Zihong Zhou

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Education

2022.9 – **M.S. in Computer Science, Dartmouth College**

2017.9 – 2021.6 **B.Sc. Computer Science and Technology, South China Agricultural University**

Research Publications

1. Zhou, Z., & Wei, L.-Y. (2020). Spherical light integration over spherical caps via spherical harmonics. *SIGGRAPH Asia 2020 Technical Communications*. https://doi.org/10.1145/3410700.3425427

Research

Analytical Area Light Integration via Spherical Harmonics 2020.2-2020.8

- 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.

Experience

Rendering Engineer, Revobit 2020.9 - 2022.8

- 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 2022.9-2022.12

- 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 2018.7-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.