

Pengpei Hong

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EDUCATION

The University of Utah

PhD in Computer Science, advisor: Cem Yuksel

- **Research Interests:** Hardware Raytracing, Real-time Rendering, Realistic Image Synthesis

Salt Lake City, USA

Aug. 2023 – Now

South China University of Technology

BS in Computer Science

- **GPA:** 3.77/4.00

Guangzhou, China

Sept. 2019 – June 2023

PUBLICATIONS

- **Manifold Path Guiding for Importance Sampling Specular Chains**

Zhimin Fan*, Pengpei Hong*, Jie Guo, Changqing Zou, Yanwen Guo, and Ling-Qi Yan

ACM Transaction on Graphics (*Proceeding of SIGGRAPH ASIA 2023*)

PROJECTS

- **Hardware Ray Tracing**

Designed hardware units and hardware algorithms on our custom GPU simulator.

Developed treelet traversal technique and early termination to reduce ray traffic for dual streaming.

Designed latency-hiding and prefetching technique to better utilize DRAM bandwidth and cache coherency.

Salt Lake City, USA

Aug. 2023 – Now

- **Manifold Path Guiding**

Designed path guiding methods to importance sample arbitrarily long specular chains.

Utilized coherency between specular chains to generate better seed paths for Manifold Walk.

Implemented a spatial tree to find approximate KNN and use them to reconstruct contribution distributions.

Nanjing, China

July 2022 – May 2023

WORK EXPERIENCE

Netease Games

R&D Intern, **Real-time Environment Lighting**

- Reproduce the EGSR paper *Fast Filtering of Reflection Probes* using DirectX12 API.
- Decomposed GGX filter into several simple filters using Quasi-Newton Method and store the sample points in a table.
- Downsampled and prefiltered the skybox cubemap into different mips using the above simple filters in compute shader.
- Sampled the prefiltered mipmaps using pre-calculated samples and reconstruct the GGX filter kernel.

Guangzhou, China

July 2022 – Sept. 2022

SELECTED AWARDS

- Qualified, the 45th International Collegiate Programming Contest (ICPC) World Finals, Dhaka, Bangladesh
- Gold Medal, the 45th International Collegiate Programming Contest, Asia Regional Contest (Shenyang)
- Gold Medal, the 2021 China Collegiate Programming Contest, Regional Contest (Guangzhou)
- National Scholarship

TECHNICAL SKILLS

- **Programming Languages:** C++, Python, HLSL, GLSL
- **Graphics API:** DirectX12, OpenGL
- **Software:** Mitsuba, PBRT, Maya, Falcor, Renderdoc, PIX