Jiajing (Jessica) Chen

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Education

University of Toronto — cGPA 3.91/4.00 Toronto, ON

Bachelor of Science in Computer Science, Statistical Science, Mathematics *Expected Graduation May 2026*

Scholarships: NSERC Undergraduate Student Research Award 2024, New College In-Course Scholarship ($1500)

Experience

Quantitative Trading Analyst / AI Engineer August 2024 – present

RBC Capital Markets *Toronto, Canada*

- Built **deep learning neural network models** for short-term volume prediction and extended **kdb+/q database** coverage to LATAM and EMEA stock exchanges for **AI-driven trading algorithms**
- Developed and backtested a novel **multi-signal trading algorithm**, including cleaning and preprocessing large volumes of raw market data

Undergraduate Research Assistant — Supervisor: Dr. Michael Bowling

University of Alberta, Department of Computing Science *Edmonton, Canada*

- **Co-authored paper** in review at **ICLR 2026**, Toward Agents That Reason About Their Computation, introducing solutions for resource and compute constrained **reinforcement learning**
- Implemented an action-repeat mechanism into **deep Q-Network DQN**, allowing agents to reduce decision frequency by 75%, lowering computational cost while maintaining training stability and reward performance

Projects

AI Audio Editor (Hack the North 2025) | *SQL, TypeScript* September 2025

- Developed **agentic digital audio workstation** to directly edit audio files and tracks through LLM prompts
- Integrated remote access to **Azure Virtual Machine** for backend database storage of audio files, users, and projects

Paper Plate Paranoia (utGDDC Fall Jam 2024 2nd Place) | *Unity, C#* October 2024

- Bullet hell game where player must collect items while dodging enemies with different attack patterns
- Designed **dynamic enemy attack patterns**, including tracking enemies and telegraphed laser systems
- Developed animation state transitions and event-driven visual feedback to enhance player experience and clarity during high-intensity gameplay

Predicting RNA Reactivity | *Python, PyTorch* March 2024

- Designed and evaluated machine learning architectures, including **Hyena**, **convolutional neural networks**, hybrid CNN-Transformer models, to predict RNA chemical reactivity dataset containing 1M+ RNA sequences
- Achieved MAE of 0.1540 vs. baseline 0.1731, ranking in the top 50 of the Stanford RNA Folding Competition

Heart-Beatz | *Arduino, Python, JavaScript, CSS* February 2023

- Built hardware and software heart beat tracker that personalizes workout music based on heart rate
- Implemented an **Arduino-based circuitry** to measure users' heart rate, uploading data to a **MySQL database**
- Built a **React-based web application** integrating hardware to display visualizations of the user's exercise data

Activities and Volunteer

UofT Machine Intelligence Student Team

Vice President Academics *May 2025 – present*

- Define vision and strategic priorities for the Academics department, addressing key gaps in ML education at UofT
- Co-chair of **AI Squared reinforcement learning tournament**, fostering a competitive yet inclusive environment with guest lectures and networking events, industry partners with **AMD Schola, Riot Games**, etc.
- Lead planning and execution of large-scale workshops and educational programs for audiences of **400+ attendees**

Technical Skills

Languages: Python, C++, C#, C, JavaScript, TypeScript, SQL, Q, Java, GDScript
Developer Tools: Git, React, Node.js, Unity, Godot, Gymnasium, WandB, Firebase, Django
Machine Learning Frameworks: PyTorch, Jax, TensorFlow, Scikit-learn, ML-Agents (Unity)