Alex Pawelko

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⚙ Skills

Languages C++, Java, C, C#, GLSL, Kotlin, TypeScript, x86 Assembly, Lua, JavaScript, Scala, Maple, Python, HLSL

Technologies OpenGL, Unity, Unreal, Spring, Express, Netty, MongoDB, SQL, Gradle, Jenkins, Maven, Git, Node.js

◔ Work Experience

University of Waterloo, Department of Pure Mathematics
Waterloo | May 2024 - Aug. 2024

Research Assistant, advised by Prof. Spiro Karigiannis

> Performed novel research in **differential geometry**, using tools from symplectic geometry and gauge theory.
> Presented three research seminar talks to professors and graduate students in geometry group.
> Programmed symbolic algorithms used in research for **tensor analysis** and **exterior calculus** using **Maple**.

Tactic Studios
Remote | Sep. 2023 - Dec. 2023

Game Programmer

> Programmed gameplay, user interface, and networking features in **Java** and **C++** within proprietary engine for upcoming third-person shooter title published by Square Enix.
> Collaborated closely with fellow programmers, artists, producers, and the publisher to make a great game!

Eden Industries
Remote | May 2022 – Aug. 2022, Jan. 2023 - Apr. 2023

Game Programmer

> Programmed 2D and 3D graphics and shaders in **C++** and **GLSL** for upcoming titles on all major platforms.
> Implemented and debugged gameplay mechanics using **C++** within **Unreal** and in-house engines.

Podcrash
Remote | Apr. 2021 – Jul. 2021

Software Development Lead (full time)

> As part of rebrand of Podcrash+ project, programmed new user interface in **Java** and **GLSL** with **MiGLayout**.
> Wrote **Gradle** plugins in **Kotlin** as part of integrating Podcrash Play build pipeline with **Jenkins CI**.
> Designed and programmed localization and string caching system for Podcrash Play game client in **Java**.

Software Developer (part time)
Remote | Aug. 2020 – Apr. 2021

> Implemented **OAuth2** single sign-on backend in **TypeScript**, **Express**, and **MongoDB** to meet account needs.
> Developed server-side game logic and game data microservice with **Java**, **Kotlin**, **Redis**, and **PostgreSQL**.

⚗ Projects

BetterMP ⬈
Apr. 2018 – Jul. 2021

> Gaming client for Minecraft, featuring performance optimizations, statistics, support for competitive tournaments, quality of life features, and a personal cosmetics system.
> Initially a personal project, acquired by Podcrash as Podcrash+/Play after reaching over **250K** downloads.
> Technologies: Java, OpenGL, Kotlin, C, JNI, Git, Dagger 2, OW2 ASM, Netty, TypeScript, Electron, MySQL, jOOQ

Hagnus Miemann & badchessengine ⬈
Mar. 2020 – Present

> Two of the strongest chess-playing programs ever made, ranked at ∼**200th** and **432nd** in the world.
> Technologies: C (BCE), Universal Chess Interface (BCE), Python (BCE), C++ (HM), X11 (HM)

Beyond Skyrim ⬈
Jul. 2017 – Aug. 2020

Implementation Developer

> Mod project for Skyrim, adding hundreds of hours of expansion-quality content with over **10M** downloads.
> Responsible for implementing and scripting gameplay mechanics.
> Technologies: Papyrus, C++, C#, Git, Creation Kit, xEdit, Qt

🎓 Education & Certifications

University of Waterloo
Sept. 2021 – Apr. 2026

Candidate for Bachelor of Mathematics, Pure Mathematics & Comp. Sci.   *Faculty GPA: 98%*