Zihong Zhou

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Education

Dartmouth College **Sep. 2022 – May 2024 (Expected)**
M.S. in Computer Science, with concentration in Digital Arts *Hanover, NH, USA*

South China Agricultural University **Sep. 2017 – June 2021**
B.Sc. in Computer Science *Guangzhou, Guangdong, China*

Publications

Zihong Zhou, Li-Yi Wei. "Spherical Light Integration over Spherical Caps via Spherical Harmonics". In: *SIGGRAPH Asia 2020 Technical Communications*. 2020. DOI: 10.1145/3410700.3425427.

Research Experience

Visual Computing Lab **Jan 2023 - Present**
Graduate Research Assistant *Hanover, NH*

- Studied walk-on-sphere methods for solving partial differential equations and its application in rendering under the supervision of Prof. Wojciech Jarosz and Eugene d'Eon.

Open Mentor Program **Feb 2020 – August 2020**
External Advisee *Remote*

- Studied state-of-the-art methods for efficient polygonal and spherical area light integration under the supervision of *Dr. Li-Yi Wei.*
- Implemented two SIGGRAPH/ToG 2018 papers: *Integrating Clipped Spherical Harmonics Expansions, Analytical Spherical Harmonics Coefficients for Polygonal Area Lights* and generalized the method to handle spherical area lights.

Employment

Revobit **Sep 2020 – August 2022**
Rendering Engineer *Guangzhou, China*

- Worked on in-house real-time renderer designed for footwear industry. Implemented Eric Heitz's Linearly Transform Cosine method for real-time shading polygonal area lights.
- Integrated a brand-new DirectX 12 renderer backend to the existing RHI (Render Harware Interface), being compatible to the current rendering pipeline and APIs.
- Launched a new project on reference path tracer with high visual fidelity based on Diligent Engine (DirectX 12 backend and DirectX Ray Tracing API).

Projects

darts-CS 87/287: Rendering Algorithms | *C++* **Sep 2022-Dec 2022**

- Built a ray tracer from *darts* skeleton framework and **won 1st prize in the rendering competition**.
- Implemented anisotropic microfacet based BRDFs and a gltf-2.0 style PBR material.
- Implemented volumetric path tracing with multiple importance sampling, which correctly accounts for scattering, absorption and emission volumetric light transport processes.
- Implemented homogeneous and heterogeneous participating media with HenyeyGreestein phase function. Extended skeleton code to support density and temperature grid via nanovdb.

Colvillea: A Physically Based GPU Ray Tracer | *CUDA/C++, OptiX* **July 2018-Present**

- A physically based renderer written for studying rendering algorithms and and experimenting with research ideas. It is powered by OptiX and CUDA for parallelism and high performance ray tracing.
- Currently working on refactoring the architecture to support wavefront ray tracing.

Technical Skills

Languages: C/C++, CUDA, GLSL, HLSL, WinRT, Python
Developer Tools: NSight Graphics/Compute, Renderdoc, PIX on Windows, Visual Studio, Git
Graphics APIs/Tools: OptiX, OpenGL, DirectX Ray Tracing, PBRT, Mitsuba, Maya, Blender

Honors & Awards

2022-2024 **Master Scholarship**, Dartmouth College
Jan, 2023 **3rd place**, Computer Graphics Forum 2023 Cover Image Contest
Dec, 2022 **1st place**, Rendering Competition at Dartmouth College