Collin Longoria

281-928-8997 | collin.longoria@digipen.edu | linkedin.com/in/collin-longoria | github.com/collinlongoria | collinlongoria.com

TECHNICAL SKILLS

Languages: C++, C, CUDA, GLSL, HLSL, C#, Python, JavaScript
Engines & APIs: Unreal Engine 5, Godot, OpenGL, Vulkan, WebGPU
Developer Tools: Git, Perforce, Visual Studio, VS Code, CLion, CMake, Renderdoc
Libraries: glslang, FMOD, Assimp, stb, GLM, SDL, GLFW, Dear ImGui

RELEVANT PROJECTS

Blok | *C++, Vulkan, CUDA, OpenGL, GLSL, ImGui (Academic Project)*   Aug. 2025 – Present
- Developed a **dual-backend voxelization and ray-tracing engine** with both Vulkan-compute and CUDA-accelerated OpenGL pipelines, enabling flexible **GPU performance benchmarking** across APIs.
- **Engineered a modular Vulkan renderer** supporting **data-driven pipelines and dynamic descriptor allocation**, resulting in a more adaptable and extensible graphics framework.
- Optimized a high-precision **mesh voxelizer** converting millions of triangles into **sparse voxel octrees (SVOs)** in under **40 ms per frame** on RTX-class hardware, **supporting real-time global illumination research.**

Trajan Engine | *C++, OpenGL, Vulkan, GLFW, ImGui*   Dec. 2024 – Present
- Built a **modern OpenGL-based rendering architecture** leveraging **advanced buffer management, dynamic shader pipelines, and real-time material updates** to deliver a flexible, developer-friendly engine **optimized for rapid iteration** and extensible graphics workflows.
- Implemented a **multithreaded entity-component system (ECS)** with **ImGui-based live editing and diagnostics**, reducing iteration time and **debugging efficiency for engine-level systems.**

An Omen in the Mirror | *Unreal Engine 5, C++, Blueprints (Academic Project)*   Aug. 2024 – April 2025
- Developed a **modular puzzle framework in C++** allowing designers to **link interactive components without code**, reducing **technical bottlenecks** in level design.
- Collaborated with **technical artists** to design **high-performance custom shader effects** and **reusable Blueprint components**, **improving gameplay** clarity and achieving project goal of **60 frames per second** across all target platforms.

Elementokens | *C++, OpenGL (Academic Project)*   Aug. 2023 – April 2024
- Led **engine-side development** of **rendering and gameplay logic**, creating **reusable modules** for **turn-based movement, combat, and dynamic map rendering** to streamline feature integration.
- Designed a **data-driven content pipeline** that **enabled designers** to **prototype units, maps, and rulesets without engine changes, accelerating iteration cycles by roughly 50%**.

EXPERIENCE

Assistant Teacher   June 2025 – July 2025
DigiPen WANIC Program   *Redmond, WA*
- Mentored high school students in programming fundamentals, data structures, and basic game programming in JavaScript.
- Debugged student code in real-time, identifying logic errors and teaching debugging strategies.
- Developed supplemental coding exercises and mini-projects to reinforce classroom material, including interactive projects using P5.js.
- Collaborated with the lead instructor to adapt lesson content based on student feedback and performance.

EDUCATION

DigiPen Institute of Technology   Redmond, WA
Bachelor of Science in Computer Science in Real-Time Interactive Simulation, Minor in Math   *Aug. 2022 – May 2026*

3.6 GPA