

Shanying Liu

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EDUCATION

Columbia College, Columbia University

New York, NY

BA in Computer Science, Minor in Visual Art, 3.93 GPA

Aug. 2024 – May 2028

TA for 3D UI and VR. Courses: DSA, Linear Algebra, Computer Graphics (CG), Deep Learning for CG; 2027: OS

EXPERIENCE

Founding Engineer – Systems and Graphics

May 2026 – Present

Nori Robotics (YC S26)

San Francisco, CA

- Built real-time robot control engine in C++ and multi-camera streaming pipeline (GStreamer), delivering four 720p30 feeds on a 4GB Raspberry Pi 5 alongside multi-threaded security monitoring.
- Halved robot CPU (1.03 → 0.48 cores) via py-spy: GStreamer frame-path rebuild + event-driven ROS 2 executor.
- Designed IsaacSim synthetic-data pipeline (relighting/re-texturing, ray tracing) with a parallelized sparse-scan anonymization pass, 2.4× faster than dense scanning.
- Built browser-based robot simulator (three.js/WebGL2) for hardware-free testing: URDF loading, inverse kinematics, basic physics, and an SSAO/TAA post-processing pipeline injected into a third-party render loop.
- Own the Nori SDK (architecture, CI/CD, PyPI) and first customer deployments: provisioning, fleet ops, OTA.

Graphics Research Engineer

Jan 2025 – Present

Columbia Computer Graphics and User Interface Laboratory (PI: Dr. Steven Feiner)

New York, NY

- Won **IEEE VR 2026 Best Research Demo (Honorary Mention)** for real-time Gaussian-splatted proxies in XR; full paper in progress, to be submitted to CHI 2027.
- Implemented 3D Gaussian Splatting renderer on a standalone XR headset, achieving stable 60fps via an efficient insertion-sort depth pass; built C++ Linux server for 3DGS training, segmentation, and semantic extraction.
- Engineered Pol-XR, a VR visualization system for geological radar data in C# and Unity, with a Python pipeline generating 3D meshes from raw radar streams.

C++ Unreal Engine Programmer Intern

May – Aug 2025

Tencent, Lightspeed Studios

Auckland, NZ

- Built procedural generation systems for large-scale 3D environments in C++ and Unreal Engine 5; wrote custom HLSL shaders and optimized rendering pipelines guided by RenderDoc profiling.
- Designed configurable mesh instancing system, cutting draw calls by 55% and lowering GPU memory overhead.
- Implemented multi-threaded dynamic lighting with a day/night cycle supporting thousands of concurrent lights; built asset pipeline tools with artists to accelerate design iteration.

PROJECTS

Material-Guided Decoders: Lighting Estimation

Jan – Apr 2026

Neural Rendering Project: github.com/ShanyingLiu/Material-Lighting-Estimation

- Built inverse rendering pipeline (ResNet-50 + FiLM) predicting environment lighting from single images via material parameter regression; built Blender synthetic-data pipeline for ground-truth lighting.

Game Development

Jan 2023 – Present

Ongoing and Past Indie Projects

- Created *CircuTale* and *Mower Power* (Kenney Jam 2025 award winner); contributed volumetric fog and lighting/culling fixes to *Us Five Forever* (Godot), shipped on Steam; mentor at CU Game Incubator on horror RPG *Ties of a Flower*.

HONORS

IEEE VR Best Research Demo (Honorary Mention)

2026

European Girls' Olympiad in Informatics (EGOI) Team Qualification

2021, 2022, 2023

New Zealand Programming Competition, 2nd place, 3rd place

2022, 2024

TECHNICAL SKILLS

Core Languages: C++ (17/20), C, C#, Python (PyTorch, NumPy), Java, Bash

Graphics & GPU: Vulkan 1.3, OpenGL 4.6, Metal, CUDA, OptiX, HLSL/GLSL

Systems: Linux, embedded/memory-constrained targets, CMake, gcc/Clang

Engines & Tools: Unreal Engine 5 (Source/RHI), Unity (SRP), RenderDoc, NVIDIA Nsight, Blender, Substance