

Experience

- **University of Toronto** | Toronto, ON • Research Assistant September 2022 - April 2023
 - Research project under [Professor Scott Schwartz](#) for “readings course” (thesis-like); primarily used **Pytorch** for models.
 - Quantification of **aleatoric** (data) and **epistemic** (model) uncertainty in **deep neural networks**. Looks at using **generative (likelihood defining) neural networks** with **importance sampling** to produce reliable parameter posteriors.
- **Amazon** | Toronto, ON • SDE Intern May 2022 - August 2022
 - Software Development Engineer Intern on FBA (Fulfillment by Amazon) inbound team.
 - Created a scalable prototype for the next FBA seller experience, leveraging **GraphQL**, **AWS services** (Lambda, S3, AppSync, etc...), **Java**, and **TypeScript**, and integrated websocket API into existing FBA website (frontend). All fully managed by **custom infrastructure as code**.
 - Provided actionable novel extensions for improved efficiency, e.g., latency reduction via service usage prediction and lambda warmers.
- **Advanced Micro Devices (AMD)** | Toronto, ON • SWE Intern May 2021 - May 2022
 - Language Runtime Team of Machine Learning SW Engineering Unit
 - Novel language features for [HIP-Compute](#) (analogous to CUDA), and novel infrastructure projects for HIP.
 - Utilized C++ to **implement concurrency and image processing algorithms**, and wrote various **GPU kernels** for projects, while working on and utilizing the **ROCm tech stack**, in particular **HIP for compute tasks**.
- **Watchtower Robotics** | Boston, MA • SWE Intern (Machine Learning) May 2019 - August 2019
 - Created and implemented procedure involving an **unsupervised label generation process** and **custom CNN**, synthesizing proprietary robot data with feature engineered audio data to predict to label pipe features, e.g., joints, with **90%+ test set accuracy**. The procedure cut data analysis time by 50% and got AI VC firm attention (Innospark).
 - Greatly leveraged Scipy, sklearn for statistical analysis, and implemented ML models using **Tensorflow and Keras**.

Skills

Languages Python, C++, C, C#, Java, GraphQL, PostgreSQL, R, Stan, CSS/CSS3, JSX, ES6, JavaScript, TypeScript

Tools/Frameworks Git, AWS, CMake, CUDA, HIP, ROCm, Clang, Pytorch, Tensorflow, Scipy, Keras, Sklearn, Tidyverse, cmdstanr, rstanarm, lme4, React.js, .NET, Bootstrap, Figma, Sketch, Adobe CC

Principles Scalable Architectures, OOP, Statistical Modelling, Deep Learning, Generative Modelling, Agile Development

Education

- **University of Toronto (UofT)** September 2018 - June 2023
 - Honours Bachelor of Science, double major in Computer Science and Statistics, Dean's List Scholar
 - Admitted as UofT Scholar - awarded to top ~4.5% of incoming class; graduated with High Distinction

Publications

- **Diffusion on the Probability Simplex** June 2023
 - Published in **ICML - SODS (International Conference on Machine Learning)**
 - Creates novel diffusion model that models discrete data on a probability simplex; probability simplex naturally creates an interpretation where points correspond to categorical probability distributions.