Daniel Zheng

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Education

University of Toronto - Toronto, ON   Sept. 2023 – Apr. 2028 (expected)
B.A.Sc. in Computer Engineering + PEY Co-op
Intended Minors: Artificial Intelligence

Projects

Gesture-Based LED Controller - Toronto, ON   Jul. 2025 - Present

- **Developed gesture-controlled interface prototype for prosthetic applications**, enabling intuitive LED brightness control through real-time finger tracking with 60+ gesture updates per second.
- **Created proof-of-concept for accessible prosthetic control systems**, demonstrating potential to improve quality of life for amputees through natural gesture-based interfaces.
- **Integrated computer vision** (MediaPipe/OpenCV) with Arduino hardware via serial communication to achieve responsive gesture recognition and control.

Music Genre Classification CNN - Toronto, ON   Apr. 2025 – Present
Course: Applied Fundamentals of Deep Learning

- **Achieved 80%+ average accuracy in 12-class music genre classification** using PyTorch CNN optimized with dropout and inception layers on 224x224 spectrograms.
- **Implemented advanced population-based crossover algorithm (MEEFO)** to automatically tune CNN hyperparameters and weights, eliminating manual optimization overhead.
- **Produced per-class precision, recall, and F1-score reports** post-training, enabling targeted performance analysis across genres.

Personal Website - Toronto, ON   Jun. 2025 - Present

- **Designed and developed a fully responsive portfolio site from scratch** using Next.js (App Router), React and TypeScript to showcase projects.
- **Created modular, reusable UI components** styled with Tailwind CSS for consistency and rapid iteration.
- **Configured continuous deployment via Netlify CI/CD**, automatically building and publishing updates with each Git push.

Interactive Map Navigation Tool (TastiMap) - Toronto, ON   Jan. 2025 – Apr. 2025
Course: Software Design and Communication

- **Built a high-performance pathfinding system processing 40,000+ road intersections** across major cities using optimized C++ STL data structures and graph algorithms (**Dijkstra's, ACO**).
- **Architected modular frontend to backend communication** connecting Glade/EZGL signals to core logic modules, **implementing endpoint-like architecture akin to RESTful APIs**.
- **Integrated real-time restaurant data from Google Places API** using LibCurl, creating interactive pop-ups with live website links.
- **Delivered production-ready code through a 3-person Agile team** using **Git**, automated testing and debuggers to ensure 95%+ test coverage and maintainability.

Work Experience

Deran Academy - Markham, ON (Remote)   Sept. 2022 – Sept. 2024
Mathematics Tutor

- **Delivered Math, Chemistry and Biology instruction to 20+ students** in grades 1-12, adapting lessons to individual learning styles.
- **Conducted bilingual instruction (Mandarin & English)** over Zoom and Google Meet, improving average test scores by 15–20%.
- **Prepared and delivered weekly progress reports** using Adobe Acrobat, contributing to improved student learning outcomes and raising 95% of students' grades above 90%.

Skills

Languages: C, C++, Python, Java, Assembly, Verilog, Kotlin
Developer Tools: Git, Google Cloud Platform, Netlify
Libraries/Frameworks: React, Next.js, PyTorch, NumPy, MediaPipe Hands, OpenCV