

# ERIC LIU

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## Education

### University of Toronto

Sep 2022 – May 2027

Bachelor of Applied Science in Computer Engineering with PEY Co-op

Toronto, Ontario

- On track to graduate with Minors in Artificial Intelligence Engineering and Engineering Business
- Dean's List Scholar

## Technical Skills

**Programming Languages:** Python, C++, C, SQL, Java, JS, Verilog, MATLAB, Assembly, Angular, HTML/CSS

**Frameworks & Tools:** Stable Baselines3, PostgreSQL, PyTorch, Gym, Git, JSON, Docker, Linux, NumPy, AWS, GCP

## Experience

### Scotiabank – Capital Markets Data Analyst

May 2026 - Aug 2026

*CIDA: Data Governance - Global Banking and Markets*

Toronto, Ontario

- Incoming Summer 2026

### Scotiabank – Quantitative Trading Developer Co-op

May 2025 – April 2026

*Electronic Execution Services (Algorithmic Trading) – Global Banking and Markets*

Toronto, Ontario

- **Tech Environment:** SQL, Python, Angular, Pandas, Bloomberg, TCA, Reinforcement Learning, MongoDB
- Enhanced VWAP execution models across Canadian and U.S. equity flows using reinforcement clustering and Gaussian Mixture Models to strengthen quantitative modeling and curve stability.
- Developed the *Outage App*, a Bloomberg-integrated diagnostic tool that analyzes failed algorithmic executions (market halts, liquidity limits, client caps) and automatically calculates client refunds across 20,000+ affected orders.
- Improved Transaction Cost Analysis, reconciliation pipelines, and automated client-facing analytics tools
- Building a reinforcement learning internal market-making system that intercepts retail order and reduce market impact.

### Big Tuna - Software Developer

Aug 2020 – May 2024

*Seasonal Game Developer*

Oakville, Ontario

- **Tech Environment:** JavaScript, JSON, SQL, Developer Portal, Game Design, Git, Software Testing.
- Part of a three-person team that created and maintained a highly engaging Discord bot with more than 23,000 players.

## Research

### Scotiabank – Quantitative Equity Researcher

Sep 2026 - Apr 2027

*Electronic Execution Services (Algorithmic Trading)*

Toronto, Ontario

- Incoming Fall 2026

### Market Making Via Reinforcement Learning Research

May 2023 – Aug 2024

*Research Assistant Under Professor Wei Xu*

Toronto, Ontario

- **Tech Environment:** Python, Stable Baselines (DDPG and DQN algorithms), Linux, Pandas, Gym, PyTorch.
- Researched and developed a profitable market-making agent for cryptocurrency exchange using Deep Deterministic Policy Gradient (DDPG) and Deep Q-Network (DQN), understanding its underlying mathematical and financial constructs.
- Crafted a sophisticated machine learning environment that mimics real-world market conditions and scenarios, integrating over 100 million tradebook data entries, paired with a dynamic reward framework.

## Extracurricular

### University of Toronto Aerospace Design Team

Jul 2023 – Present

*Liquid Propulsion and Aerodynamics Division in Rocketry*

Toronto, Ontario

### Ontario Engineering Competition (OEC)

January 2024

*Represented the University of Toronto for programming competition*

Kingston, Ontario

### University of Toronto Engineering Kompetition (UTEK)

November 2023

*First place in programming competition (Team of 4)*

Toronto, Ontario

## Projects

### Fungi Identification Project using Deep Learning | Python, Git, PyTorch, NumPy, Pandas

Jul 2024

- Developed a comprehensive Convolutional Neural Network (CNN) model that identifies various species of fungi, trained on over 10,000 images, achieving model accuracy of 81% compared to baseline accuracy of 65%.

### GIS Mapping System | C++, GTK, Git, Multithreading, Heuristic Algorithms

May 2024

- Implemented map functionalities, time precomputation, and multithreading optimizations.