Felix Zhang

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EDUCATION

University of Toronto — Sept. 2021 – May 2025

Honours Bachelor of Science; Specialist in Computer Science, Major in Mathematics — *3.95/4.0 cGPA*

- **Coursework:** Operating Systems; Neural Networks and Deep Learning; Probabilistic Learning and Reasoning; Intro. to Image Understanding; Algorithm Design, Analysis and Complexity; Advanced Algorithm Design; Computational Complexity and Computability; Complex Analysis I; Real Analysis I; Mathematical Probability
- **Awards:** University of Toronto Scholar ($7 500), Malcolm Wallace Scholarship ($4 500), Louis Savlov Scholarships in Sciences And Humanities ($500), Dean's List Scholar

TECHNICAL SKILLS

Languages	C, C++, Python, Rust, Bash, Java
Frameworks	PyTorch, TensorFlow, scikit-learn, NumPy, Pandas, SciPy, Matplotlib, MuJoCo, Eigen3
Tools	Git, gdb, Linux, shell, CMake, Qemu, Google Colab, Jupyter, Anaconda, Docker, WSL, Slurm

EXPERIENCE

Researcher — June 2024 – Present

PRISM Lab, Holland-Bloorview Kids Rehabilitation Hospital & FUSRP, the Fields Institute

- Worked under Prof. Tom Chau on denoising electroencephalogram (EEG) data with deep-learning models
- Performed a literature review on previous methods used for EEG denoising and tested previously proposed machine-learning models on the *EEGDenoiseNet* dataset
- Investigated the applicability of end-to-end transformer models to denoise EEG signals as well as the impact of using signals' time-frequency representation as input

ML Runtime Engineer — May 2024 – Present

Cerebras Systems

- Implemented a runtime virtual memory system in **C++** which pre-emptively loads data immediately before it is needed by tracking upcoming memory accesses
- Triaged and addressed **20+** failing tests within a high-priority test suite that is run nightly

Research Student — May 2024 – Present

University of Toronto

- Worked under Prof. Jack Sun to implement pedagogical operating system *KidneyOS* in **Rust** for an introductory operating systems course
- Designed and built the process system and implemented kernel/user thread differentiation in context swtiches
- Implemented [TODO: list] system calls

Machine Learning Researcher — July 2023 – May 2024

BMO Lab, University of Toronto

- Worked under Prof. David Rokeby to integrate motion-capture suits and diffusion models into live performances
- Applied forward dynamics in real-time on motion-capture data using **MuJoCo**, providing joint-level control of the model and the option to extract physical data using inverse dynamics
- Explored the use of reinforcement learning to imitate input movements from motion capture suits in real-time

Research Assistant — May 2023 – May 2024

Biological Physics Group, University of Toronto

- Worked under Prof. Anton Zilman to model receptor signalling via soluble ligands with a high degree of cross-talk
- Built a feed-forward network in **PyTorch** that predicts the cytokine dynamics of T-cells in response to antigens
- Showed two variables are sufficient to determine cytokine concentrations (as predicted by previous theoretical work) because the model predicted the correct outputs with **0.01%** error using two hidden variables

Research Student — May 2022 – Sept. 2022

Physics Education Group, University of Toronto

- Worked with Prof. Carolyn Sealfon to develop suggestion extraction models for feedback from physics courses
- Created a dataset of ~**11 000** sentences from student feedback which labels whether they contain suggestions
- Compared the effectiveness of statistical and deep-learning classifiers at extracting suggestions using **scikit-learn** and **TensorFlow** respectively
- Demonstrated the efficacy of a BERT classifier at addressing this problem with it achieving an F_1 score of **0.823**