Ryan Shar

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Education

Carnegie Mellon University Pittsburgh, PA
Master of Science in Machine Learning December 2025

University of British Columbia Vancouver, BC
Bachelor of Science in Honors Computer Science May 2024

Projects

Carnegie Mellon University
Large Language Model Alignment Aug 2024 - Present

- Working under Dr. Ameet Talwalkar and Valerie Chen to align LLM behavior and measure uncertainty in model understanding

University of British Columbia
Deterministic and Bernoulli Duplication (Honors Thesis) Sep 2023 - May 2024

- Advised by Dr. Mathias Lécuyer to refine sampling error bound of sparse weighted decision trees (GOSDT models) with Deterministic and Bernoulli (DaB) sampling
- Designed synthetic weighted datasets engineered for below baseline performance in traditional GOSDT models and above baseline performance in DaB models

Class Based Variational Autoencoders Jan 2024 - May 2024

- Formulated a novel statistical ML model as a final project for CPSC 440 (Advanced machine learning)
- Augmented traditional Variational Autoencoders in Pytorch for improved representation of scarce labels, having 30% better variance than traditional VAEs for reconstruction

Work Experience

University of British Columbia Vancouver, BC
Teaching Assistant Dec 2020 - May 2024

- Courses taught: CPSC 110 (Introduction to Recursive Programming), CPSC 210 (Software Construction), CPSC 213 (Introduction to Computer Systems), CPSC 317 (Introduction to Computer Networking)
- Lead labs and tutorials for 60-100 students per semester, earned an average 4.9/5 student review
- Collaborated with instructors to create assignment and exam questions using Python and PrarieLearn for automated grading and problem generation, allowing for live feedback

Undergraduate Researcher, Systopia Lab May 2023 - Oct 2023

- Received the Undergraduate Student Research Award from NSERC to work under Dr. Mathias Lécuyer in an MLSys project investigating RL models in ElasticSearch
- Performed feature engineering and model tuning, improved model's performance by 20% when tested on real-world user data

Motorola Solutions
Firmware Developer Sep 2021 - Aug 2022

- Developed C++ for H5A Modular Camera's core streaming and recording functionality
- Created Lua gRPC bindings to interact with runtimes allowing for efficient debugging of live systems

Skills

Programming Languages: Python, Java, C++
Tools/Libraries: Pytorch, Pandas, Numpy, Scikit-Learn, Scipy, pytest
Machine Learning: NLP, LLM, Statistical ML, Reinforcement Learning, Causal ML

Volunteer Experience

Mentor, Women in Computer Science Sep 2023 - May 2024
Travel and Safety Officer, UBC Quadball Team Sep 2022 - May 2024