

# Amy Liu

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## ABOUT

Driven student researcher & developer in computer graphics. Eager to support procedural graphics workflows, 3D content creation pipelines, and GPU acceleration research. Interested in *Tools Development Engineering* and *Research & Development Engineering*.

## EDUCATION

**University Of Pennsylvania** Aug 2021 - May 2026

BSE in **Digital Media Design** (Computer Graphics)

MSE in **Computer Graphics and Game Technology**

### Relevant Coursework:

Procedural Computer Graphics, Interactive Computer Graphics, Advanced Rendering, Computer Animation, Game Design Practicum, GPU Programming, CG Production Pipelines, Linear Algebra, Advanced 3D-Modeling, Virtual Reality Laboratory

### Activities:

- 2023-24 Social VP | Penn CG Student Chapter (SIGGRAPH)
- 2022-26 Member | Penn Lions (Chinese lion dance team)

## EXPERIENCE

**3D Tools and Graphics R&D Intern** Jul 2024 - Dec 2024

**GliaCloud Co., Ltd.** 📍 Taipei City, Taiwan

- Contributed original data to NVIDIA NIM Services research through NVIDIA Startup Inception program collaboration.
- Built a ComfyUI plug-in for NVIDIA Omniverse.<sup>1</sup>
- Built an internal plug-in for Omniverse to standardize import of OpenUSD (Universal Scene Description) 3D assets.
- Deployed USD Search API onto company infrastructure via cloud-hosted Kubernetes clusters. Supported testing and workflow integration of 3D deepsearch microservices.
- Wrote 5+ custom HLSL Reshade (post-process) shaders.

**Computer Graphics Research Intern** May 2022 - Jan 2023

Sponsored by the **National Science Foundation**

📍 ICT Vision & Graphics Lab Los Angeles, CA

- Developed a standalone Python API service that instantaneously generates physically-accurate, 3D-modeled face accessories (glasses, hats, masks) onto input scanned human face mesh of arbitrary gender, race, & age.
  - Photo-realism in final rendered outputs qualified as training data for next-gen facial parsing machine-learning models.
  - Presented in 2022 National Science Foundation Symposium.
- Briefed 50+ participants for lab's state-of-the-art Light Stage digitalization research. Fully trained in Light Stage 6 control.

**Student Frontend Engineer** Jan 2022 - Dec 2024

**Penn Labs** 📍 Philadelphia, PA

- React developer for web services used by the entire UPenn student body – Schedule Planning (5K+ users), Course Reviews (9K+ users), & Enrollment Alerts (3K+ users).
- Integrated a social-networking feature for real-time schedule sharing – successful usage by 4K+ students in 2024.
- Collaborate daily with backend engineers, devops, designers, and business developers.

## RESEARCH CONTRIBUTIONS

**"MoBi-LE - A Low-Cost 3D-printable Robot to Educate Children in Waste Disposal"** 2024

Published in *Assoc. for Computing Machinery Digital Library*

- **Purpose:** How a 3D-printed robot can benefit decision-making and inspire tech innovation in K-6 educational environments.

**"The Fictive Mosaics of Medieval Serbia"** 2022

Published in *The University of Chicago Press Journals*

- **Purpose:** How 3D digital reconstruction techniques can improve efficiency & accuracy in anthropology.

## PERSONAL PROJECTS

**"Neural for USD"** 2025

A pipeline for using OpenUSD scenes to build NeRF training data and perform novel view synthesis.

- QT-based custom Hydra render engine to preview OpenUSD stage and capture multi-view data.
- PyTorch-based NeRF deep learning model.

**"Houdini Ruins Terrain Toolset"** 2025

A procedural toolset developed in SideFX Houdini for generating ruined terrains and detailed environmental assets for real-time game engines

- Features heightfield-based terrain geometry, Copernicus texturing, rigid-body dynamics (RBD) simulation and fracturing, dynamic shortest path calculations, etc.

**"NVIDIA Omniverse ComfyUI Bridge"**<sup>1</sup> 2024

An extension for the NVIDIA Omniverse platform to support a ComfyUI workflow directly within the viewport.

- Captures AOV data (depth, normals, instance / semantic segmentation) from Omniverse USD stage context.
- Exposes a service endpoint for local ComfyUI instances to receive data as NumPy and PyTorch structures.

## SKILLS

### General:

C++/C#/C, Python, SQL, Typescript/HTML/CSS

### Computer Graphics / 3D-Modeling:

**Languages/APIs:** GLSL, HLSL, VEX, MEL, OpenGL, OpenUSD

**Tools:** Maya, Houdini, Unity, Adobe Photoshop/Substance 3D

### Misc:

Shell scripts (Bash/Vim), Version Control (Git, GitHub Actions)

Cloud Infrastructure Platforms (AWS S3, Azure),

Container Tools (Kubernetes + Helm, Docker),

Python Virtual Environments (Pypenv, Conda)