Zhi Yang Chen

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Education

University of Toronto Sep 2021 – Apr 2026
Bachelor of Applied Science in Computer Engineering (BASc) *Toronto, ON*

- Relevant Coursework: Operating Systems, Algorithms and Data Structures, Introduction to Databases, Distributed Systems, Computer Networks, Software Design, Computer Organization, Digital Systems, Computer Fundamentals

Projects

YelpCamp | *Node.js, Express.js, MongoDB* Demo

- Launched a full-stack campground review web application, utilizing technologies such as **Node.js**, **Express.js**, and **MongoDB** to build a dynamic and intuitive platform
- Designed a user-friendly front-end using **HTML**, **CSS**, and **Bootstrap**, elevating user experience through responsive design principles and **UX/UI** refinements
- Optimized user experiences by establishing a secure and uninterrupted interface, utilizing Render for deployment on **AWS infrastructure**

OTFMap | *C++, GTK, Glade, EZGL, OpenStreetMap API, Git* Demo

- Built a GIS akin to Google Maps, utilizing **C++ (STL)** and **OSM API**, along with a customized database
- Implemented **Dijkstra's** and **A* algorithms** for fully optimized pathfinding in 20 different cities, surpassing all TA algorithms in travel time and ranking within the **top 10%** of the class
- Designed a user-friendly front-end utilizing **Glade** and **GTK**, allowing for responsive and efficient user interaction

Thread & Process Manager | *C, Linux*

- Implemented a fully functional 1 MiB ext2 filesystem in **C**, featuring directories, regular files, and **symbolic links**, demonstrating a deep understanding of **filesystem architecture** and **disk management**
- Engineered a virtual memory management system in **C**, simulating page table management and implementing copy-on-write optimizations, showcasing proficiency in low-level **memory handling** and optimization techniques
- Developed a user-space threading library for enhanced **thread management** and **process scheduling**

Enhanced Processor | *Verilog HDL, ARMv7 Assembly, ModelSim*

- Constructed a sophisticated **16-bit processor** with 8 registers and a robust **Arithmetic Logic Unit (ALU)** using **Verilog HDL**, incorporating a **Finite State Machine (FSM)** for precise control
- Integrated various I/O devices, including LEDs, switches, and HEX displays, to create a captivating animation on a **DE1-SoC board**, leveraging **ARMv7 Assembly** programming

Experience

Junior Tolling Field Technician May 2023 – Sep 2023
407 ETR Concession Company Limited *Woodbridge, ON*

- Maintained tolling equipment through detailed inspections, diagnostics, and adjustments, securing a **98% peak performance rate** and guaranteeing a **99.5% uninterrupted** tolling operation
- Conducted exhaustive testing of tolling equipment in a controlled laboratory environment, proactively resolving technical issues to maintain a **98% data transmission** reliability rate
- Assisted in the East Detolling project, decommissioning 22 legacy sites and establishing 6 new sites, resulting in a **10% improvement** in tolling efficiency

Electrical Systems Engineer Sep 2022 – Sep 2023
Blue Sky Solar Racing *Toronto, ON*

- Proficiently soldered and tested **circuit boards**, ensuring a high degree of performance and reliability for various electronic applications, improving the team's electrical systems
- Utilized Altium Designer to design **PCB layouts**, create component libraries, and **develop schematics** for various solar car electrical systems, contributing to system functionality and advancements

Skills

Languages: C, C++, Python, SQL, PostgreSQL, HTML, CSS, JavaScript, Typescript
Frameworks: React.js, Node.js, Express.js, Next.js, Bootstrap, MongoDB, Mongoose, NumPy, PyTorch
Developer Tools: Git, Github, Git Bash, Linux, Unix, GTK, Glade, Altium Designer, ModelSim, Multisim