

# Noah Ripstein

noah.h.ripstein@gmail.com | [noahripstein.com](http://noahripstein.com)

## EDUCATION

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<b>University of Toronto</b> Ph.D. in Statistical Sciences	<b>Toronto, Canada</b> Beginning Sept. 2025
<b>McMaster University</b> Non-degree student, additional advanced coursework in Statistics and Mathematics	<b>Hamilton, Canada</b> Sept. 2024 – Apr. 2025
<b>McMaster University</b> B. Arts Sc. (Hons.) Arts and Science, & Psychology, Neuroscience and Behaviour (Math Minor) <ul style="list-style-type: none"><li>cGPA: 3.94/4.0   Laura Dodson Prize (top graduation award)</li><li><b>Honours Thesis:</b> Bayesian Modelling of a Haptic Categorization Task, and Temporal Video Segmentation</li></ul>	<b>Hamilton, Canada</b> Sept. 2020 – Apr. 2024

## AWARDS AND SCHOLARSHIPS

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<b>Top Doctoral Fellowship (FAST)</b> (\$20,000), University of Toronto Faculty of Arts and Science Fellowship to support “the recruitment of the very best domestic students to PhD programs.”	<b>2025</b>
<b>Doctoral Recruitment Award</b> (\$5,000), University of Toronto Department of Statistical Sciences	<b>2025</b>
<b>Industry Disruptor Award</b> (\$5,000), RBC Amplify Awarded by chief executives for developing most innovative solution in summer-long competition.	<b>2024</b>
<b>Laura Dodson Prize</b> (\$200), McMaster University Faculty of Arts and Science Top academic achievement graduation award in Arts and Science program (awarded to 1-2 students in cohort).	<b>2024</b>
<b>Barbara Francis Scholarship</b> (\$400), McMaster University Faculty of Arts and Science Top academic achievement award in Arts and Science program (awarded to one student in program annually).	<b>2022</b>
<b>Undergraduate Student Research Award</b> (\$7,500), McMaster University Faculty of Arts and Science Awarded funding for summer 2022 research through competitive USRA program.	<b>2022</b>
<b>McMaster President’s Award</b> (\$2,500), McMaster University Faculty of Arts and Science Entrance scholarship for 95%+ high school GPA.	<b>2020</b>

## RESEARCH EXPERIENCE

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<b>University of Toronto</b> Research Collaborator (Statistical Sciences) Supervisors: Professor Jamie Stafford and Professor Patrick Brown <ul style="list-style-type: none"><li>Research in Extended Latent Gaussian Models (ELGMs), a broad class of Bayesian hierarchical model, focused on efficient model fitting and applications to spatio-temporal statistics.</li><li>Developing novel method to infer high resolution disease risk from spatially aggregated point process data for which the boundaries of the aggregating regions change over time.</li><li>Investigating computational advancements to fit ELGMs more accurately with Variational Inference.</li></ul>	<b>Toronto, Canada</b> Aug. 2024 – present
<b>McMaster University</b> Research Assistant II (Statistics) Supervisor: Professor Pratheepa Jeganathan <ul style="list-style-type: none"><li>Developing a Bayesian approach to spatial clustering, with applications to spatial omics and tumour identification.</li><li>Designing novel approach to regionalization which leverages Gaussian Mixture Models to quantify uncertainty.</li></ul>	<b>Hamilton, Canada</b> Sept. 2024 – present
<b>McMaster University</b> Research Student (Computational Neuroscience & Computer Vision) Supervisor: Professor Daniel Goldreich <ul style="list-style-type: none"><li>Built Bayesian models of human sensory perception and learning; found that human performance in a learning task is similar to optimal Bayesian models.</li><li>Independently identified opportunities to implement novel computer vision method to automate manual video labelling.</li><li>Developed method to temporally segment videos, facilitating 250+ hours of automatic video labelling.</li></ul>	<b>Hamilton, Canada</b> Sept. 2022 – Apr. 2024

- Synthesized and combined research in historically separate areas of Statistics and computer vision (time series changepoint detection, human-object interaction, and temporal action segmentation).

## McMaster University

Research Student (Bioethics)

Supervisor: Professor Daniel Coren

- Independent research project funded by USRA award which involved synthesizing cognitive and neurological dementia research in conjunction with philosophical notions of responsibility.

Hamilton, Canada

May 2022 – Aug. 2022

## INDUSTRY EXPERIENCE

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### Royal Bank of Canada (RBC)

Software Developer, *RBC Amplify*

*Amplify is RBC's flagship technology and innovation early talent program and accepts less than 1% of applicants.*

- Developed multimodal machine learning product which improves call centre client intent identification and provides advisors with personalized client insights, saving time for clients and advisors.
- Projected to save \$2M+ annually through advisor time savings in first year of deployment.
- Named inventor in RBC provisional patent.
- Won prestigious "Industry Disruptor Award" in final competition with 18 teams for best product after presentation to audience of 400+ (see Awards and Scholarships).

Toronto, Canada

May 2024 – Aug. 2024

## SKILLS

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**Programming Languages:** Python, R, Stan, MATLAB, SAS, SQL

**Frameworks:** INLA, RStan, R Spatial Statistics packages, Numpy, Scipy, Sklearn, Matplotlib, Tensorflow, PyTorch, Pandas

## INDEPENDENT PROJECTS

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### 2048 Game Artificial Intelligence (2023)

- Developed probabilistic methods to algorithmically beat 2048, the viral online game from 2014 which can be formalized as a Markov Decision Process.
- Independently discovered strategies including Expectimax and Monte Carlo Tree Search without reference to existing theory. Later found literature about the techniques and used my findings to improve performance.
- Tuned parameters with multi-objective Bayesian optimization to identify pareto-efficient parameters which strike balance of score and computing time, achieving 97% win-rate.

## EXTRACURRICULARS

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**Hospital Volunteer** – St. Michael's Hospital

May 2023 – Aug. 2023

**Peer Mentor** – McMaster Arts and Science Program

Sept. 2022 – Apr. 2024

**Peer Mentor** – McMaster Psychology, Neuroscience and Behaviour Program

Sept. 2022 – Apr. 2024

**Occasional Writer** - The Melange, a magazine about life in the Arts and Science Program

Sept. 2021 – Apr. 2024

**Overnight Canoe Trip Guide** – Camp Northway Lodge, Algonquin Park

Jun. 2019 – Jul. 2019