Lucas Weinstein

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github.com/lucasbwein | lucasweinsteinportfolio.vercel.app | Carlsbad, CA

EXPERIENCE

Graphics Programming Intern (Incoming) **Jun - Sep 2026**
Sony Interactive Entertainment - San Diego Studio

- Incoming summer 2026 intern on MLB The Show graphics team
- Focus: C++ tools development, asset pipeline, and editor features

Team Member **2021 - 2022**
Blaze Pizza - Carlsbad, CA

- Provided customer service in fast-paced restaurant environment
- Collaborated with team to maintain efficient operations

EDUCATION

San Diego State University | San Diego, CA **May 2026**
Bachelor of Science in Computer Science | GPA**:** 3.7

TECHNICAL SKILLS

Languages: C++, JavaScript, Python, HTML/CSS, GLSL
Graphics: OpenGL 3.3+, Metal Compute Shaders, Ray Tracing, Instanced Rendering, Procedural Generation
Networking & Systems: TCP/IP Socket Programming, select(), I/O Multiplexing, Client-Server Architecture
Frontend & Web: React, HTML/CSS, localStorage
Tools & Platforms: Git, GitHub, VS Code, Vercel, npm, Linux/Unix
Core Competencies: Self-Directed Learning, Graphics Programming, Real-Time Rendering, Network Programming, Shader Development

PROJECTS

GPU Ray Tracer | C++, Metal, OpenGL
github.com/lucasbwein/Compute-Ray-Tracer

- Implemented real-time ray tracer using Metal compute shaders, achieving 60 FPS with multi-bounce reflections
- Optimized performance from 3 FPS (CPU) to 60 FPS (GPU) through parallel processing of pixels
- Developed physically-based lighting with ray-traced shadows, specular highlights, and anti-aliasing

Shell Texturing Fur Rendering | C++, OpenGL
github.com/lucasbwein/OpenGL-Shell-Texturing

- Implemented instanced rendering of 64+ layers at 100 FPS using OpenGL, achieving fur effect through GPU optimization
- Developed fragment and vertex shader for strand generation, physics simulation, and view dependent alpha blending
- Developed procedural noise-based fur patterns eliminating need for texture assets, generating unique strand heights

Rock-Paper-Scissors Game Server | C++, TCP Sockets
github.com/lucasbwein/Rock-Paper-Scissors-Game

- Developed TCP server handling concurrent players using select() for I/O multiplexing
- Implemented matchmaking queue system automatically pairing players for real-time best-of-3 gameplay and finite state machines to manage game flow
- Debugged network issues including TCP message buffering, null byte handling, and race conditions in round resolution
- Applied object-oriented design with Player and Game classes managing lifecycle and interactions

Replace the Urge | React, JavaScript, CSS, localStorage
urge-replacer.vercel.app | github.com/lucasbwein/Urge-Replace

- Built behavioral change application helping users identify and replace unintentional habits
- Created analytics dashboard tracking behavior patterns, satisfaction ratings, and most common triggers
- Designed multi-screen user flow with state management handling urge selection, reflection questions, alternative choices, and 1-10 rating scales