

Ian Waudby-Smith

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Academic positions

University of California, Berkeley
Miller Postdoctoral Fellow in Statistics
Host: Michael I. Jordan

Berkeley, CA
2024–present

Education

Carnegie Mellon University
PhD, Statistics
Advisor: Aaditya Ramdas
Umesh K. Gavaskar Best Dissertation Award

Pittsburgh, PA
2019–24

University of Waterloo
BMath, Pure Mathematics & Statistics
5-year co-op program
Dean's Honours List

Waterloo, ON
2013–18

Papers

Johannes Ruf^α and **Ian Waudby-Smith**^α. 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.

^aAlphabetical ordering.

Teaching Experience

Carnegie Mellon University

Graduate Teaching Assistant

Pittsburgh, PA

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

Student Researcher

New York, NY

Jun–Aug 2023

Mentors: Jean Pouget-Abadie & Jennifer Brennan

Microsoft Research

Research Intern

New York, NY & Redmond, WA

May–Aug 2022

Mentor: Paul Mineiro

- Anytime-valid off-policy inference for contextual bandits — [link to paper](#).

Adobe Research

Research Intern

San Jose, CA

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)

Research Student

Toronto, ON

Apr–Aug 2019

Mentor: Eleanor Pullenayegum

- Understanding model misspecification in quality-of-life surveys — [link to paper](#).

Health Data Science Lab, University of Waterloo

Research Assistant

Waterloo, ON

2016–18

Mentors: Joel Dubin & Joon Lee

- Sentiment analysis and mortality in intensive care patients — [link to paper](#).

Department of Statistics, University of Waterloo

Research Assistant

Waterloo, ON

Apr–Aug 2017

Mentor: Pengfei Li

- Robust statistical tests for zero-inflated data — [link to R package](#).

Department of Pure Mathematics, University of Waterloo

Research Assistant

Waterloo, ON

Jan - Apr 2017

Mentor: Yu-Ru Liu

- Sieve methods in analytic number theory.

Cancer Care Ontario

Student Analyst

Toronto, ON

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

Volunteer

- Miller symposium organizing committee

Berkeley, CA

Carnegie Mellon University

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

Pittsburgh, PA

Awards

Miller Institute for Basic Research in Science

Miller fellowship

Berkeley, CA

2024–'27

Carnegie Mellon University Department of Statistics and Data Science

Umesh K. Gavaskar Best Dissertation Award

Pittsburgh, PA

2024

Statistical Society of Canada

Probability Section Student Research Presentation Award

St. John's, NL

2024

Amazon Science

Graduate Research Fellowship

Pittsburgh, PA

2023

University of Waterloo

Waterloo Statistics Student Conference Presentation Award

Waterloo, ON

2022

Carnegie Mellon University Department of Statistics and Data Science

Teaching Assistant of the Year

Pittsburgh, PA

2021

Adobe Research

PhD Research Gift

Pittsburgh, PA

2020

University of Waterloo

David Johnston International Experience Award

Waterloo, ON

2018

The Natural Sciences and Engineering Research Council of Canada

NSERC Undergraduate Student Research Award

Waterloo, ON

2017

University of Waterloo

President's Research Award

Waterloo, ON

2016–17

University of Waterloo

University of Waterloo President's Scholarship of Distinction

Waterloo, ON

2014

Presentations

National University of Singapore Young Mathematical Scientists Forum

Log-optimality of e-processes and sequential tests

Singapore

2025

Berkeley Biostatistics Seminar

Anytime-valid off-policy inference for contextual bandits

Berkeley, CA

2025

Stanford Data Driven Seminar

Log-optimality of e-processes and sequential tests

Stanford, CA

2025

MBZUAI-Berkeley Workshop

Anytime-valid off-policy inference for contextual bandits

Abu Dhabi, UAE

2025

MBZUAI A brief introduction to game-theoretic, safe, anytime-valid inference Mini course consisting of 4 lectures	Abu Dhabi, UAE 2025
Inria/Sierra Seminar <i>Anytime-valid inference and uniform central limit theory</i>	Paris, France 2025
Stanford Statistics Seminar <i>Anytime-valid inference and uniform central limit theory</i>	Stanford, CA 2025
International Seminar on Selective Inference <i>P-uniform anytime-valid inference and conditional independence testing without Model-X</i>	Virtual 2024
CLIMB Workshop <i>Election audits via anytime-valid inference</i>	Berkeley, CA 2024
ERC OCEAN retreat A brief introduction to game-theoretic, safe, anytime-valid inference Mini course consisting of 3 lectures	Venice, Italy 2024
Statistical Society of Canada meeting <i>Distribution-uniform strong laws of large numbers</i> Recipient of the Probability Section's Student Presentation Award	St. John's, NL 2024
Workshop on Game-Theoretic Statistical Inference <i>P-uniform anytime-valid inference and conditional independence testing without Model-X</i>	Oberwolfach, Germany 2024
Fienberg Student Research Workshop at Carnegie Mellon University <i>Election audits via anytime-valid inference</i>	Pittsburgh, PA 2024
International Conference on Statistics and Data Science (ICSDS) <i>Distribution-uniform anytime-valid inference</i>	Lisbon, Portugal 2023
Joint Statistical Meetings (JSM) <i>Anytime-valid off-policy inference for contextual bandits</i>	Toronto, ON 2023
International Conference on Machine Learning (ICML) <i>Extensions of randomized response for private confidence sets</i>	Honolulu, HI 2023
Centrum Wiskunde & Informatica <i>Anytime-valid off-policy inference for contextual bandits</i>	Amsterdam, Netherlands 2023
University of Copenhagen Statistics Seminar <i>Anytime-valid off-policy inference for contextual bandits</i>	Copenhagen, Denmark 2023
Copenhagen Causality Lab, University of Copenhagen <i>Asymptotic confidence sequences for anytime-valid causal inference</i>	Virtual 2023
Conference on Digital Experimentation (CODE@MIT) <i>Asymptotic confidence sequences for anytime-valid causal inference</i>	Cambridge, MA 2022
Microsoft Research Reinforcement Learning Discussion Group <i>Anytime-valid contextual bandit inference</i>	Virtual 2022
California Institute of Technology A brief introduction to safe, anytime-valid inference (SAVI)	Virtual 2022
Waterloo Student Conference in Statistics, Actuarial Science, and Finance <i>Estimating means of bounded random variables by betting</i>	Waterloo, ON 2022
Microsoft Research A brief introduction to safe, anytime-valid inference (SAVI)	Virtual 2022
TPDP: Theory and Practice of Differential Privacy Workshop <i>Locally private nonparametric confidence intervals and sequences</i>	Baltimore, MD 2022

Safe, Anytime-Valid Inference (SAVI) Workshop <i>Time-uniform central limit theory and anytime-valid causal inference</i>	Eindhoven, Netherlands 2022
Statistical Society of Canada (SSC) Annual Meeting <i>Time-uniform central limit theory and anytime-valid causal inference</i>	Virtual 2022
ASA, Pittsburgh Chapter Spring Banquet <i>Time-uniform central limit theory and anytime-valid causal inference</i>	Pittsburgh, PA 2022
Carnegie Mellon University Computer Science Theory Lunch <i>Estimating means of bounded random variables by betting</i>	Pittsburgh, PA 2021
International Seminar on Distribution-Free Statistics <i>Estimating means of bounded random variables by betting</i>	Virtual 2021
E-Vote-ID: The International Conference for Electronic Voting <i>RiLACS: Risk-limiting audits via confidence sequences</i>	Virtual 2021
NeurIPS Workshop on Causal Inference Challenges in Sequential Decision Making <i>Time-uniform central limit theory and anytime-valid causal inference</i>	Virtual 2021
Spotify Experimentation Platform Team <i>Doubly robust confidence sequences for sequential causal inference</i>	Virtual 2021
Joint Statistical Meetings (JSM) <i>Doubly robust confidence sequences for sequential causal inference</i>	Virtual 2021
Vinted Science and Analytics Meetup <i>Doubly robust confidence sequences for sequential causal inference</i>	Virtual 2021
Joint Statistical Meetings (JSM) <i>Confidence sequences for sampling without replacement</i>	Virtual 2020
Statistical Society of Canada (SSC) Annual Meeting <i>Multi-state models for chronic kidney disease prevalence projections in Ontario</i>	St. Catherines, ON 2016