Amy Liu

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ABOUT

Perceptive student developer and researcher in computer graphics. Eager to create & improve immersive storytelling and multi-sensory capabilities of technology. Interested in *Research & Development Engineering* and *Tools 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)

PROFESSIONAL EXPERIENCES

3D GenAI Startup Intern
Jul 2024 - Dec 2024

GliaCloud Co., Ltd.
Taipei City, Taiwan

- Bolstered company's NVIDIA's Startup Inception program collaboration by contributing original data to NVIDIA NIM Services research.
- Implemented a ComfyUI connector for NVIDIA Omniverse.
- Wrote a plug-in to standardize internal structures of OpenUSD 3D assets for Omniverse.
- Deployed 2 cloud-hosted Kubernetes clusters to serve 3D deepsearch AI models.
- Designed 4 custom HLSL Reshade (post-process) shaders.

Comp. 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 an inputted scanned human face mesh of any gender, race, & age.
  - Photo-realism in final rendered outputs qualified as training data for next-gen facial parsing machine-learning models.
  - Presented in 2022 Nat. 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 - Present

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

"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.

"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.

PERSONAL PROJECTS

"Neural for USD"
2025

A pipeline for using OpenUSD scenes to build NeRF training data and perform novel view synthesis.
- QT-based 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
- Implements heightfield-based terrain geometry, Copernicus texturing, rigid-body dynamics (RBD) simulation, dynamic shortest path calculations.

"NVIDIA Omniverse ComfyUI Bridge"
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: MDL, VEX, HLSL, OpenGL/GLSL, OpenUSD
Tools: Maya, Houdini, Unity, Adobe Photoshop/Substance 3D

Misc:
Shell scripts (Bash/Vim), Version Control (Git, GitHub Actions)
Cloud Infrastructure Platforms (AWS, Azure),
Container Tools (Kubernetes + Helm, Docker),
Python Virtual Environments (Pyenv, Conda)