Samuel Gerkin

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SUMMARY

Game developer and graphics programmer with deep C++, C#, and Python experience and a strong mathematical foundation. Shipped projects across Unity and Unreal Engine including custom physics, rollback netcode, cel-shading post-process, and a Vulkan ray tracing engine. Comfortable from the GPU up — HLSL/GLSL, Vulkan, BVH construction — and from the gameplay layer down — narrative systems, networking, and gameplay architecture.

WORK EXPERIENCE

Unity Contract Developer (Under NDA) | 2025 – Present

- Built Unity gameplay systems integrating Pixel Crushers Dialogue System with Articy:draft, including a C# story controller and Lua bridge, Cinemachine cutscene sequencing, examine-mode interaction with virtual cameras, and a fan-style player response UI.

Unreal Engine Contract Developer (Under NDA) | 2025 – Present

- Adapted the UE5 Third Person template into the open-world half of a turn-based RPG, building from scratch: enemy AI, inventory, shop, ability/level-up menus, dialogue integration, save system, and a pause menu with nested settings.
- Extended the existing combat system with new abilities and a spreadsheet-driven per-level scaling pipeline so designers could tune ability progression without touching the editor.
- Built HLSL cel-shading outline post-process shader with circular Laplacian kernel over depth and scene normal GBuffers.

Technical Content Creator, YouTube (@samuelgerkin) | 2022 – 2024

- Produced technical tutorials on GLSL and graphics programming with 1M+ views and 9,000 subscribers helping developers learn shader fundamentals.

QA Tester, Experis | Aug 2023 – Feb 2024

- Tested game builds as part of a QA team, identifying bugs and providing detailed reproduction steps.
- Awarded Tester of the Month for building a spreadsheet system that improved team coordination and testing efficiency for a complex feature.

NOTABLE PROJECTS

- **Beneath Quiet Streets** — First-person narrative mystery game in Unreal Engine featuring a knowledge-based investigation system, custom raytraced audio occlusion, and modular gameplay architecture. Playable demo completed over ~10 months.
- **Custom Vulkan Game Engine** — C++ engine supporting runtime toggling between rasterization, hardware ray tracing, and compute BVH ray tracing modes.

- **Multiplayer Grand Strategy Prototype (Unreal)** — ENet-based client-server architecture with authoritative server tick loop, synchronized world state replication, and battle resolution systems.
- **CCD Sphere Physics Engine (Unity)** — Continuous collision detection physics with a spatial hash broad phase, Burst-compiled Jobs, struct-of-arrays layout, independent set batching, and a GPU compute path via AppendStructuredBuffer.
- **Rollback Multiplayer Fighting Prototype (Unity)** — GGPO-style rollback netcode over Unity Transport with fixed-point determinism, custom tick simulation, input prediction, and configurable input delay.
- **Minecraft GLSL Ray Tracing Shader** — Released shader with 100,000+ downloads.

TECHNICAL SKILLS

Languages: C++, C#, Python, Java, Lua, GLSL, HLSL

Engines: Unity (Cinemachine), Unreal Engine 5 (C++ and Blueprint, Behavior Trees, Enhanced Input), Vulkan (custom engine)

Graphics: Ray tracing, BVH construction, shader development, post-process effects, GPU compute

Networking: Rollback netcode (GGPO-style), Unity Transport, ENet, authoritative server tick simulation

Tooling: Pixel Crushers Dialogue System, Articy:draft, Git, JetBrains Rider, Visual Studio, CMake

Mathematics: Linear algebra, geometry, fixed-point arithmetic, algorithm design

EDUCATION

BA in Filmmaking Practices, Arizona State University, Tempe, AZ (2021)
— GPA: 3.79 / 4.00
Minor in Computational Mathematical Sciences (most coursework completed)