Amy Liu

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Driven student researcher & developer in computer graphics (CG). Prepared to support procedural graphics workflows, 3D content creation pipelines, & GPU/engine optimization research. Interested in roles in CG akin to *Internal Tools 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

- Developed company's pilot project, "Omniverse ComfyUI Bridge" [1], with a team of 4 engineers.
- Contributed original data to NVIDIA NIM Services research through NVIDIA Startup Inception program collaboration.
- Built an internal plug-in to standardize scene 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 Web 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"
2023

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" [1]
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, VEX, CUDA, OpenUSD, Vulkan, OpenGL
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 (Pyenv, Conda)