

Andrew J. Haman

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Professional Summary

Highly skilled and results-driven programmer with extensive experience in game and systems development. Proven ability to design and implement complex features from scratch in performance-sensitive environments. Adept in creating robust, high-quality software with a focus on efficiency and user experience.

Education

University of Toronto

Honours B.Sc. in Computer Science

Honours B.Sc. in Mathematics

Graduated with Distinction

2018 – 2023

Professional Experience

Independent Game Developer

Freelance

2023 – Present

- **3D Game Engine Development:** Created several custom 3D first-person game engines from the ground up using C++ and JAI. Responsibilities included simulation, tools, rendering, and data management. Key achievements:
 - Developed SIMD/AVX256 implementations for collision detection and raycasting.
 - Implemented real-time Constructive Solid Geometry (CSG) manifold calculations for enhanced player movement.
 - Designed and integrated custom global illumination (GI) and lightmap solutions, including advanced irradiance caching.
 - Built custom DX12/OpenGL renderers with support for PBR, transparent shadows, HDR, and advanced post-processing techniques.
 - Developed an automated serialization system with features like undo/redo and dynamic code recompilation.
 - Created dynamic asset hot-reloading and immediate mode GUIs for in-game editors and consoles.

- Implemented Kriging-based terrain editing for seamless terrain integration.
- **Game Development:** Worked on various projects, including:
 - **Happenlance** (<https://store.steampowered.com/app/1663410/Happenlance/>):
 - Designed and programmed a camera hinting system for a 2D-platformer.
 - Developed level editor features with Dear ImGui and designed eight diverse game levels.
 - Created and integrated New Game+ modes, ensuring compatibility with the existing codebase.
 - **Dante's Cowboy/RPGPT (Contract):**
 - Implemented cross-platform shadow mapping and PCF sampled bilinear shadow filtering across WebGL 1.0, OGL ES 2.0, and OpenGL 3.3.
 - **Thekla Inc. (Contract):**
 - Designed and implemented UI themes for the GetRect GUI library, which ships with the JAI language compiler.

Lead Programmer

Come Closer (<https://nofacecreep.itch.io/come-closer>)

*University of Toronto, CSC404 Course
2023*

- Led the development of a VR puzzle-platformer game using Unity, collaborating with a multidisciplinary team including programmers, sound designers, and artists.
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Technical Skills

- **Programming Languages:** C, C++, Jai, Python, C#
 - **Technologies:** Win32, DirectX12, OpenGL, WebGL, OGL ES, Unity
 - **Tools:** Blender, Adobe Photoshop, Premiere Pro
 - **Specializations:** Game engine development, graphics programming, UI/UX design, dynamic code systems
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Projects & Coursework

- **Linkst:** Developed a minimal Windows linker for simple object files and basic Windows API programs.

- **School Projects:**

- Implemented Unix-based file systems and asynchronous message queues in C.
- Developed Catmull-Clark mesh subdivision, mesh skinning, and kinematics in C++.
- CPU path-tracer and BVH acceleration structure.

Additional projects and details are available on my website at andrewjhaman.com/projects

Additional Skills

- Strong understanding of complex and interconnected systems.
 - Comprehensive experience in game and game engine development.
 - Musical background with experience in multiple instruments and stage performance.
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