

ALDEN WU

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EDUCATION

University of California, San Diego

Computer Science M.S. (Depth: Graphics & Vision)

Computer Science B.S. & Pure Mathematics B.S., GPA 3.96

San Diego, CA

Sep 2025 – Jun 2027

Sep 2022 – Jun 2026

EXPERIENCE

Amazon – Software Engineer (Intern) | C++, Python, AWS, LLMs (Bedrock), WebDriver

Jun 2025 – Sep 2025

- Worked on LLM-based automation framework for Kindle device to facilitate CI/CD
- Increased performance by 7x for common actions (e.g. navigation, text input) by adding new capabilities to the action model
- Decreased cost by 5.5x for common actions by optimizing LLM interaction logic
- Improved stability of on-device daemon by fixing memory buffer management

Marvell – Software Engineer (Intern) | PHP, HTML/CSS, JavaScript, Subversion, XAMPP

Jun 2024 – Sep 2024

- Refactored and simplified large portions of code to improve maintainability, reducing bloat and repetition
- Coordinated with other team members to make transition to new structure seamless and painless
- Used MySQL to display more detailed and useful information to end users

OPEN-SOURCE CONTRIBUTIONS

Rhythm game & framework – “osu!” (17.8k stars) | C#, OpenGL, SDL, NUnit, RenderDoc, .NET

Jul 2022 – Feb 2023

github.com/pppy/osu, github.com/pppy/osu-framework

13 PRs merged, 74 commits

- Implemented several real-time graphical effects, e.g. interactive “smoke trail” animations
- Optimized performance by reducing polygon counts by ~15% for “slider” objects

PROJECTS

Path tracer, 3D renderer – Samples, github.com/goodtrailer/lajolla | C++, NVIDIA OptiX, CMake

Jan 2025 – Feb 2025

- Physically based Monte-Carlo ray tracer, GPU accelerated with NVIDIA OptiX
- Implemented the Smith-GGX microfacet model for reflection and transmission
- Improved performance with BSDF importance sampling and next event estimation (MIS)
- Volumetric rendering of chromatic heterogeneous media (e.g. colored smoke)

Study website – github.com/goodtrailer/rote | TypeScript, HTML/CSS, SQL

Aug 2023 – Sep 2023

- Developed a React front-end with a Node.js/Express back-end, communicating via REST API
- Strengthened authentication security using password hashing, HTTPS (SSL/TLS) encrypted cookies, and CORS
- Designed a scalable database schema in PostgreSQL

Audio capture tool – github.com/goodtrailer/obs-app-audio | C++, Win32, WASAPI, gdb, Audacity

Dec 2020 – Oct 2021

- Facilitated low latency (< 50µs) IPC by coding a lightweight library for Win32 pipes
- Performed real-time audio processing on parallel sources with multithreading and efficient data structures (e.g. ring buffer)
- Created a DLL injector to hook application APIs and intercept audio data

RELEVANT COURSEWORK

CSE Operating Systems, Computer Architecture, Parallel Programming, Physics Simulation, Computer Graphics, Animation, Rendering (PBR), Computer Vision, Virtual Reality, Discrete Differential Geometry (DDG), PL/Compilers, Differentiable Programming, Optimization (ML), Networked Services, Data Structures, Algorithms, Software Engineering (OOP)

MATH Numerical Analysis, Fourier/Harmonic Analysis, Linear Algebra, Vector Calculus, Computational Stochastics, Probability, Real Analysis, Functional Analysis, Group Theory, Ring Theory, Logic, Graph Theory, Lie Groups, Algebraic Topology

TECHNICAL SKILLS

Languages C/C++, ARM Assembly, Verilog, MATLAB, C#, Java, Python, JavaScript, HTML/CSS, PHP, PostgreSQL

Frameworks Unreal Engine, Unity, React.js, Express.js, Win32, JUnit, GoogleTest, Appium/Selenium

Developer tools git, ssh, gdb, AWS, AWS Bedrock, NVIDIA Nsight, CMake, vcpkg, NuGet, Maven, Linux, Apache HTTP

Libraries/etc. .NET, OpenGL, CUDA, OpenCL, NVIDIA OptiX, Node.js, Passport.js, PyTorch, OpenCV, NumPy, SciPy