

# Ian Waudby-Smith

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## Education

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### Carnegie Mellon University

PhD, Statistics

Advisor: [Aaditya Ramdas](#)

Pittsburgh, PA

2019–present

### Carnegie Mellon University

MS, Statistics

GPA: 4.0/4.0

Pittsburgh, PA

2019–20

### University of Waterloo

BMath, Joint Honours Pure Mathematics & Statistics (Co-op)

GPA: 90/100, Dean's Honours List

Waterloo, Canada

2013–18

## Papers

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**Ian Waudby-Smith**, Lili Wu, Aaditya Ramdas, Nikos Karampatziakis, and Paul Mineiro. Anytime-valid off-policy inference for contextual bandits. *preprint*, 2022+.

**Ian Waudby-Smith**, David Arbour, Ritwik Sinha, Edward H. Kennedy, and Aaditya Ramdas. Time-uniform central limit theory and asymptotic confidence sequences. *preprint*, 2022+.

**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](#)), 2023.

**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*, 2023.

**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

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### Google Research

Student Researcher

Mentors: Jean Pouget-Abadie & Jennifer Brennan

New York, NY

Jun–Aug 2023

### Microsoft Research

Research Intern

Mentor: Paul Mineiro

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

New York, NY & Redmond, WA

May–Aug 2022

<b>Adobe Research</b> <i>Research Intern</i> Mentors: David Arbour & Ritwik Sinha <ul style="list-style-type: none"> <li>Asymptotic confidence sequences and anytime-valid causal inference — <a href="#">link to paper</a>.</li> </ul>	<b>San Jose, CA</b> <i>Jun–Aug 2020</i>
<b>The Hospital for Sick Children (SickKids)</b> <i>Research Student</i> Mentor: Eleanor Pullenayegum <ul style="list-style-type: none"> <li>Understanding model misspecification in quality-of-life surveys — <a href="#">link to paper</a>.</li> </ul>	<b>Toronto, ON</b> <i>Apr–Aug 2019</i>
<b>Health Data Science Lab, University of Waterloo</b> <i>Research Assistant</i> Mentors: Joel Dubin & Joon Lee <ul style="list-style-type: none"> <li>Sentiment analysis and mortality in intensive care patients — <a href="#">link to paper</a>.</li> </ul>	<b>Waterloo, ON</b> <i>2016–18</i>
<b>Department of Statistics, University of Waterloo</b> <i>Research Assistant</i> Mentor: Pengfei Li <ul style="list-style-type: none"> <li>Robust statistical tests for zero-inflated data — <a href="#">link to R package</a>.</li> </ul>	<b>Waterloo, ON</b> <i>Apr–Aug 2017</i>
<b>Cancer Care Ontario</b> <i>Student Analyst</i> Mentor: Zhihui (Amy) Liu <ul style="list-style-type: none"> <li>Multi-state models for forecasting chronic kidney disease progression.</li> </ul>	<b>Toronto, ON</b> <i>Jan–Apr 2016</i>

## Computational Skills

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

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

## Teaching Experience

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<b>Carnegie Mellon University</b> <i>Graduate Teaching Assistant</i> <ul style="list-style-type: none"> <li>36-708: Statistical Methods in Machine Learning (x2)</li> <li>36-462: Data Mining</li> <li>36-401: Modern Regression</li> <li>36-731: Foundations of Causal Inference</li> <li>36-732: Modern Causal Inference</li> </ul>	<b>Pittsburgh, PA</b> <i>2019–22</i>
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## Service

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**Reviewer:** New England Journal of Data Science

<b>Carnegie Mellon University</b> <i>Volunteer</i> <ul style="list-style-type: none"> <li>Computing committee student representative</li> <li>Incoming PhD student mentor</li> <li>Women in Data Science (WiDS) conference volunteer</li> <li>Statistical Machine Learning Reading Group (SMLRG) organizer</li> </ul>	<b>Pittsburgh, PA</b>
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## Awards

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<b>Amazon Science</b> <i>Graduate Research Fellowship</i>	<b>Pittsburgh, PA</b> <i>2023</i>
<b>University of Waterloo</b> <i>Waterloo Statistics Student Conference Presentation Award</i>	<b>Waterloo, ON</b> <i>2022</i>

<b>Carnegie Mellon University Department of Statistics and Data Science</b> <i>Teaching Assistant of the Year</i>	<b>Pittsburgh, PA</b> 2021
<b>Adobe Research</b> <i>PhD Research Gift</i>	<b>Pittsburgh, PA</b> 2020
<b>University of Waterloo</b> <i>David Johnston International Experience Award</i>	<b>Waterloo, ON</b> 2018
<b>The Natural Sciences and Engineering Research Council of Canada</b> <i>NSERC Undergraduate Student Research Award</i>	<b>Waterloo, ON</b> 2017
<b>University of Waterloo</b> <i>President's Research Award</i>	<b>Waterloo, ON</b> 2016–17
<b>University of Waterloo</b> <i>University of Waterloo President's Scholarship of Distinction</i>	<b>Waterloo, ON</b> 2014

## Presentations

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<b>Joint Statistical Meetings (JSM)</b> <i>Anytime-valid off-policy inference for contextual bandits</i>	<b>Toronto, ON</b> 2023
<b>International Conference on Machine Learning (ICML)</b> <i>Extensions of randomized response for private confidence sets</i>	<b>Honolulu, HI</b> 2023
<b>Centrum Wiskunde &amp; Informatica</b> <i>Anytime-valid off-policy inference for contextual bandits</i>	<b>Amsterdam, Netherlands</b> 2023
<b>University of Copenhagen Statistics Seminar</b> <i>Anytime-valid off-policy inference for contextual bandits</i>	<b>Copenhagen, Denmark</b> 2023
<b>Copenhagen Causality Lab, University of Copenhagen</b> <i>Asymptotic confidence sequences for anytime-valid causal inference</i>	<b>Virtual</b> 2023
<b>Conference on Digital Experimentation (CODE@MIT)</b> <i>Asymptotic confidence sequences for anytime-valid causal inference</i>	<b>Cambridge, MA</b> 2022
<b>Microsoft Research Reinforcement Learning Discussion Group</b> <i>Anytime-valid contextual bandit inference</i>	<b>Virtual</b> 2022
<b>California Institute of Technology</b> <i>A brief introduction to safe, anytime-valid inference (SAVI)</i>	<b>Virtual</b> 2022
<b>Waterloo Student Conference in Statistics, Actuarial Science, and Finance</b> <i>Estimating means of bounded random variables by betting</i>	<b>Waterloo, ON</b> 2022
<b>Microsoft Research</b> <i>A brief introduction to safe, anytime-valid inference (SAVI)</i>	<b>Virtual</b> 2022
<b>TPDP: Theory and Practice of Differential Privacy Workshop</b> <i>Locally private nonparametric confidence intervals and sequences</i>	<b>Baltimore, MD</b> 2022
<b>Safe, Anytime-Valid Inference (SAVI) Workshop</b> <i>Time-uniform central limit theory and anytime-valid causal inference</i>	<b>Eindhoven, Netherlands</b> 2022
<b>Statistical Society of Canada (SSC) Annual Meeting</b> <i>Time-uniform central limit theory and anytime-valid causal inference</i>	<b>Virtual</b> 2022
<b>ASA, Pittsburgh Chapter Spring Banquet</b> <i>Time-uniform central limit theory and anytime-valid causal inference</i>	<b>Pittsburgh, PA</b> 2022
<b>Carnegie Mellon University Computer Science Theory Lunch</b> <i>Estimating means of bounded random variables by betting</i>	<b>Pittsburgh, PA</b> 2021

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