Joseph Morton

Senior Software Engineer | Tools, Graphics & Engine | Unreal Engine 5, C++ | 10+ years

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Profile

Senior programmer with 10+ years in games and real-time graphics, specialising in procedural generation, editor tooling and build pipelines. On Chronicles: Medieval (Unreal Engine 5) I created the procedural settlement generator and the map generation pipeline that rebuilds, validates, cooks and submits maps on CI. Comfortable across editor tools, rendering, gameplay and automation, and used to working closely with artists, designers, AI and audio engineers.

Skills

- **Languages & APIs:** C++, C#, Python, Lua, GLSL, Vulkan, OpenGL, OpenXR
- **Unreal Engine 5:** PCG framework, editor modes and Slate UI, commandlets, asset registry and reflection, World Partition.
- **Engines:** Unreal Engine, Unity, Glacier 2, Lumos (own engine)
- **Pipeline & tools:** Perforce, TeamCity, Jenkins, Git, Visual Studio, Xcode, RenderDoc, Simplygon, FMOD
- **Platforms:** Windows, macOS, Linux, iOS, Android, Meta Quest

Professional experience

Raw Power Games | Senior Programmer | Jan 2025 to Present

Chronicles: Medieval | Unreal Engine 5, C++

- Owned the procedural settlement generator. Rebuilt it on a Voronoi foundation from first pass to production, producing villages, towns and cities from designer-authored zone rules, with roads, walls, rivers and bridges. Took it from a Houdini prototype into UE5 so settlements can be authored and modded entirely in-engine.
- Designers used the generator to build 100+ settlements in a few months, working in a custom editor mode with viewport overlays, a zone panel with drag and drop and thumbnails, and one-click regeneration.
- Collaborated with Environment Artists to improve both the interface of the tool and the output.
- Owned the step-based map generation pipeline (around 30 step types) that regenerates, map-checks, cooks and submits maps to Perforce, from an editor button or headless on TeamCity. Nightly runs regenerate every settlement that uses an updated building composition.
- Built walls that fit the terrain around designer chosen zones, with modules selected by landscape height using a lookahead beam search.
- Generated gameplay data for every settlement: playable area, player start, nav seed points, AI road graph and zone routes, with building IDs kept stable across regenerations.
- Optimised the building composition editor by batching updates, removing a 220 ms stall, and added drag and drop, undo and thumbnails.
- Built an Audio Usage Finder editor tool that resolves indirect FMOD event references through gameplay tags, UI themes, dialogue and barks.
- Settlement work featured in the studio's dev blog: Crafting believable worlds in Chronicles: Medieval (Steam, Nov 2025).

XR Games | Senior Programmer | Oct 2022 to Dec 2024

Hitman 3 VR: Reloaded (Meta Quest 3) | Glacier 2, C++

- Led development of an in-house mesh reduction tool (C++, OpenGL, Simplygon API) that loaded meshes straight from Glacier 2 scene data for automated asset optimisation.
- Extended the Glacier 2 editor with wireframe views and better debug rendering, and fixed editor crashes.
- Built gameplay features with designers across C++ and visual scripting: dual wielding, weapon firing and interaction systems; improved VR mechanics such as throwing and keypad interaction.

- Integrated controller haptics via OpenXR and profiled and optimised performance with RenderDoc and Glacier 2's profiler.

Lockwood Publishing | Software Developer | Jan 2018 to Oct 2022

Avakin Life | Unity, C++/C#

- Rendering Tech team, focused on visual upgrades to the avatar system.
- Updated the C++ asset conversion plugin and software renderer that generate avatar textures and meshes at runtime.
- Added PBR clothing and body-shape displacement; optimised Unity shaders for lower-end devices.
- Built a quality-settings system scaled to device GPU and RAM limits.
- Kept in-house avatar tools in step with system changes and streamlined artists' asset workflows.

Whispering Gibbon | Junior Technical Engineer | Apr 2016 to Dec 2017

- Cut physics analysis time for 3D printing by 80% by implementing adaptive Finite Element Analysis.
- Built automatic mesh manipulation and optimisation for 3D printing using Signed Distance Fields.

Projects

Lumos: open-source C++ game engine · github.com/jmorton06/Lumos

- Cross-platform engine on Vulkan and OpenGL with PBR rendering, post-processing, an SSE optimised maths library, Lua scripting and a custom physics engine. Over 1,600 GitHub stars.
- Editor built on the engine's own immediate mode UI.

Indie apps: native iOS & macOS · joem.app

- Design, build and ship my own apps on the App Store, including LabPal (science toolkit) and a suite of macOS menu bar utilities, including a compilation time utility to improve build speeds.

Education

Newcastle University

- MSc Computer Game Engineering (Distinction), 2016
- BSc Mathematics, 2015

Interests: action-adventure, sports and FPS games; football and tennis.