

# CATHY CHEN

778-872-3760 | mycathy.chen@mail.utoronto.ca | cathy-chen.com | linkedin.com/in/icathychen/

## EDUCATION

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### University of Toronto

Sep 2020 - May 2025

Bachelor of Applied Science in **Computer Engineering** + PEY Co-op (1 year)

GPA: 3.94/4

Minor in Artificial Intelligence

Relevant Courses: Software Engineering, Operating Systems, Algorithm & Data Structures, Fundamentals of Machine Learning, Computer Graphics, Multi-media System, Distributed System, Computer Architecture, Computer System Programming

## TECHNICAL SKILLS

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- **Programming Language:** C, C++, Python, Swift, JavaScript, Assembly Language, Verilog
- **Software/Frameworks/API:** GTK, Qt, PyQt, OpenGL, Autodesk Maya, Houdini, Unreal Engine, XCode, Figma, Photoshop
- **Software Development Tools:** Git, Linux, Perforce Source Control, Bitbucket, Jira, Jenkins, AWS, Visual Studio
- **Other programming experience:** CSS, HTML, TCL, TypeScript, Houdini VEX, SQL, React, Bash/Shell scripting

## WORK EXPERIENCES

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### Software Engineer Intern | Intel Corporation, San Jose

Sep 2023 – Sep 2024

C++ | Verilog | Python | Tcl | Perforce | Quartus Compiler

- Collaborated with Synthesis team to develop, debug, refactor, test, and maintain complex features for large-scale Quartus Design Software in C++ to enable analysis and compilation of HDL designs for FPGA.
- Optimized Quartus compiler synthesis runtime performance on Windows by 30% through strategic caching with hash table implementation and identifying functions bottlenecks and hotspots using **Intel VTune** and **Visual Studio CPU Profiler**.
- Implemented JSON string caching to enable dynamic loading of hardcoded strings and boosted runtime performance by 15%.
- Automate the generation and validation of read-only-memory for eASIC chip design in eTools Software flow using python and tcl scripting to help improve ROM checking efficiency and streamline the process.
- Leveraged Perforce for version control and wrote comprehensive regression tests using python and Verilog hardware language.

### Software Development Engineer Intern | Amazon Web Services, Vancouver

Jun 2023 – Aug 2023

React | Typescript | AWS | GIT

- Developed a React-based single-page webapp in AWS Payments Team, automating the launching of Seller-of-Record through infrastructure with **AWS S3**, **CloudFront**, and **Midway authentication** for robust security measure.
- Developed frontend UI using **typescript**, **AWS Cloudscape** System and integration to **AWS API Gateway** backend calls.
- Set up server hosted zones using **Route53** and internal testing domains in AWS CDK pipeline for the AWS Payments Tool.
- Configured DNS records such as CNAME and A Record to facilitate efficient zone delegation across different platforms.

### Mobile Software Engineer Intern | TD Bank, Toronto

May 2022 - Aug 2022

Swift | Swift UI | GIT | Bitbucket | Jira | Agile Software Development

- Developed new features in TD mobile iOS app Reward Section using **Swift** and **Swift UI** in Xcode to optimize user experience according to business requirements, UX designs templates, and architectural guidelines.
- Ensured defect free codes by writing comprehensive unit tests and participated in code reviewing process.

## PROJECTS

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### Relica Travel Map | C++, OpenStreetMap API, GTK Graphics Library

- Developed a Travel map application in C++ that allow users to plan and store shortest travel routes with multiple destinations.
- Implemented optimization algorithms such as Dijkstra's, A\* heuristic and Greedy Algorithm to obtain optimal travel paths.
- Implemented matrix and multi-threading to enhance Map's runtime performance and user experiences.
- Designed GUI using the GTK, EZGL graphics packages and Glade.

### Diamond Crush Game | C, ARM Assembly Language

- Built a Diamond Crush game on a DE1-SoC computer board using C and ARM Assembly language.
- Utilized different hardware components such as A9 private timer, Interrupts, Parallel Port, Switches, HEX display and VGA display for graphics interface rendering and user interactions.

### Autodesk Maya Python Plug-in | Python, Qt, Pyside, Maya Python API, Pymel

- Designed and implemented a 3D dynamic Spiral Staircase Generator plug-in using Maya python API and Pymel that can generate animated stairs of various sizes, height and elevation through user-defined input.
- Created Model controller library and lighting manager plug-in tools using Maya commands library and the python Qt interface framework to automate repetitive tasks for artists, streamlining workflows and increasing productivity.

## OTHERS

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Awards: **Dean's Honour List** (University of Toronto) | **Outstanding Youth Leadership** (City of Richmond)

Volunteers: **SIGGRAPH** Student Volunteer (2024) | **Toronto International Film Festival** Volunteer (2022)