Joseph Yu

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Education

University of Toronto   Sept. 2022 – May 2026
Honours Bachelor of Science — Computer Science, Bioinformatics, & Mathematics   *Toronto, ON*
- **cGPA**: 3.96/4.0
- **Relevant Coursework**: Java & Software Design (A+), C & Systems Programming (A+), Data Structures (A-), SQL & Databases (A+), Algorithms (A-), OS & Concurrency (A), Machine Learning (A), Multivariable Calculus (A+), Statistics (A)

Experience

Machine Learning Developer   Jan. 2025 – Present
University of Toronto Machine Intelligence Student Team   *Toronto, ON*
- Developing a CNN to diagnose respiratory illnesses from lung sounds, coughs, and wheezes by applying machine learning techniques to classify audio data, optimizing model performance for accuracy and efficiency, and enabling users to better understand potential health conditions before seeking medical treatment

Machine Learning Researcher   Mar. 2024 – Present
SickKids (PGCRL) — Yuen Lab   *Toronto, ON*
- Improved understanding of genetic disease predictors by designing, training, and fine-tuning **three** different **PyTorch CNNs** with CUDA integration, achieving robust performance on over eight distinct biological datasets
- Streamlined bioinformatics workflows by building a genome data pre-processing pipeline using Bash and command-line utilities
- Processed, analyzed, and visualized CNN training and evaluation data using pandas and matplotlib Python libraries for research presentations

Skills

Languages: Python, Java, C, C++, SQL (PostgreSQL), Bash, HTML/CSS, JavaScript
Tools/Frameworks: PyTorch, Linux, Flask, MongoDB, Git, VS Code, Unity, sklearn, pandas/polars, numpy, matplotlib, pytest, JUnit 5, Conda/Mamba

Projects

Atlas Adventures ⧉ | *Java, MongoDB, Git*
- Created an educational geography quiz app using **Java**, BingMaps API, and **MongoDB**, helping users learn geography through interactive gameplay
- Wrote unit, integration, and end-to-end tests for the application using JUnit5, covering **6000+** lines of code to ensure code quality and reliability
- Collaborated effectively in a team development environment using **Git** for version control, code reviews, and merge conflict resolutions

Pomogarden: Interactive AI Pomodoro Timer (DeerHacks 2024) ⧉ | *Python, Flask, JS, Cohere*
- Engineered a **Flask** backend for a pomodoro-inspired web application leveraging generative AI (Cohere) to generate unique motivational messages, resulting in an engaging productivity tool
- Designed a beautiful, immersive, and interactive UI using React and JavaScript for an engaging user experience

Colony Counter | *PyTorch, Pandas*
- Improved biological research efficiency by designing, training, and tuning a **deep convolutional neural network** in **PyTorch** to automate the counting of yeast colonies on agar plates
- Collected, processed, and labeled yeast colony image data during research position in the Alex N. Nguyen Ba Lab

Snail's Pace: AR Horror Game (HackTheNorth 2023) ⧉ | *Unity, C#, AR Foundation*
- Learned **Unity and C#** and built a geospatial AR horror game in which a snail chases the player across the globe, using Unity's AR Foundation toolkit and AR+GPS Location plugin, **all within a 36-hour time frame**