Aditya Prakash

Engineer Programmer

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Skills

Languages	C++, C, C#, HTML, JS, CSS, Python, Java
Tools & Tech	Git, Visual Studio, RenderDoc, NVIDIA Nsight Graphics
Concepts	Real-Time Simulation, Data Structures & Algorithms, Object-Oriented Programming, Linear Algebra

Project Experience

Independent Project | *Radis* - Custom C++ Engine — October 2023 - Present

- Implemented a hardware-accelerated Vulkan ray tracing pipeline from scratch, constructing BLAS/TLAS acceleration structures and shader binding tables to achieve real-time global illumination with physically based lighting.
- Architected a render graph, streamlining synchronization and resource management to achieve optimal GPU utilization across diverse workloads.
- Built an asset pipeline with GPU-compressed textures and custom packing, reducing load times by ~80% and significantly reducing memory overhead.
- Developed a modular ECS architecture, reducing iteration time and accelerating engine feature development as a solo developer.

Graphics Programmer | *NiteLite* - Custom C++ Engine — September 2024 - Apr 2025

- Co-architected a real-time Vulkan-based rendering engine from scratch, integrating GPU-driven pipelines and multi-draw indirect to **reduce CPU draw-call overhead by ~90%**, enabling an order-of-magnitude more objects on screen.
- Engineered a fully GPU-accelerated particle system supporting over **6 million** customizable particles at 60 FPS via compute shaders and optimized memory usage.
- Applied RenderDoc and NVIDIA Nsight Graphics to profile and debug the engine, identifying bottlenecks; optimized shaders and pipelines to **boost frame rates by 300%** under peak load.
- Collaborated with a 9-person interdisciplinary team to deliver a fully playable game on schedule using our custom engine, integrating art and gameplay features while maintaining stable 240+ FPS performance.

Technical Lead | *Knuckle Knockout* - Custom C++ Engine — September 2023 - Apr 2024

- Led a 5-person interdisciplinary team in architecting a custom C++ game engine from the ground up, and used it to successfully ship a completed game on Steam.
- Co-developed an OpenGL renderer, implementing advanced post-processing effects with convolution kernels.
- Engineered a high-performance physics engine, comfortably simulating **5,000+ dynamic entities** at 60 FPS.
- implemented spatial partitioning to exponentially reduce SAT collision checks, improving performance by ~70%.
- Integrated audio into the engine's core ECS architecture to manage dynamic in-game sound events.

Work Experience

Student Assistant Tutor | Digipen Institute of Technology — Redmond, Jan 2024 - Present

Provided academic support and guidance to undergraduate students (Freshman–Junior level) across multiple courses.

GAM200 Student Teacher Assistant | Digipen Institute of Technology — Redmond, September 2025 - Present

Supported interdisciplinary student teams with technical areas including graphics, physics, and core architecture.

Education

Bachelor of Science in Computer Science in Real-Time Interactive Simulation — **Graduation: April 2026**

Digipen Institute of Technology — Dean's Honor List