CHRISTIAN ROBLES

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OBJECTIVE

Graduate Student with a passion for physically-based rendering and simulation seeking full-time roles and internships.

EDUCATION

Master of Computer Science, University of Southern California — Expected May 2023
Concentration in Multimedia and Creative Technologies — GPA: 3.7

Relevant Coursework: Probability, Computer Animation and Simulation, 3-D Graphics and Rendering

Bachelor of Computer Science, Arizona State University — 2013 - 2017

SKILLS

Programming Languages C++, Python, TypeScript, R, Go, Java
Standards and Frameworks Open Image Denoise, MaterialX, glTF, Unity, OpenGL, Qt, CMake, LaTeX

EXPERIENCE

Software Engineer Intern — Summer 2022
Autodesk, Graphics Platform Team — *San Francisco, CA (Remote)*

- Enhanced the ASWF-backed MaterialX look-development standard with export to Khronos Group's glTF.
- Developed a test pipeline to render translations on over 350 materials of the AMD GPU Open Material set.
- Provided the translation node graph to MaterialX as an open-source contribution. (Project Details)

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

- Worked directly with enterprise and not-for-profit partners to tackle their most significant technical challenges.
- Implemented featurization pipelines to prove the efficacy of treatments for children with Cystic Fibrosis.
- Assisted partners in transitioning critical infrastructure to meet stringent regulatory deadlines.

PROJECTS

RRS: Albedo to EARS. Monte Carlo Path Tracer demonstrating state-of-the-art Russian Roulette & Splitting techniques developed under the advisory of Professor Ulrich Neumann. Exploring cutting edge techniques for iterative optimization of threshold parameters with respect to estimator efficiency and ground-truth approximations by Intel Open Image Denoise. Sharing progress with bi-weekly blog posts on personal site. (Project proposal)

Grandma Green. Developing a virtual pet and farming simulation game in Unity through USC's Advanced Game Projects program. Designed and implemented performant data structures and routines for plant growth cycles, genotype expression, sprite resolution and garden serialization.

Ray Marching. Led the design and development of a ray-marched renderer demonstrating procedural materials, displacement surfaces, fractals and GPU acceleration with CUDA. Presented results as a final presentation and report for Professor Neumann's 3D Graphics and Rendering course. (Report and slides)

Multiple Importance Sampling. A review of Veach's thesis and exploration of fundamental techniques in Monte Carlo Integration and Multiple Importance Sampling. Implemented extensions and augmentations to the renderer described in Peter Shirley's *Ray Tracing* series to demonstrate Multiple Importance techniques. (Blog post)

VOLUNTEERING

- Taught AP Computer Science A to a class of Junior and Senior High School students at the Cambridge Rindge & Latin School through the Microsoft TEALS Program in the 2020-2021 school year.