George Chen

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Education

University of Waterloo - *BASc, Honours Electrical Engineering* Sep 2022 - Present

Relevant Courses: Digital Computers, Electronic Circuits, Algorithms and Data Structures

Skills

Programming Languages: C, C++, Python, VHDL, Java, C#, JavaScript, HTML, CSS, ASP.NET Core.
Tools/Technologies: Altium Designer, LTspice, KiCad, MPLAB, Quartus Prime, AutoCAD, Git, Revit.
Hardware/Lab: Arduino, AVR, STM32, ATmega, ESP32, PCB Design, Oscilloscope, DMM, Soldering.

Work Experience

Electrical Designer - Plan Group | *C#, AutoCAD, Revit* Jan 2023 - Apr 2023

- Conducted quality control inspections in Revit for electrical floor plan layouts for Sick Kids Hospital, resulting in a 70% reduction in completion time per layout.
- Increased CAD workflow efficiency by 10% through the development of macros and tools in C#.
- Designed and repaired plumbing and electrical fixtures in Revit for TD Bank floor plan layouts.

Projects

Logic Gates PCB | *KiCad, Micro-Cap* Jan 2026 - Present

- Designing PCB to drive basic logic gates built using transistor-transistor logic with USB-C as supply voltage.
- Preliminary part in process to create a 4 bit calculator PCB using individual BJT transistors.

Traffic Light Controller | *VHDL, FPGA, Quartus Prime* Jul 2025

- Designed a moore state machine and a holding register with a synchronizer to simulate a traffic light system through two seven segment displays on an FPGA using synchronous design in VHDL.
- Converted digital waveforms to sequential circuits and registers used in the state machine.

Breathalyzer Device | *C++, STM32, I2C* Sep 2023 - Nov 2023

- Architected a breathalyzer device to approximate the alcohol concentration in the air using an MQ3 alcohol sensor and STM32 Nucleo-F401RE microcontroller, displaying the result on an LCD screen via I2C protocol.
- Implemented calibration algorithm using data from changes in electron flow within the sensor for more precise readings in various environments.

Multivibrator PCB | *Altium Designer* Feb 2025

- Developed an astable multivibrator PCB in Altium Designer for stable pulse generation including schematic design, component selection, PCB layout optimization and analog waveform analysis.

Chess Desktop App | *Python* Jan 2024 - Mar 2024

- Developed a chess game in Python that adheres to traditional rules using the PyGame library.
- Incorporates a simple AI engine built using a minimax algorithm with alpha-beta pruning to play against.
- Employs a recursive algorithm to announce moves played by the player and engine synchronously.