CHRISTIAN ROBLES

mail@roblesch.page | blog.roblesch.page | Los Angeles, CA

EDUCATION

Master of Computer Science, Multimedia & Creative Technologies — 2021 - 2023
University of Southern California, 3.73 GPA

Bachelor of Computer Science — 2013 - 2017
Arizona State University

WORK EXPERIENCE

Autodesk, Graphics Platform Team — 2022
Software Engineer Intern — *Remote*

- Quickly ramped up to be productive in large (200k+ lines) internal and open-source C++ projects.
- Improved workflows for Autodesk customers by extending material export to the widely used *glTF-PBR* format.
- Developed an automated render test pipeline to validate translations on the 350+ *AMD GPU Open* material set.
- Engaged open standards community by contributing translation node graph back to *MaterialX*. (Blog Post)

Microsoft, Commercial Software Engineering — 2017 – 2021
Software Engineer II — *Cambridge, MA*

- Worked with Microsoft's priority strategic partners to solve key technical blockers and accelerate Azure adoption.
- Delivered automated CI/CD and test pipelines, interface adapters, and containerized cloud native applications.
- Designed and implemented data featurization pipelines in Python and R for data science hypotheses at scale.

PROJECTS

NVIDIA Adaptive Shading. Utilized C++, D3D12 and compute shaders to integrate the Nvidia Adaptive Shading algorithm as described in "Visually Lossless Content and Motion Adaptive Shading in Games" by Yang et al. in an open-source graphics framework. Achieved shading time reductions of up to 40% in test scenes with complex lighting conditions.

Vulkan Graphics Engine. Wrote a C++20 rendering engine using Vulkan.hpp and the RAII pattern. Engine loads and renders glTF models with hierarchical transforms, normal maps, shading, directional shadow maps and an interactive camera.

Grandma Green. Collaborated with artists, designers and developers to ship a virtual pet and farming simulation game in Unity through the USC Advanced Game Projects program. Designed and implemented performant data structures and routines for genotype expression, garden serialization and daily task tracking. 8,000+ downloads on the iOS App Store.

Directed Research: EARS. Developed a C++ forward path tracer demonstrating state-of-the-art techniques in Russian Roulette & Splitting for a degree credited supervised research project. Implemented iterative parameter optimization with respect to estimator efficiency and variance as described in Rath et al.'s "Efficiency-Aware Russian Roulette & Splitting (EARS)" (SIGGRAPH 2022). Shared a bi-weekly development series on my blog describing progress and results.

Signed Distance Fields. Led a team of four in the design and development of a C++ signed distance function renderer demonstrating procedural clouds, displacement surfaces, constructive solid geometry, fractals, and GPU acceleration with CUDA. Presented results as a final presentation and report. Project placed first in a ranked grading system.

TECHNICAL SKILLS

Programming Languages
C++, C#, Rust, Python, TypeScript, CMake

Software & APIs
Vulkan, D3D12, Shaders, Qt, Linux, Docker, Git, Unity

PERSONAL INTERESTS

Rock climbing, national parks, hiking, camping, coffee, video games.