Justin Wai

(647) 893-7609 | justin.wai@gmail.com | www.linkedin.com/in/justin-wai2004/ | github.com/EightSmart

Education

University of Toronto Toronto, ON
BASc, Electrical and Computer Engineering *Expected Graduation – May 2026*
cGPA: 3.96

Experience

Engineer (Project Intern) June 2023 - August 2023
Hong Kong Applied Science and Technology Research Institute (ASTRI) *Hong Kong*

- Led design and development of an object tracking system using ROS2 (Python/C++) and 6DOF Robot Arm
- Implemented object detection and segmentation using converted Caffe models with Intel OpenVINO AI Toolkit
- Developed calibration system using RealSense depth cameras and OpenCV to detect orientation and position
- Wrote detailed design documents and presented project to Networking Software Division; tested the project with TSN (Time Sensitive Networking), reducing latency to 1ms and increasing stability of arm

Volunteering / Clubs

Firmware CDH General Member September 2022 - Present
University of Toronto Aerospace Team (UTAT) *Toronto, Canada*

- Wrote firmware drivers in C for GPS and Battery Management System (BMS) modules aboard FINCH, a hyperspectral imaging CubeSat Satellite
- Designed a Time Library to emulate part of a CubeSat Space Protocol Operating System
- Developed proof of concept demo allowing Dynamic Thread Priority during runtime within FreeRTOS

Facilities Director January 2022 - Present
Hong Kong Virtual Area Control Centre (HKvACC) *Hong Kong / Remote*

- Automated flight plan checking by developing a C++ DLL Plugin, reducing workload for controllers by up to 50%
- Designed installer application in QT C++ for the Hong Kong Sector Package, utilising libgit2 library for automatic branch merging and merge conflict resolution
- Modernized the vACC website using TypeScript and Tailwind CSS

Guided Engineering Academic Review Sessions Mentor September 2023 - Present
University of Toronto FASE *Toronto, Canada*

- Led weekly review sessions for first year engineering students, covering courses: MAT186 (Calculus I), MAT188 (Linear Algebra), CIV100 (Mechanics), APS105 (Programming Fundamentals), ECE110 (Circuit Anlaysis)
- Led development of creative and diverse teaching resources to create a dynamic and engaging class environment
- Delivered a tailored learning experience, adapting to different students' needs and academic performance

Projects

2-Player Whack A Mole November 2023 - December 2023
Verilog

- Collaborated with a partner to program Whack-A-Mole in Verilog for the Altera SoC FGPA, using DE1-SOC
- Features VGA animated output using images initialised from memory, PS2 keyboard input, FSMs and datapaths
- Achieved 100/100 grade for project complexity and presentation

JHB Holiday Mapper January 2024 - April 2024
C++ / GTK

- In a team of 3, created a GIS client for tourists to search for, display, and navigate between points of interest, with an intuitive, adaptive UI and intelligent holiday planning algorithm
- Achieved 13th place out of 85 teams for pathfinding algorithm efficiency and effectiveness

Technical Skills

Languages: C/C++, Verilog, Python, JavaScript, TypeScript, HTML/CSS, MATLAB
Toolkits: ROS2, OpenVINO AI, TensorFlow, FreeRTOS
Developer Tools: Git, VS Code, Intel Quartus Prime, ModelSim-Intel, LTSpice, STM32 IDE, QT Design Studio