Ang (Jamie) Chen

jamiechenang@gmail.com | angjchen | Depersonalizc | Personal Website

Education

Brown University **2022–2024**
M.Sc. in Computer Science, 4.00/4.00 *Providence, RI*

The Chinese University of Hong Kong **2018–2022**
B.Eng. in Computer Science, with Honors, 3.56/4.00 *Shenzhen, China*

Experience

OPPO US Research (InnoPeak Technology) **May 2023 - August 2023**
Graphics Software Engineer Intern *Seattle, WA*

- **Surveyed & analyzed** current real-time global illumination solutions with an emphasis on voxel-based approaches.
- **Prototyped** two interactive voxel-based global illumination demos with Vulkan for both **PC and Android**, featuring voxel cone tracing and HDDA-accelerated raytracing on NanoVDB level sets.
- **Profiled** the demos with RenderDoc and Nsight Graphics; Reduced **16ms** frametime by optimizing draw calls.
- Hosted 6 officewide **tech sharing** and **code walkthrough sessions** to share field knowledge with my coworkers.

Future Network of Intelligence Institute **March 2022 - May 2022**
Machine Learning Engineer Intern *Shenzhen, China*

- Developed deep learning infra for a project on 3D human reconstruction with neural radiance fields (NeRFs).
- **Built data pipeline components** for extracting and rendering 3D human meshes with Python and PyTorch3D.
- Wrote customized GLSL shader programs to **accelerate training data synthesis** by over **1000x**.
- **Fine-tuned** the ResNet34 backbone with PyTorch on Renderpeople datasets to improve model performance by **4%**.

Shenzhen Research Institute of Big Data **Sept. 2021 - Dec. 2021**
Undergraduate Research Assistant *Shenzhen, China*

- Leveraged **entropy-based unsupervised learning** to adapt a polyp segmentation ResUNet++ model trained on traditional endoscopic images to unlabeled video capsule endoscopy (VCE) data.
- Improved segmentation performance of the baseline model by **9.8%** in IoU and by **6.2%** in Dice score.

Projects

NASA SUITS Challenge **Feb. 2023 - May 2023**
C#, Unity, MRTK3

- **Top-10 national finalist** in the 2023 NASA SUITS Challenge, teamed with the Rhode Island School of Design.
- Developed a HoloLens 2 AR interface to **assist astronauts** in conducting surface exploration on the Moon and Mars.
- Implemented essential features for the **navigation** and the **geosampling interface** with MRTK3 in the Unity engine, including GPS localization, gesture controls, voice memos, timed sample collection, and a global notification system.

Weenix OS Kernel **Jan. 2023 - May 2023**
C, GDB, Git

- Developed major components (6K lines of code) of a Unix-like operating system kernel, including:
- **Proc:** Kernel threads, context switching, processes and synchronization primitives;
- **Drivers:** Device drivers for virtual terminals (`tty`), disks, and memory devices (`/dev/null`, `/dev/zero`);
- **FS:** Virtual file system (VFS) and System V file system (S5FS);
- **VM:** Virtual memory management that supports file-backed and anonymous memory mapping, copy-on-write fork with shadow memory objects, and page fault handling.

Realtime Volumetric Clouds Renderer **Nov. 2022 - Dec. 2022**
C++, OpenGL, GLSL, Git

- Developed an OpenGL volumetric clouds renderer that produced visually stunning 3D clouds in **real time**.
- Implemented **ray-march volume rendering** and **anisotropic scattering** to achieve convincing lighting effects.
- Wrote **GLSL compute shaders** to generate and cache tileable 3D Worley noise as textures for cloud geometry.
- Optimized rendering performance with **adaptive step sizes** and **stochastic sampling** to balance visual quality with high frame rates, resulting in a **50% increase** in rendering performance.

Skills

Languages & Tools: Python, C, C++, SQL, Go, Java, HTML, CSS, JavaScript/TypeScript, React, Julia
Visual Computing: OpenGL/WebGL, GLSL, Vulkan, RenderDoc, Nsight Graphics, Unity, OpenCV
Machine Learning: PyTorch, scikit-learn, NumPy, PyTorch3D, SciPy, TensorFlow/Keras