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
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Education

Dartmouth College *Sep 2024 – Jun 2026*
Master of Computer Science with Concentration in Digital Arts
75% tuition based scholarship

Tongji University *Sep 2017 – Jul 2021*
Bachelor of Engineer in Environmental Design

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 – Now*

- Conducted research in physically based rendering at the Visual Computing Lab; Paper under submission to EGSR: *Conditional Product Next Event Estimation for Gaussian Process Implicit Surfaces*, with a focus on sampling strategies and implicit surface representations.
- 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++)

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