

Song Shi

Rendering Engineer specializing in physically based rendering, volumetric effects, and GPU-based real-time graphics.

📍 Hanover, NH, USA ✉ Song.Shi.GR@dartmouth.edu 📞 603 349 1859 🌐 <https://mustard-cg.com>
in Song Shi 🌐 Song Shi

Education

Dartmouth College Sep 2024 – Jun 2026
Master of Computer Science with Concentration in Digital Arts
Tongji University Sep 2017 – Jul 2021
Bachelor of Engineer in Environmental Design

Publications

Conditional Product Next Event Estimation for Gaussian Process Implicit Surfaces
Song Shi, [Kehan Xu](#), [Wojciech Jarosz](#)
Computer Graphics Forum (EGSR 2026)

Experience

Rendering Research and Development Intern Nanjing, China
D5 Render Dec 2025 – March 2026

- Developed real-time volumetric cloud rendering for *D5 Lite*, enabling fine-grained artistic control across altitude using vertical density profiles and Perlin–Worley noise. Achieved a 12× performance improvement via temporal reprojection and improved convergence using spatiotemporal blue noise (STBN). Enhanced visual fidelity with a multi-scattering approximation and cascaded shadowing.
- Implemented real-time sky and atmosphere rendering with per-frame updated LUTs on GPU compute shaders, costing 0.7 ms/frame. Increased the fidelity of cloud and surface rendering by integrating atmosphere distant lighting and aerial perspective. (C++, HLSL)

Research and Teaching Assistant Hanover, NH
Dartmouth College Jan 2025 – July 2026

- Research assistant in Dartmouth Visual Computing Lab (VCL). Worked on unified representation of surface and volumes, and efficient rendering of Gaussian Process Implicit Surface.
- Teaching assistant for 4 CS courses at Dartmouth, including COSC87 Rendering Algorithms, COSC73 Computational Photography, COSC 70 Foundations of Applied Computer Science, and COSC 29.06 Digital Tangible User Interfaces.


Software Engineer Shanghai, China
Bigmind Aug 2022 – Jan 2024

- Developed high-fidelity real-time graphics for *SimuloCity*, a Unity-based automotive simulation platform, featuring realistic weather effects and GIS-based environments; optimized performance to maintain 120 FPS at 2K resolution on an RTX 3080, expanding extreme-condition scenario coverage.
- Built a data-driven vehicle configuration system using neuroevolution and generative models to augment limited traffic datasets, improving simulation coverage of rare scenarios. Received the Best Innovation Award at the 2023 China International Import Expo.

Software Engineer Shenzhen, China
FuturePlus Aug 2021 – Jul 2022

- Designed and implemented 3D procedural generation algorithms in Blender and Unreal Engine, accelerating urban planning workflows by 90% across two development sites totaling over 3,900 hectares.

Projects

PBR Path Tracing Renderer with unbiased Monte Carlo integration [BlogLink](#) 

- Integrated volume path tracing with importance sampling in the framework of null scattering and environmental map with importance sampling, on the Dartmouth College CS287 path tracing framework. (C++)

Ocean Simulation in Unity [GithubLink](#) 

- Implemented Stockham GPU FFT to simulate ocean waves in Unity with 650+ FPS in 4K with RTX 4090.

Honors and Awards

Dartmouth MSDA Best Thesis Award	Jun 2026
1st place in Rendering Competition at Dartmouth College	Dec 2024
Dartmouth 75% Tuition Based Scholarship	Sep 2024 - Jun 2026
Third-class Scholarship for Outstanding Students at Tongji University	Nov, 2020

Skills

Languages: C#, C++, Python, JavaScript.

Core Expertise: PBR, Real-Time Rendering, Geometric Representation, Volumetric Rendering

Graphics & GPU: HLSL, Vulkan, OpenGL, Compute Shaders, PIX

Tools: Unity, Unreal Engine, Blender, Git