

Aryan Gidwani

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EDUCATION

University of Toronto

Toronto, ON

Bachelor of Applied Science in Computer Engineering + PEY Co-op (GPA: 3.15)

Sep. 2023 – Apr 2028

- **Coursework:** Operating Systems, Data Structures & Algorithms, Compilers, Digital Systems, Computer Organization, Software Design and Communication, Linear Algebra
- **Awards:** Top 10 at Hack the Heart Hackathon

TECHNICAL SKILLS

Programming Languages: C, C++, Python, Verilog, Java, JavaScript

Tools & Frameworks: Linux, Docker, Git, GDB, Valgrind, Make/CMake, OpenGL Shading Language (GLSL), VGA Graphics, Flex, Bison, GTK, Quartus Prime, LTspice

Concepts: Concurrent & Parallel Programming, Performance Optimization, Compiler Design, RESTful APIs

Hardware: Altera DE1-SOC, RISC-V Architecture

EXPERIENCE

Insurance Data Analyst Intern

Mississauga, ON

Echelon Insurance

May 2025 – Aug 2025

- Performed **data analysis** on 500+ insurance policies weekly, identifying overdue activities and discrepancies to ensure 100% record accuracy and compliance
- Investigated and processed 30+ claims per week involving unlisted drivers, detecting trends and anomalies, and escalating 10–15% of complex cases to underwriters for timely resolution
- Prepared and delivered weekly **data-driven presentations** to a team of 10+, summarizing policy updates, trends, and recommendations to streamline workflows and support informed decision-making

PROJECTS

GLSL Front-End Compiler for OpenGL Shaders | C, GLSL, Flex, Bison, Git

Sep 2025 – Nov 2025

- Developed a lightweight **GLSL shader compiler** simulating the front end of a graphics pipeline, capable of compiling shaders with constructs such as variables, operators, control flow, and functions, by performing **lexical analysis, syntax parsing, and semantic validation**.
- Implemented a full lexical scanner with Flex (**30+ regex rules**) and a robust parser with Bison (**50+ grammar productions**) for efficient tokenization, syntax validation, and error detection using DFA-based matching
- Constructed an **Abstract Syntax Tree (AST)** to enable semantic checks, type validation, and symbol table generation, preparing shader code for intermediate representation

Interactive City Mapping Application | C++, GTK Library, Git

Jan 2025 – Apr 2025

- Designed and developed an interactive mapping application for **visualizing and navigating maps of 20+ cities**, enabling dynamic features such as live traffic updates, weather overlays, subway and cycling paths, and automatic intersection identification from user-inputted street names (<https://youtu.be/jRscCVP-Bp0>)
- Implemented efficient pathfinding algorithms in C++, including Dijkstra's and 2-opt, leveraging multi-threading to compute optimal routes between locations with an average latency of 2 seconds
- Integrated APIs and utilized data structures such as **maps, vectors, and sets** to implement core features, including live traffic updates via TomTom Traffic API and weather overlays via OpenWeather API, ensuring fast and accurate map interactions

Basketball Video Game | Verilog, Quartus Prime, RISC-V Architecture, VGA Adapter

Oct 2024 – Nov 2024

- Designed and developed an interactive basketball video game for the Altera DE1-SOC board, featuring real-time scoring, responsive VGA graphics, and user-controlled gameplay
- Implemented game logic with **50+ finite states**, flip-flops, registers, slow counters, and seven-segment displays, enabling smooth game progression with less than 20 ms input-to-display latency

Pacemaker Data Analyzer | Python, NumPy

Feb 2024 – Feb 2024

- Developed a pacemaker data analysis application, placing in the **top 10 at the Hack the Heart Hackathon**; detecting heart irregularities and low battery levels within large ECG datasets
- Filtered and analyzed heartbeat data by demographic, supporting multiple patient profiles and displaying heart graphs with condition indicators and pacemaker battery status
- Designed an interactive UI with multiple color themes, enabling smooth visualization of 10,000+ ECG readings with minimal latency