **Berkeley, CA**
Election audits via anytime-valid inference — *2024*

ERC OCEAN retreat — **Venice, Italy**
A brief introduction to game-theoretic, safe, anytime-valid inference — *2024*
Mini course consisting of 3 lectures

Statistical Society of Canada meeting — **St. John's, NL**
Distribution-uniform strong laws of large numbers — *2024*
Recipient of the Probability Section's Student Presentation Award

Workshop on Game-Theoretic Statistical Inference — **Oberwolfach, Germany**
$\mathcal{P}$-uniform anytime-valid inference and conditional independence testing without Model-X — *2024*

Fienberg Student Research Workshop at Carnegie Mellon University — **Pittsburgh, PA**
Election audits via anytime-valid inference — *2024*

International Conference on Statistics and Data Science (ICSDS) — **Lisbon, Portugal**
Distribution-uniform anytime-valid inference — *2023*

Joint Statistical Meetings (JSM) — **Toronto, ON**
Anytime-valid off-policy inference for contextual bandits — *2023*

International Conference on Machine Learning (ICML) — **Honolulu, HI**
Extensions of randomized response for private confidence sets — *2023*

Centrum Wiskunde & Informatica — **Amsterdam, Netherlands**
Anytime-valid off-policy inference for contextual bandits — *2023*

University of Copenhagen Statistics Seminar — **Copenhagen, Denmark**
Anytime-valid off-policy inference for contextual bandits — *2023*

Copenhagen Causality Lab, University of Copenhagen — **Virtual**
Asymptotic confidence sequences for anytime-valid causal inference — *2023*

Conference on Digital Experimentation (CODE@MIT) — **Cambridge, MA**
Asymptotic confidence sequences for anytime-valid causal inference — *2022*

Microsoft Research Reinforcement Learning Discussion Group — **Virtual**
Anytime-valid contextual bandit inference — *2022*

California Institute of Technology — **Virtual**
A brief introduction to safe, anytime-valid inference (SAVI) — *2022*

Waterloo Student Conference in Statistics, Actuarial Science, and Finance — **Waterloo, ON**
Estimating means of bounded random variables by betting — *2022*

Microsoft Research — **Virtual**
A brief introduction to safe, anytime-valid inference (SAVI) — *2022*

TPDP: Theory and Practice of Differential Privacy Workshop — **Baltimore, MD**
Locally private nonparametric confidence intervals and sequences — *2022*

Safe, Anytime-Valid Inference (SAVI) Workshop **Eindhoven, Netherlands**
Time-uniform central limit theory and anytime-valid causal inference *2022*

Statistical Society of Canada (SSC) Annual Meeting **Virtual**
Time-uniform central limit theory and anytime-valid causal inference *2022*

ASA, Pittsburgh Chapter Spring Banquet **Pittsburgh, PA**
Time-uniform central limit theory and anytime-valid causal inference *2022*

Carnegie Mellon University Computer Science Theory Lunch **Pittsburgh, PA**
Estimating means of bounded random variables by betting *2021*

International Seminar on Distribution-Free Statistics **Virtual**
Estimating means of bounded random variables by betting *2021*

E-Vote-ID: The International Conference for Electronic Voting **Virtual**
RiLACS: Risk-limiting audits via confidence sequences *2021*

NeurIPS Workshop on Causal Inference Challenges in Sequential Decision Making **Virtual**
Time-uniform central limit theory and anytime-valid causal inference *2021*

Spotify Experimentation Platform Team **Virtual**
Doubly robust confidence sequences for sequential causal inference *2021*

Joint Statistical Meetings (JSM) **Virtual**
Doubly robust confidence sequences for sequential causal inference *2021*

Vinted Science and Analytics Meetup **Virtual**
Doubly robust confidence sequences for sequential causal inference *2021*

Joint Statistical Meetings (JSM) **Virtual**
Confidence sequences for sampling without replacement *2020*

Statistical Society of Canada (SSC) Annual Meeting **St. Catherines, ON**
Multi-state models for chronic kidney disease prevalence projections in Ontario *2016*