

Gaoxiang Zhao

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Education

University of Pennsylvania <i>MS in Scientific Computing</i>	August 2025 – May 2027 Philadelphia, USA
• Related Courses: Machine Learning, Computer Animation, Linear Algebra and Optimization	
Wuhan University <i>BEng in Communication Engineering</i>	September 2021 – July 2025 Wuhan, China

Experience

ZJU-Coohom Joint Lab of CG&AI Research Intern	August 2024 – November 2024 Hangzhou, China
• Explored and devised shading algorithms for KooEngine, a commercial rendering engine dedicated to indoor scenes rendering. • Optimized this Vulkan-based engine by reducing the CPU-GPU synchronization frequency. • Proposed a photon mapping method for fast caustics rendering.	

Projects

Short-Term Wind Speed Prediction	October 2025 – December 2025
• Developed a machine learning pipeline using 3 years of ERA5 data to forecast hourly wind speeds for the Tehachapi region • Implemented and compared several machine learning algorithms including linear regression, random forest, gradient boosting, and multilayer perceptron	
Xeno Renderer Physically-based renderer implemented in C++	December 2023 – January 2025

Diffraction Simulation	June 2024 – August 2024
• Reproduced SIGGRAPH paper <i>A Free Space Diffraction BSDF</i> . • Solved Fraunhofer diffraction equation under ray-tracing framework. • Compared the convergence rates between RGB rendering and spectral rendering.	

Sampling in Real-time Rendering	September 2023 – November 2023
• Constructed image pyramids to visualize aliasing artifacts across different resolutions, validating sampling theories via frequency domain analysis. • Investigated the impact of downsampling on texture details and structural preservation, linking spatial domain artifacts to spectral signal loss.	

Technical Skills

- Programming: C++, Python, CUDA, MATLAB
- Tools: L^AT_EX, Git, PyTorch, Unity, OpenGL, Vulkan, Issac
- Language: English (Proficient), Mandarin (Native)