

Patrik Buhring

 [OptimisticPeach](#) |  patrikbuhring@gmail.com |  [+1 \(647\)-460-7000](tel:+16474607000)

Education

University of Waterloo

Sept. 2022 - Aug. 2027

- **Double Majoring** in **Computer Science** (94% GPA) and **Pure Mathematics** (86% GPA).
- Candidate for a **Bachelors in Mathematics**.
- Programming for Performance (**98%**): Concurrent and efficient computation on modern hardware.

Skills

Languages Rust, Go, C++, C#, Java, C, Bash, Dart, Python, Racket, HLSL, GLSL

Frameworks & Libraries OpenGL, DirectX 11, Android, .NET, Linux, CUDA

Spoken & Written Languages English, Spanish, French

Experience

Bioinformatics Coop Student

Jan. 2024 – Apr. 2024

University of Guelph – Center for Biodiversity Genomics

Go, C, Python, and Bash

- Drove a project to completion, adding components and documentation, and ensuring overall polish.
- Refactored, benchmarked, and documented a **Go** codebase to ensure **future maintainability**.
- Participated in an optimized rewrite of a core algorithm for species categorization.

Projects

Comprehensive Rust Workshop

Feb. 2024 – Mar. 2024

- Ran the [Google Comprehensive Rust](#) workshop for a group of approximately 15 students.
- Cooperated with the Computer Science Club to organize and advertise the workshop.

Terminal Game Engine

Dec. 2023

C++

- Wrote a **terminal game engine** as well as a space invaders style game and a snake clone.
- Designed an incredibly flexible **ECS** API that achieves **realtime framerate** on a **terminal**.
- Incorporated **mouse input**, fine-grained rendering using braille characters, and colour support.

[Hypersphere: An Exploration of 3D and 4D Spherical Geometry](#)

Dec. 2022 – Present

Rust, WGSL, WebGPU, WASM, JavaScript, HTML, and CSS

- Publishes updates to [a live WebGPU enabled demonstration](#) in a custom-written HTML website.
- Integrates a custom flat shading water shader and various terrain generation modes for visual appeal.
- Developed an open source [4D math utilities](#) library and [separate tech demo](#).
- Adapts an existing [hydraulic erosion simulation](#) for spherical terrain: [demo video](#).

[Hexasphere: Open Source Sphere Generation](#)

Aug. 2020 – Present

Rust

- Implements an efficient sphere subdivision algorithm with the aim of reducing distortion.
- More than [1.5 Million downloads](#).
- Maintains and updates the project, ensuring quality and well-documented code.
- Optimized to produce cache-friendly meshes for efficiency when rendering very detailed spheres.