# Blair Bilodeau

## CONTACT INFORMATION

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## DEGREES

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

## PROFESSIONAL AFFILIATIONS AND EMPLOYMENT

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|---|---|
| 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 Researcher, 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

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|---|---|---|
| 2022 | 8,000 CAD | Centre for International Experience Award, University of Toronto |
| 2020–21 | 12,000 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

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

## 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**.

*Numerical Quadrature for Bayesian 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 (to appear)**.

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**.

CONTRIBUTED AND INVITED TALKS/SEMINARS/COLLOQUIA/WORKSHOPS

*Adaptively Exploiting $d$-Separators with Causal Bandits*
Mar  2022    Carnegie Mellon University: ACMI Lab Meeting **(Invited)**

*An Introduction to Theoretical Statistics Research*
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

*Minimax Rates for Conditional Density Estimation via Empirical Entropy*
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*
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 **(Peer-Reviewed)**
Apr  2021    DeepMind: Foundations Reading Group **(Invited)**
Mar  2021    University of California, Los Angeles: Computer Science Seminar **(Invited)**
Mar  2021    Massachusetts Institute of Technology: Stochastics and Statistics Seminar **(Invited)**
Feb  2021    RIKEN Center for Advanced Intelligence Project: Public Seminar **(Invited)**

*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 **(Invited)**

*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                                                    UTSG = University of Toronto, St. George

Course Instructor
  2021 S          UTSG  STA347  Probability Theory
  2020 S          UTSG  STA347  Probability Theory

Head Teaching Assistant
  2019 F          UTSG  STA442  Methods of Applied Statistics
  2019 S          UTSG  STA261  Probability and Statistics II

Teaching Assistant
  2021 F          UTSG  STA347  Probability Theory
  2021 F          UTSG  STA257  Probability and Statistics I
  2021 W          UTSG  STA238  Probability, Statistics, and Data Analysis II
  2020 F          UTSG  STA347  Probability Theory
  2020 F          UTSG  STA257  Probability and Statistics I
  2019 F          UTSG  STA257  Probability and Statistics I
  2019 W          UTSG  STA457  Time Series Analysis
  2019 W          UTSG  STA355  Theory of Statistical Practice
  2018 F          UTSG  STA347  Probability Theory
  2018 F          UTSG  ACT230  Mathematics of Finance for Non-Actuaries


SERVICE

Journal Referee
  Journal of Machine Learning Research, Machine Learning

Conference Referee
  ALT 2021, AISTATS 2022, ICLR 2022, COLT 2022, ICML 2022

Workshop Referee
  NeurIPS 2021

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