JACOB S. HAYDEL

394 E Utopia Ave, Salt Lake City, UT 84115♦ 817-980-0932 ♦ jcbhaydel@gmail.com

EDUCATION

B.S. / M.S. University of Utah Aug. 2017 – Present
Major: Computer Science / Computing (Graphics and Visualization Track)
B.S. GPA: 3.96, M.S. GPA: 3.81

Ph.D. University of Utah Aug. 2022 – May. 2025 (Expected)
Major: Computing (Graphics and Visualization Track)
GPA: N/A

WORK EXPERIENCE

Hardware Ray Tracing Research Group (HWRT) April 2018 – Present
Salt Lake City, UT

- Working on a new cycle accurate hardware simulator called arches.
- Working on a RISC-V implementation of TRaX in the new simulator.

Scientific Computing Imaging Institute (SCI) January 2019 – May 2020
Salt Lake City, UT
Graphics Developer Intern

- Worked on SCIRun, a Scientific Problem-Solving Environment.
- Fixed and extended the in-house OpenGL based renderer.

Advanced Micro Devices (AMD) June 2020 – August 2020
Salt Lake City, UT
RTG Intern

- Analyzed ray tracing workloads in modern video games and benchmarks.

University of Utah August 2020 – Present
Salt Lake City, UT
Graduate Research Assistant

- Working on a new dynamic level of detail technique for ray casting.

Qualcomm May 2021 – August 2021
Salt Lake City, UT
Graphics Research Intern

- Worked on developing and test new ray tracing hardware designs

Meta (Reality Labs Research) May 2022 – August 2022
Redmond, WA
Research Scientist Intern

- Worked on researching methods for anit-aliasing in the context of ray-casting

PROJECTS

- Spectral Path Tracer in C++ (Path Ripper). Implements BRDF importance sampling, explicit light sampling, physically based materials, dispersion, spectral reconstruction, texture mapping, and environment mapping.

- Rasterizer implementing Monte Carlo integration for image-based lighting using OpenGL. Uses importance sampling for the GGX BRDF and precomputed irradiance maps for the Lambertian component.

HONORS

- Utah Teapot Rendering Competition Winner 2019
- University of Utah Dean's List 2017-2020
- Selected for the Pioneer Mentors program for SIGRAPH 2016

TECHNICAL EXPERIENCE

C, C++, OpenGL, GLSL, x86, RISC-V, MIPS, QT, C#, JAVA, and Python