# George Chen

george.chen@uwaterloo.ca | georgescoding.com | github.com/GeorgesCoding

## 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

**Door Sensor** | *ESP32, C++, I2S* Apr 2025 - Present

- Developed an IoT system using dual ESP32 microcontrollers and an ultrasonic sensor to detect building entry events, with real-time Wi-Fi communication triggering audio playback via I2S-connected speakers.

**Traffic Light Controller** | *VHDL, FPGA, Quartus Prime* Jul 2024

- Designed a moore state machine to drive two seven segment displays to simulate a traffic light controller system on an FPGA using synchronous design in VHDL.

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

- Engineered an alcohol detection system that approximates the alcohol concentration in the air.
- Implemented an MQ3 alcohol sensor that interfaces with an STM32 microcontroller to compute the percent of blood alcohol in the air and display the result on an LCD screen using I2C protocol.
- Integrated a calibration procedure that uses the MQ3 to gather real-time data on the fluctuating electron flow in the sensor, allowing for more precise readings in various environments.

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

- Developed a chess game with all classic rules in Python using the PyGame library.
- Incorporates an AI bot built using a minimax algorithm with alpha-beta pruning for decision-making.
- Employs a recursive algorithm for the dialogue window that changes according to the board state.

**Multivibrator PCB** | *Altium Designer* Feb 2025

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

## Education

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

Relevant Courses: Linear Circuits, Digital Circuits and Systems