Miguel Biron-Lattes

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About me

PhD in statistics with extensive professional experience in the financial industry, both in the private and public sectors. My main motivation is to seek opportunities where I can develop and implement advanced statistical computational methods to drive innovation. I am particularly interested in research positions within companies dedicated to developing scientific knowledge, where I can apply my expertise to solve complex problems and contribute to cutting-edge advancements in the field.

Education

Ph.D. Statistics *University of British Columbia* – Vancouver, BC   Sep 2018 — Aug 2024
- Supervisors: Drs. Alexandre Bouchard-Côté & Trevor Campbell
- Thesis: "Automatic massively parallel Markov chain Monte Carlo with quantifiable error"

M.A. Statistics, *Columbia University* – New York, NY   Sep 2014 — May 2015

B.Sc.Eng. Industrial Engineering, *Universidad de Chile* – Santiago, Chile   Mar 2006 — Jul 2012
- Considers also a professional degree in Industrial Engineering

Publications

Liu, T., Surjanovic, N., **Biron-Lattes, M.**, Bouchard-Côté, A., & Campbell, T. AutoStep: Locally adaptive involutive MCMC. *Accepted to ICML 2025*.

Luu, S., Xu, Z., Surjanovic, N., **Biron-Lattes, M.**, Campbell, T., & Bouchard-Côté, A. Is Gibbs sampling faster than Hamiltonian Monte Carlo on GLMs? *Accepted to AISTATS 2025*.

Thompson, W., [...], **Biron-Lattes, M.**, et al. (2025) On the Orbit of the Binary Brown Dwarf Companion GL229 Ba and Bb. *The Astronomical Journal* 169(4), 193.

Biron-Lattes, M., Surjanovic, N., Syed, S., Campbell, T., & Bouchard-Côté, A. (2024) autoMALA: Locally adaptive Metropolis-adjusted Langevin algorithm. *AISTATS 2024, PMLR* 238, 4600-4608.

Biron-Lattes, M., Campbell, T., & Bouchard-Côté, A. (2024) Automatic Regenerative Simulation via Non-Reversible Simulated Tempering. *JASA*, 120(549), 318–330.

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

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

Biron-Lattes, M., & Bravo, C. (2014) 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.

Experience

Postdoctoral Fellow, *SFU Statistics* – Burnaby, BC   Dec 2024 – Present
Working with Donald Estep on inverse problems with geological and geophysical applications. Currently developing a fully Bayesian surface-based model for analysis of underground resources using muography data. Inference is performed with a GPU-accelerated gradient-based MCMC algorithm, with both model and sampler fully implemented in JAX.

Senior Consultant, *UBC Statistics* – Vancouver, BC   Dec 2019 — Dec 2024
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.

Graduate Research Assistant, *UBC Statistics* – Vancouver, BC   May 2019 — Aug 2024
Carried out research on Bayesian computational methods to tackle challenging inference problems. Published papers in high ranked journals, and presented results at prestigious international conferences.Carried out research on Bayesian computational methods to tackle challenging inference problems. Published papers in high ranked journals, and presented results at prestigious international conferences.

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

Financial Engineering Analyst, *CLGroup Financial Services Cons.* – Santiago, Chile   Feb 2011 — Jun 2014
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

Projects

`Pigeons.jl`: **Distributed and parallel sampling from intractable distributions**
- A Julia package to approximate challenging posterior distributions, and more broadly, Lebesgue integration problems.
- Role: co-author and maintainer.
- Repo: github.com/Julia-Tempering/Pigeons.jl
- Tools used: Julia, MPI, Automatic Differentiation

Technical skills

Languages: English (fluent), Spanish (native).
Programming languages: Julia (advanced), R (advanced), Python (advanced), Bash (intermediate), MATLAB (intermediate), C/C++ (basic), Java (basic).
Machine learning and Bayesian inference frameworks: NumPyro (advanced), JAX (advanced), Stan (advanced), Turing (advanced).
Version control: Git (advanced).
Containerization: Docker (intermediate).
Cluster schedulers: Slurm (advanced), PBS (advanced).
Query languages: Oracle SQL (advanced), Transact-SQL (advanced).
Distributed computation: MPI (intermediate).
Workflow systems: Nextflow (advanced).
Spreadsheets: Microsoft Excel (advanced).
Document typesetting: LaTeX (advanced).