

SONG ZHANG

✉ song.zhang@utah.edu

in [linkedin.com/in/song-zhang](https://www.linkedin.com/in/song-zhang)

github.com/guiqi134

Education

University of Utah

PhD in Computing, Computer Graphics Track

Sep. 2022 – Now

Salt Lake City, UT

University of Utah

Master of Science in Computer Science, Computer Graphics

Sep. 2020 – May 2022

Salt Lake City, UT

New York Institute of Technology

Bachelor of Science in Computer Science

Sep. 2016 – May 2020

New York, NY

Experience

Rendering Engineer

D5 Render

May 2024 – July 2024

Nanjing, Jiangsu, China

- Worked with real-time engine team on reproducing volumetric ReSTIR.

Research Intern

NVIDIA

May 2023 – Aug. 2023

Redmond, WA, USA

- Worked with real-time rendering group on path sampling research project to improve rendering quality in games.
- With a specific focus on extending ReSTIR algorithm to better sample high-frequency contents.

Research Assistant

Realistic Computer Graphics Group, University of Utah

Sep. 2022 – Now

Salt Lake City, UT, USA

- Working on real-time path tracing research in Dr. Cem Yuksel's Realistic Computer Graphics Group.

Projects

Null-Scattering Volumetric ReSTIR | C++, Falcor, Slang

Aug. 2024

- Extending ReSTIR to null-scattering volumetric methods (e.g. delta tracking, ratio tracking, etc), instead of relying on regular tracking or ray marching methods.

ReSTIR Shadow Maps | C++, Falcor, Slang

Sep. 2022

- Extended ReSTIR algorithm to handle the shadows in many-light scene without hardware ray tracing support.
- Used ReSTIR sampling results as guidance to pick most important lights in the scene and only render shadow maps for those lights.
- With only a few (i.e. 10 - 24) shadow maps, we achieved real-time quality close to use all (hundreds of) shadow maps in various complex scenes.

Using ReSTIR for Area Light Soft Shadows (master research project) | C++, Falcor, Slang

Sep. 2021

- Integrated a modified PCSS method into ReSTIR pipeline for shadow approximation.
- Some comparison tests are being done with other shadow mapping methods like Variance Shadow Map (VSM), Exponential Shadow Map (ESM), and Moment Shadow Map (MSM).

Publications

1. Song Zhang*, Daqi Lin*, Markus Kettunen, Cem Yuksel, and Chris Wyman. Area Restir: Resampling for Real-Time Defocus and Antialiasing. *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2024)*, 43(4):98:1–98:13, 07 2024. (*Joint First Authors)

Technical Skills

Technologies: Computer Graphics, Real-time Rendering, Physically-based Rendering

Languages: C/C++, Python, C#, Javascript

Developer Tools: VS & VS Code, Unity, Git

Frameworks: Falcor, DirectX, OpenGL, CUDA