Miguel Biron-Lattes

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Education

2018–2024 **Ph.D. Statistics**, *University of British Columbia*, Vancouver, BC
supervisors: Drs. Alexandre Bouchard-Côté & Trevor Campbell
thesis: Automatic Massively Parallel Markov Chain Monte Carlo with Quantifiable Error

2014–2015 **M.A. Statistics**, *Columbia University*, New York, NY
project: Analyzing call center data using self-exciting point processes

2006–2012 **B.Eng.Sc. Industrial Engineering**, *University of Chile*, Santiago, Chile
supervisors: Drs. José Miguel Cruz & Cristián Bravo
note: Considers also a professional degree in Industrial Engineering

Academic Experience

2019–2024 **Research Assistant**, *UBC Statistics*, Vancouver, Canada
Supervised by Alexandre Bouchard-Côté & Trevor Campbell.

2019–2024 **Teaching Assistant**, *UBC Statistics*, Vancouver, Canada
- STAT200 — Elementary Statistics for Applications
- STAT251 — Elementary Statistics
- STAT301 — Statistical Modelling for Data Science
- STAT302 — Introduction to Probability
- STAT450 — Case Studies in Statistics
- STAT447C — Bayesian Statistics

Publications

2024 **Biron-Lattes, M.**, Surjanovic, N., Syed, S., Campbell, T., & Bouchard-Côté, A. autoMALA: Locally adaptive Metropolis-adjusted Langevin algorithm. *Proceedings of The 27th International Conference on Artificial Intelligence and Statistics*, in *Proceedings of Machine Learning Research* 238:4600-4608.

2024 **Biron-Lattes, M.**, Campbell, T., & Bouchard-Côté, A. Automatic Regenerative Simulation via Non-Reversible Simulated Tempering. *Journal of the American Statistical Association*, 1–13.

2023 **Biron-Lattes, M.**, Bouchard-Côté, A., & Campbell, T. Pseudo-marginal inference for CTMCs on infinite spaces via monotonic likelihood approximations. *Journal of Computational and Graphical Statistics*, 32(2), 513-527.

2019 **Biron, M.**, Córdova, F., & Lemus, A. *Banks' business model and credit supply in Chile: the role of a state-owned bank*. BIS Working Paper No 800.

2014 **Biron, M.**, & Bravo, C. On the discriminative power of credit scoring systems trained on independent samples. In *Data Analysis, Machine Learning and Knowledge Discovery* (pp. 247-254). Springer International Publishing.

Honors

2018–2021 **Four year doctoral fellowship (4YF)**, *UBC*
Provided with financial support of at least $18,200 per year plus tuition for up to four years of their doctoral studies

2018 **Anona Thorne and Takao Tanabe Graduate Entrance Scholarship**, *Department of Statistics, UBC*

2014 **Becas Chile Scholarship**, *CONICYT*
For graduate studies abroad (ranked 42 out of 408 recipients and out of 1,384 valid applications)

2006–2010 **Dean's list**, *University of Chile (FCFM)*
For obtaining a GPA of 5.7 or above (scale ranges from 1 to 7).

Conferences and seminars

Presentations

May-2024 **27th International Conference on Artificial Intelligence and Statistics (AISTATS) 2024**, *Valencia, Spain*
Poster: *autoMALA: Locally adaptive Metropolis-adjusted Langevin algorithm.*

May-2023 **2023 IRSA Conference—The Fast and the Curious: Modern Markov Chain Monte Carlo**, *Minneapolis, MN*
Talk: *Automatic regenerative simulation via Non-Reversible Simulated Tempering.*

Jun-2022 **2022 IMS Annual Meeting in Probability and Statistics**, *London, UK*
Talk: *Pseudo-marginal inference for CTMCs on infinite spaces via monotonic likelihood approximations.*

Jun-2021 **2021 World Meeting of the International Society for Bayesian Analysis**, *Virtual*
Pseudo-marginal inference for CTMCs on infinite spaces via monotonic likelihood approximations.

Oct-2019 **Composites Research Network + Data Science Institute Research Talks**, *UBC*
Debiasing Monte Carlo Estimators.

2018–present **Multiple Reading Groups**, *UBC*
Regular presentations at groups headed by Drs. Bloem-Reddy, Bouchard-Côté & Campbell.

2018 **Conference on Business Analytics in Finance and Industry (BAFI)**, *Santiago, Chile*
Leveraging Probability of Default Models for Bayesian Inference of Default Correlations

Organization

2020–present **Constance van Eeden Distinguished Visitors Lecture**, *UBC*

Professional Experience

2019–2024 **Senior consultant**, *Applied Statistics and Data Science Group*, UBC
Assist graduate students from UBC in formulating an appropriate statistical methodology for their thesis research projects. Mentoring junior consultants by helping them to deal with clients, and giving them feedback on the quality of their recommendations. Topics of the projects range from forestry, to biostatistics, agriculture, and medicine, among others.

2015–2018 **Senior Financial Stability Analyst**, *Financial Market Commission*, Santiago, Chile

Investigated potential threats to the financial stability of the Chilean banking system by analyzing multiple data sources in order to produce actionable insights. In particular, this required processing massive databases with account-level data collected from banks using `SQL` and then analyzing them with `R`. Additionally carried out research projects on the topic of financial stability:

- Participated in an international collaborative research project coordinated by the Bank of International Settlements (BIS), aimed at understanding the relationship between banks' business models and the overall supply of credit.
- Developed a method for Bayesian inference of default correlations by leveraging probability of default (PD) models
- Built a systemic risk indicator for retail loans using account-level and macroeconomic data
- Carried out a systematic comparison of the performance of statistical learning models for credit scoring
- Estimating the joint distribution of implicit bank PDs from market transactions of time deposits

2011–2014 **Financial Engineering Analyst**, *CL Group Financial Services Consulting*, Santiago, Chile

Lead a wide array of projects on quantitative modelling of market and credit risk for financial institutions. Notable examples:

- Quantifying counterparty credit risk exposure of an interest rate swaps portfolio
- Developing the market risk framework for a Central Counterparty of OTC derivatives
- Assessing the credit risk exposure of a government-backed portfolio of student loans
- Constructing probability of default models at multiple banks for credit risk management

Technical Skills

Languages	English (fluent), Spanish (native).
Programming languages	Julia (advanced), R (advanced), Python (advanced), Bash (intermediate), MATLAB (intermediate), C/C++ (basic), Java (basic).
VCS	Git (advanced).
Containers	Docker (intermediate).
Schedulers	Slurm (advanced), PBS (advanced).
Database	Oracle SQL (advanced), Transact-SQL (advanced).
Distributed	MPI (intermediate).
Workflows	Nextflow (advanced).
Spreadsheets	Microsoft Excel (advanced).
Typesetting	LaTeX (advanced).

Projects

Pigeons.jl A Julia package for solving challenging Bayesian inference problems.

- Role: co-author and maintainer.
- Repo: github.com/Julia-Tempering/Pigeons.jl
- Tools used: Julia, MPI, Automatic Differentiation

Last updated: December 3, 2024