

# Blair Bilodeau

## CONTACT INFORMATION

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## DEGREES

2023 (*Exp.*)    Ph.D.      Statistical Sciences, University of Toronto  
   Committee: Daniel Roy (Advisor), Nancy Reid, Ting-Kam Leonard Wong  
2018            H.B.Sc.    Financial Modelling, University of Western Ontario

## PROFESSIONAL AFFILIATIONS AND EMPLOYMENT

2022            Research Intern, Google Brain, Seattle, Washington  
2022            Visiting Student, Simons Institute for the Theory of Computing, Berkeley, California  
2020            Visiting Student, Insitute for Advanced Study, Princeton, New Jersey  
2019–          Graduate Student, Vector Institute, Toronto, Ontario  
2017–18       Undergraduate Researcher, University of Western Ontario, London, Ontario  
2016            Risk Research Intern, London Life, London, Ontario  
2015            Data Analyst Intern, Bell Canada, London, Ontario

## RESEARCH GRANTS

2022            1,000 CAD    School of Graduate Studies Conference Travel Grant  
2022            8,000 CAD    Centre for International Experience Award+  
2021            750 USD     Institute of Mathematical Statistics Hannan Graduate Student Travel Award  
2020–22       18,000 CAD   Vector Institute Research Grant  
2020            6,000 CAD    NSERC Michael Smith Foreign Study Supplement  
2019–22       105,000 CAD   NSERC Alexander Graham Bell Canada Graduate Scholarship – Doctoral  
2018–19       17,500 CAD   NSERC Alexander Graham Bell Canada Graduate Scholarship – Master’s  
2018–19       15,000 CAD   Queen Elizabeth II Graduate Scholarship in Science and Technology (*Declined*)  
2017–18       9,000 CAD    NSERC Undergraduate Student Research Awards

## HONOURS AND AWARDS

2022            AISTATS Top 10% Reviewer Award  
2021            Dept. of Statistical Sciences Doctoral Early Research Excellence Award  
2020            Dept. of Statistical Sciences Student Ambassador Award  
2020            New York Academy of Sciences Machine Learning Symposium Best Poster Award  
2018            E. F. and F. W. Burton Graduate Scholarship  
2017            Robert and Ruth Lumsden Scholarship in Science  
2017            Borwein Memorial Prize  
2014–18       University of Western Ontario Continuing Admission Scholarship

## PUBLICATIONS AND PREPRINTS

\* Shared first authorship

### *Density Estimation*

1. **B. Bilodeau**, D. J. Foster, and D. M. Roy. (2021). Minimax Rates for Conditional Density Estimation via Empirical Entropy. **arXiv:2109.10461**.
2. **B. Bilodeau**, D. J. Foster, and D. M. Roy. (2020). Tight Bounds on Minimax Regret Under Logarithmic Loss via Self-Concordance. **International Conference on Machine Learning**.

*Adaptive Sequential Decision Making*

3. **B. Bilodeau**, L. Wang, and D. M. Roy. (2022). Adaptively Exploiting  $d$ -Separators with Causal Bandits. **arXiv:2202.05100**.
4. J. Negrea\*, **B. Bilodeau\***, N. Campolongo, F. Orabona, and D. M. Roy. (2021). Minimax Optimal Quantile and Semi-Adversarial Regret via Root-Logarithmic Regularizers. **Neural Information Processing Systems**.
5. **B. Bilodeau\***, J. Negrea\*, and D. M. Roy. (2020). Relaxing the I.I.D. Assumption: Adaptively Minimax Optimal Regret via Root-Entropic Regularization. **arXiv:2007.06552**.

*Quadrature for Statistical Inference*

6. A. Stringer\* and **B. Bilodeau\***. (2022). Fitting Generalized Linear Mixed Models using Adaptive Quadrature. **arXiv:2202.07864**.
7. **B. Bilodeau\***, A. Stringer\*, and Y. Tang\*. (2021). Stochastic Convergence Rates and Applications of Adaptive Quadrature in Bayesian Inference. **arXiv:2102.06801**.

*Queueing in Health Care*

8. **B. Bilodeau** and D. A. Stanford. (2022). High-Priority Expected Waiting Times in the Delayed Accumulating Priority Queue with Applications to Health Care KPIs. **INFOR: Information Systems and Operational Research**.
9. **B. Bilodeau**, D. A. Stanford, M. Goldszmidt, and A. Appleton. (2019). Simulated Co-location of Patients Admitted to an Inpatient Internal Medicine Teaching Unit: Potential Impacts on Efficiency and Physician-Nurse Collaboration. **INFOR: Information Systems and Operational Research**.

ADDITIONAL SCHOLARLY WORK

**B. Bilodeau**. (2022). Blair Bilodeau’s Contribution to the Discussion of ‘Assumption-Lean Inference for Generalised Linear Model Parameters’ by Vansteelandt and Dukes. **Journal of the Royal Statistical Society: Series B**.

CONTRIBUTED AND INVITED TALKS/SEMINARS/COLLOQUIA/WORKSHOPS

*Adaptively Exploiting  $d$ -Separators with Causal Bandits*

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|-----------|--|
| Dec 2022  | International Conference on Computational and Methodological Statistics ( <b>Invited</b> ) |
| June 2022 | Statistical Society of Canada Annual Meeting: Oral Session                                 |
| May 2022  | University of Toronto Statistical Sciences Research Day: Oral Session                      |
| May 2022  | Simons Institute for the Theory of Computing: Statistical Theory Reading Group             |
| Mar 2022  | Carnegie Mellon University: Zachary Lipton Lab Meeting ( <b>Invited</b> )                  |

*Minimax Rates for Conditional Density Estimation via Empirical Entropy*

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|-----------|--|
| Sep 2022  | CREST-CMAP Weekly Seminar ( <b>Invited</b> )                               |
| June 2022 | Institute of Mathematical Statistics Annual Meeting: Oral Session          |
| Aug 2021  | American Statistical Association Joint Statistical Meetings: Speed Session |
| June 2021 | Statistical Society of Canada Annual Meeting: Oral Session                 |
| Apr 2021  | University of Toronto Statistical Sciences Research Day: Oral Session      |

*Relaxing the I.I.D. Assumption: Adaptively Minimax Optimal Regret via Root-Entropic Regularization*

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|----------|--|
| Feb 2022 | Simons Institute for the Theory of Computing: Learning with Strategic Behaviour Reading Group  |
| Dec 2021 | NeurIPS Workshop on Robustness and Misspecification in Prob. Modeling ( <b>Peer-Reviewed</b> ) |
| Apr 2021 | DeepMind: Foundations Reading Group ( <b>Invited</b> )   |
| Mar 2021 | University of California, Los Angeles: Computer Science Seminar ( <b>Invited</b> )             |
| Mar 2021 | Massachusetts Institute of Technology: Stochastics and Statistics Seminar ( <b>Invited</b> )   |
| Feb 2021 | RIKEN Center for Advanced Intelligence Project: Public Seminar ( <b>Invited</b> )              |

*An Introduction to Theoretical Statistics Research*

- June 2022 University of Toronto: Undergraduate Research Opportunity Program Weekly Seminar **(Invited)**
- July 2021 University of Toronto: Independent Summer Stats Community Talk Series **(Invited)**

*Stochastic Convergence Rates and Applications of Adaptive Quadrature in Bayesian Inference*

- June 2021 International Society for Bayesian Analysis World Meeting: Oral Session

*Tight Bounds on Minimax Regret under Logarithmic Loss via Self-Concordance*

- Aug 2020 American Statistical Association Joint Statistical Meetings: Poster Session
- Mar 2020 New York Academy of Sciences Machine Learning Symposium: Poster Session
- Mar 2020 Institute for Advanced Study: Special Year Student Seminar

*Scraping Papers from arXiv and biorXiv using Python*

- May 2020 Canadian Statistics Student Conference: Scientific Workshop **(Invited)**

*High-Priority Expected Waiting Times in the Delayed Accumulating Priority Queue*

- Aug 2019 Canadian Queueing Conference: Oral Session
- June 2019 Southwestern Ontario Graduate Math and Stats Conference: Oral Session
- May 2019 Canadian Operational Research Society Annual Meeting: Oral Session

*Simulated Co-location of Patients Admitted to an Inpatient Internal Medicine Teaching Unit*

- Aug 2018 Canadian Queueing Conference: Oral Session
- July 2018 Operational Research Applied to Health Services Annual Meeting: Oral Session

TEACHING

Course Instructor

- Probability Theory (2020, 2021)

Head Teaching Assistant

- Methods of Applied Statistics (2019)
- Probability and Statistics II (2019)

Teaching Assistant

- Probability Theory (2018, 2020, 2021)
- Probability, Statistics, and Data Analysis II (2021)
- Probability and Statistics I (2019, 2020, 2021)
- Theory of Statistical Practice (2019)
- Time Series Analysis (2019)
- Mathematics of Finance for Non-Actuaries (2018)

SERVICE

Journal Referee

- Journal of Machine Learning Research, Machine Learning

Conference Referee

- AISTATS (2022–23), ALT (2021), COLT (2022), ICLR (2022), ICML (2022), NeurIPS (2022)

Workshop Referee

- NeurIPS (2021)

Administrative Positions

- 2022 Statistical Sciences Research Day Planning Committee, University of Toronto
- 2019–21 Treasurer, Statistics Graduate Student Association, University of Toronto