Anthony Green

(253) 495-2988 | anthony.j.green@outlook.com | linkedin.com/in/anthonygreen03 | github.com/gusjengis

WORK EXPERIENCE

Research Assistant: Lead Developer | Rust, WebGPU, Markdown **github.com/gusjengis/Particle-Physics-Sim**
University of Washington Sept. 2023 – Present

- Working with Professors Dr. Chris Marriott and Dr. Lorne Arnold as an undergraduate researcher.
- Sole implementer of a real-time particle-based physics engine capable of predictive, physically-accurate simulations.
- Simulates the physics of fluids and deformable solids. Objects are composed of many elastic bonds and particles.
- Employed Rust for CPU tasks and WebGPU for GPU-based physics compute to achieve maximum performance.
- Produced documentation using Obsidian to guide users and support future development.

PROJECTS

Portfolio Site | JS, HTML/CSS, NodeJS, AWS **portfolio.agreenweb.com**

- Crafted a unique, OS-style portfolio site from scratch, showcasing over 20 personal projects, using pure JS/HTML/CSS.
- Developed a custom Node.js server and templating engine, hosted on AWS.
- Engineered a system maintaining window states in query strings for consistent UX.
- Created a proprietary, component-based UI framework, facilitating efficient abstraction.

3D Screen | C#, Unity, Meta Quest 2, HLSL

- Built a proof-of-concept, perspective aware, 3D screen in VR, along with 3 programs to demo the screen.
- Dove deep into Unity's systems, wrote 10's of custom scripts, including custom shaders.

Terrain Generator | Rust/WASM, WebGPU, JS, HTML **portfolio.agreenweb.com/perlin**

- Used GPU-compute to implement Perlin Noise from scratch, combined several layers of this Noise to generate Terrain.
- Rendered this terrain in 3D with WebGPU. This includes implementing perspective projection and lighting from scratch.

Game of Life | Rust/WASM, WebGPU, JS, HTML **portfolio.agreenweb.com/gol**

- Implemented Conway's Game of Life from scratch, utilizing the GPU for parallel compute and rendering.
- Outperforms the vast majority of web-based implementations. Measured computing 11,500 generations/s at 2048x2048.

Particle Life | WebGL, JS, HTML/CSS **portfolio.agreenweb.com/pLife**

- Implemented a beautiful particle-based artificial life simulator. Complex interactions from simple rules.
- Achieved a 300% performance boost using spatially partitioned collision detection, ensuring smooth operation across diverse devices.

Arduino Handheld | Arduino, C++, Electronics, Embedded Systems **portfolio.agreenweb.com/handheld**

- Designed and assembled a unique, Arduino-based handheld gaming console with custom 3D-printed components and off-the-shelf electronics.
- Programmed a simple operating system for the device, complete with user interface, settings menu, and multiple applications, including four original games.
- Accomplished this with extreme limitations, specifically a 16x8 RGBLED display, 16mhz processor, and 256kb RAM.

SKILLS

- **Languages/Technologies**: JS, HTML/CSS, React, Rust/WASM, WebGPU/WebGL/GPU-Compute, GLSL, WGSL, HLSL, Unity, Java, Arduino, C++, C#, C, Python, C64 BASIC, SQL, MySQL, ASM, Erlang, R, Markdown
- **Fields of interest:** Graphics/Games/GPU Programming, Systems-Level/Embedded Programming/Hardware Development, Full-Stack Web Development, Neural Networks/Machine Learning

EDUCATION

University of Washington | **Running Start** Dec 2023
Bachelors of Science (Computer Science and Systems)

- Facilitated and led programming practice sessions, tutored peers through LeetCode problems.
- Placed top 5 in Spring 23' Puget Sound Programming Competition.