

COLE PETERSON

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SUMMARY

Software engineer with a background in real-time systems, graphics programming, and interactive application development. Earned a Bachelor's in Computer Science in RTIS from DigiPen Institute of Technology. Proficient in C++ with experience building scalable front and back end systems, including real-time rendering pipelines and network programming. 2 years of professional experience as a technical artist and programmer.

SKILLS

Languages:

C / C++, Typescript, Python, GLSL, HLSL

Software:

Blender 3D, Houdini, Photoshop, ComfyUI, Unreal Engine 5, Unity

Tools & Technologies:

Git, Perforce, OpenGL, DirectX, WebSockets, Node.js

PROJECTS

Custom C++ Render Engine (OpenGL) (<https://github.com/ColePeterson/ColeEngine>):

- Built a real-time rendering engine from scratch in C++
- Implemented FBX asset loading pipeline with and scene management system
- Developed dynamic lighting system with shadow mapping for point lights
- Designed and implemented an Entity Component System (ECS) for scalable architecture
- Created a programmable particle system for real-time visual effects

Online Multiplayer Drawing App (Node.js / WebSockets / React):

- Built a multiplayer drawing app where users collaborate on a large canvas in real-time
- Developed both front-end and back-end systems with Typescript and WebSocket servers
- Canvas is divided into chunks and loaded from the server only when needed
- Strong focus on reducing overall network traffic by introducing strict data transfer rules and compression
- Deployed the [Node.js](https://node.js) server to a remote Linux virtual machine configured from scratch

Music Visualization Application (C++ / MIDI / Shaders) (<https://youtu.be/75i75OGInY0>):

- Developed a real-time visualization tool driven by MIDI input
- Integrated shader based rendering pipeline for dynamic audio reactive visuals

Basil and the Isles of Spice (Technical art / Unity / Shaders / School project)
(https://store.steampowered.com/app/3183270/Basil_and_the_Isles_of_Spice/)

- Developed core shader workflows and visual effects in a team video game project
- Wrote a custom procedural grass system using geometry shaders

PROFESSIONAL EXPERIENCE

Technical Artist | Rogue Rooster | 14315 Hidden Valley rd. Gig Harbor 98332 | **(April 2024 – March 2026)**

- Developed highly customizable master materials used across environments, characters, and assets
- Built core systems for runtime customizable characters and weapon configurations
- Implemented network synchronized Niagara based visual systems for gameplay features
- Designed procedural content generation systems with PCG for environment creation
- Profiled and optimized runtime performance using Unreal Insights
- Developed a tool that converts SpeedTree models to the new Unreal Foliage system along with custom vegetation assets in Blender
- Created a large scale environmental biome system that can update in real-time utilizing procedural Voronoi data in custom HLSL
- Designed a custom lighting and sky system to allow for seamless transitions between space and planet environments
- Frequently collaborated with engineers and artists to build efficient content pipelines that satisfy their needs
- Utilized local AI image generation using ComfyUI for various applications such as image segmentation, quick depth / normal maps and texture prototyping.

Instructor at RECTECH coding camp | 4501 Delridge Way 98106 | Seattle, WA | **(Summer 2019)**

Coached students in developing their first video game using Javascript. Supported program leader in various tasks.

FREELANCE UNREAL ENGINE WORK | Seattle, WA | **(2019)**

Created various experimental particle simulations using Niagara and HLSL. Simulations included flocking behavior, fluid dynamics and dynamic graphs. Also implemented complex multi-buffer 2D fluid dynamics.

EDUCATION

Bachelor of Science in Computer Science in Real-Time Interactive Simulation (RTIS)

DigiPen Institute of technology **(2024)**

Associate of Science

South Seattle Community College **(2019)**

High school diploma

West Seattle High School **(2015)**