Yang Xi

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Education

Carnegit Mellon University · Aug. 2024 – Present
MS in Machine Learning · Pittsburgh, PA, US

University of Toronto · Sep. 2019 – Apr. 2024
Bachelor of Applied Science in Engineering Science (cGPA: 3.88/4.0) · Toronto, ON, Canada
- Thesis: *Privacy Preservating Inference Infrastructure against NLP MLaaS Adversaries*

Experience

RBC Capital Markets · May. 2022 – Apr. 2023
AI Engineer | Digital Solutions and Client Insights Team · Toronto, ON, Canada
- Developed input feature analytics using Python libraries such as Pandas, Numpy, Matplotlib for RBC's RL execution trading algorithm, Aiden, optimizing the feature input set and reducing the overall size by 3% .
- Created an automated Python tool for evaluating the feature importance of ML models from stored data in SQL databases, giving insight and improving the explainability of model behavior.
- Implemented modifications to the Aiden architecture to analyze performance dependencies, improving the learning speed by ∼2x with a new architecture.
- Led and organized ML paper learning presentations and discussions for the Global Algo Research Team to learn about state-of-the-art ML techniques and innovations.
- Fine-tuned and engineered new rewards for the model, allowing it to perform according to different market regimes.

The University of Toronto Self-Driving Car Team · Jan. 2023 – Present
Software Engineer | 2D Object Detection Team · Toronto, ON, Canada
- Developed Python scripts to visualize ground truth and inference results as well as precision recall curves from yolo object detection model.
- Improved and refactored code base using abstract classes, wrapper functions, and more for code optimization and understandability.

Blue Sky Solar Racing · Feb. 2021 – Jul. 2023
Aerodynamics Engineer | Aerodynamics Team · Toronto, ON, Canada
- Designed and modelled solar race cars using Catia generative shape design.
- Meshed the car designs using Pointwise and simulated race conditions using Ansys to find the most optimal design.

Electric Atoms, University of Toronto · May. 2020 – Apr. 2021
Student Researcher | Supervised by Prof. Amar Vutha · Toronto, ON, Canada
- Designed an optical lens system using Inventor and Zemax Optics that increased the light collection efficiency of the samarium experiment by ∼7x to more efficiently locate ultra-narrow spectroscopic features in crystals.
- Implemented Python code for remote experimental automation and real-time data analysis collected from the optical lens system.

Honors and Awards

University of Toronto Student Leadership Award *University of Toronto* · 2023
- Awarded as recognition for outstanding student leadership, volunteer service, and commitment to the university.

Joseph F. Goetz Engineering Scholarship *University of Toronto* · 2022
- Awarded on the basis of academic merit and demonstrated leadership involvement with Skule Music and/or University of Toronto Engineering Industry/Professional Development Clubs.

Eric Miglin Scholarship *University of Toronto* · 2022
- Awarded on the basis of financial need, academic standing, and active involvement in student and/or University government.

Undergraduate Research Award *Natural Science and Engineering Research Council of Canada* · 2021
- Awarded for summer research on the development of COVID rapid lateral flow strips with *Prof. Xinyu Liu*.

Engineering Science Research Opportunity Award *University of Toronto* · 2020
- Awarded for summer research on the development of a solid-state atomic clock with *Prof. Amar Vutha*.

Projects

Data Privacy Preservation against MLaaS Adversaries (Thesis)   **2023**
- Developing a data privacy preservation inference infrastructure in the NLP domain, supervised by *Prof. David Lie.*
- Integrating student-teacher knowledge distillation, pre-trained language models, and active learning to preserve the privacy of sensitive data against data leakage and abuse, only revealing the sensitive data to local computations.

Early Cancer Detection (Capstone)   **2023**
- Implemented and developed neural networks to perform early cancer detection on blood samples for OXcan.
- Implemented a pipeline for data processing, model training, and feature selection to find the optimal protein feature set for ealy cancer detection.

Technical Skills

Languages: (Proficient) Python, Matlab, (Prior Experience) Java, C, HTML/CSS, SQL
Tools and Libraries: Git, Pandas, Numpy, Scipy, Matplotlib, Seaborn, Pytorch, HuggingFace, Jupyter, Tensorflow
Certificates: Coursera NLP Specialization, Coursera GANs Specialization, Coursera ML Specialization

Community Service and Leadership

Engineering Science Club   **May. 2023 – Present**
Vice President Student Life   *University of Toronto*
- Plan and oversee student life events for students in the Engineering Science program, promoting and encouraging social/cultural well-being for students.
- Work with events directors to develop and coordinate events, with the largest ones engaging up to 400 participants.

Iron Dragons   **Aug. 2021 – Present**
Co-General Manager, Treasurer   *University of Toronto*
- Oversaw and managed an executive team of 6 to develop training and racing plans for dragon boat.
- Developed and initiated recruitment and training plans that expanded the team from 1 mixed crew in 2021-2022 to 2 mixed competitive crews and 1 recreational crew in 2022-2023, with both competitive crews qualifying for the 2024 Club Crew World Championships.
- Keeping budgets afloat for the 2023-2024 season.

Appassionata Music Group   **Sep. 2021 – Present**
Co-Director   *University of Toronto*
- Organize and host 3 to 5 concerts per year for student and alumni musician to perform, engaging over 100 performers and audience members.

Trustworthy Machine Intelligence   **Sep. 2021 – Apr. 2023**
Vice President Learning   *University of Toronto*
- Ran and organized educational events in the form of seminars, guest speaker talks, and more on AI ethics to make this field more accessible to students.