Bill Gan

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Skills

Linux, LLVM, x64/ARM64 Assembly, DirectX 11, C/C++, C#, Unity, Rust, TypeScript, Vulkan, OpenGL 4.6, CUDA, React, Java, Python, VSCode, CLion, Azure, GCP, SQL, DB2

Education

B.Sc. Computer Science, AI Specialization
University of Waterloo Sep 2021 - Apr 2026

Relevant Courses: Networking, Databases, Operating Systems, Concurrent and Parallel Programming, Algorithms, Security, Compilers, Machine Learning, Computer Graphics, Computer Vision

Experience

SDK Software Developer
Advanced Micro Devices Jan 2023 - Apr 2023

- Worked on FidelityFX Super Resolution
- Improved graphics drivers (note: under NDA)

AI Research Assistant
Vision and Image Processing Lab, University of Waterloo May 2023 - Aug 2023

- Implemented state-of-the-art periodic autoencoders to generate locomotion animations using the AI4Animation pipeline
- Used OpenPose to generate motion capture data for training the neural motion controller

Full-stack & iOS Software Developer
Electro Source May 2022 - Aug 2022

- Created an iOS keyboard extension using Swift and MongoDB
- Implemented a robust backend service with Microsoft Graph API

Projects

OpenGL Renderer *(C++, OpenGL, GLSL)*

- Implemented a renderer with modern OpenGL features including Direct State Access, Programmable Vertex Pulling, Separate Shader Objects to approach zero driver overhead
- Used C++20 modules to organize the codebase and reduce compilation times

Compiler *(C++, LLVM, x64)*

- Developed a compiler for a custom programming language using the LLVM framework
- Supports a data-oriented paradigm with improvements to modules, semicolons, pattern matching, type inference, operator overloading, and destructors

DirectX Renderer *(C++, Direct3D 11, HLSL)*

- Implemented various computer graphics algorithms to build a 3D platform fighter game
- Created a VSCode extension to streamline shader development, including a recursive-descent parser for HLSL
- Used synchronization primitives to manage GPU parallelism for high-performance rendering

Text Editor *(Direct2D, DirectWrite, C++)*

- Created a Vim-like text editor

FPS Game *(Unity, C#, C++)*

- Created a first-person shooter game with wallriding mechanics
- Implemented network replication and client-side prediction for robust multiplayer netcode

Mask Detector *(Tensorflow, Keras, Python, Flask)*

- Trained a convolutional neural network to classify mask-wearers from photos

Awards

University of Waterloo Faculty of Mathematics Entrance Scholarship

- Received a $15,000 scholarship for early admission into Computer Science

Canadian Mathematical Olympiad Qualifying Repêchage

- Qualified by scoring top 3.5% of participants on the Canadian Open Mathematics Challenge