Ian Waudby-Smith

ianws@cmu.edu • ianws.com

Education

Carnegie Mellon University — **Pittsburgh, PA**
PhD, Statistics — *2019–present*
Advisor: Aaditya Ramdas

Carnegie Mellon University — **Pittsburgh, PA**
MS, Statistics — *2019–20*
GPA: 4.0/4.0

University of Waterloo — **Waterloo, Canada**
BMath, Joint Honours Pure Mathematics & Statistics (Co-op) — *2013–18*
GPA: 90/100, Dean's Honours List

Papers

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

Ian Waudby-Smith, Edward H. Kennedy, and Aaditya Ramdas. Distribution-uniform anytime-valid sequential inference. *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 (accepted)*, 2024.

Ian Waudby-Smith, Lili Wu, Aaditya Ramdas, Nikos Karampatziakis, and Paul Mineiro. Anytime-valid off-policy inference for contextual bandits. *ACM/IMS Journal of Data Science*, 2023.

Ian Waudby-Smith and Aaditya Ramdas. Estimating means of bounded random variables by betting. *Journal of the Royal Statistical Society, Series B, to appear.* ***(Discussion paper)***, 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.

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.

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

Computational Skills

Programming languages: R, Python, Haskell, Lisp, C

Technologies: git, SQL, *nix, CI/CD

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

Service

Reviewer: The Annals of Statistics, Biometrika, The Journal of the American Statistical Association, New England Journal of Data Science, Sankhya A.

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

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

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 CMU — **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*