

# FU YAMAOKA

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## EDUCATION

**B.A.Sc. in Computer Engineering**, University of Toronto

Sept 2022 - Apr 2027

Relevant Coursework: Digital Systems, Computer Organization, Digital Electronics, Algorithms & Data Structures

Dean's List (Fall 2022, Winter 2023, Fall 2023, Winter 2024).

GPA: 3.8.

## EXPERIENCE

**Electronics Team Member**

Sept 2023 - Current

University of Toronto Chemical Vehicle

Toronto, ON

- Designed the electronic system and body of a chemical vehicle, ensuring reliable power delivery to all components.
- Tested voltage regulation solutions to maintain constant power and optimize chemical battery usage.
- Programmed the vehicle's systems optimizing backend software for precise control and reliable performance.

**Project Manager**

Jan 2023 - May 2023

Medical Podcast App & University of Toronto

Toronto, ON

- Collaborated with 5 engineers to design a solution for delivering information about medical case studies.
- Utilized iterative design processes and app design tools to create virtual models, optimizing user experience.
- Implemented information delivery strategies and maintained documentation for project management.

## PROJECTS

**Maze Game**

(Verilog)

- Programmed an FPGA board with Quartus to read directional inputs from a PS2 keyboard for maze-solving under time constraints, utilizing a Finite State Machine (FSM) to manage the input states and transitions.
- Developed a control module to decode 8-bit hexadecimal inputs, verified with ModelSim to ensure correct operations, and synchronized with a VGA display for real-time movement visualization.
- Implemented a rate divider to manage system clocks, ensuring smooth synchronization of user inputs and display updates, followed by extensive testing to validate the FSM's performance and overall system functionality.

**AnimateIt!**

(C, Assembly)

- Enabled drawing and animation on a monitor using a DE1-SOC board, integrating peripherals like a PS2 mouse for input, a keyboard for commands, and a VGA display for output, allowing users to create and manipulate graphics intuitively.
- Programmed seamless I/O interaction with polling and interrupts for responsive user input.
- Employed Double Buffering for animations, allowing simultaneous drawing and rendering to minimize flicker.

**Navigational Map**

(C++)

- Developed a fully functional map application with features for zooming, panning, navigation, and transit route display, utilizing Dijkstra's and A\* algorithms for efficient routing.
- Accessed and managed street databases using OSM APIs, implementing open-source solutions like the EZGL library and Glade software for optimized performance and enhanced GUI interaction.
- Collaborated with a team of two developers, employing Git for version control and leveraging profiling tools like Callgrabs and Flamegraphs to optimize code performance.

**Instrument Identifier in Music**

(Python)

- Developed a CNN model to identify 8 instruments from polyphonic music recordings, processing audio files into mel spectrograms and utilizing MFCC feature extraction for improved accuracy.
- Optimized model performance with techniques like early stopping, batch normalization, and learning rate scheduling to address overlapping frequency challenges.
- Trained and validated the model on the IRMAS dataset, achieving 94.89% validation accuracy and an F1-score of 0.841 on unseen data.

## SKILLS

C	C++	Assembly	Verilog	Python	HTML	CSS	MATLAB	PyTorch	Flask	MacOS
Git	Quartus	ModelSim	FPGA	Arduino	Javascript	VSCode	Bash	Windows	Linux	