

Yang Zhou | Graphics Researcher

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Education

Ph.D. in Computer Science

University of California, Santa Barbara (Advisor: Prof. Lingqi Yan)

Focus: physically based rendering, appearance modeling, light transport algorithms, real-time rendering

Santa Barbara, CA

Sept 2019 – Present

Master of Entertainment Technology (GPA: 3.83/4.33)

Carnegie Mellon University

Pittsburgh, PA

Sept 2015 – May 2017

Bachelor of Computer Science (GPA: 89.7/100)

Southeast University, Thesis at Kungliga Tekniska Högskolan, Sweden

Nanjing, China

Sept 2011 – June 2015

Publications

Vectorization for Fast, Analytic, and Differentiable Visibility

Y. Zhou, L. Wu, R. Ramamoorthi, and L. Yan. *ACM Transactions on Graphics* 40.3: 1-21. Presented at SIGGRAPH 2021.

Professional Experience

NVIDIA Research

Research Intern

- Unannounced research project on volumetric appearance model.

Redmond, WA

June 2021 – Sept 2021

Facebook Reality Labs

Research Intern

- Unannounced research project on texture synthesis.

Redmond, WA

June 2020 – Sept 2020

Apple Inc.

Rendering Engineer

- RealityKit: Developed physically-based shading, lighting, HDR pipeline, anti-aliasing, and other real-time rendering techniques.
- AR Quick Look (iOS 12): Developed key features including environment reflection and soft contact shadow.

Sunnyvale, CA

June 2017 – May 2019

Facebook Reality Labs

Game Engineer Intern

- Contributed to an unannounced multiplayer social virtual reality system based on Unreal Engine.

Pittsburgh, PA

Jan 2017 – May 2017

Insomniac Games, Inc.

Gameplay Programmer Intern

- Developed gameplay systems for Marvel's Spider-Man PS4 game.

Burbank, CA

May 2016 – Aug 2016

Patents

Customizable Render Pipelines Using Render Graphs

C. J. White, R. W. Lamore, P. Engstad, I. Gavrenkov, M. Stoll, Y. Zhou, Pub. No.: US2020/0104970A1

Personal Projects

Narumi: An Offline Physically Based Renderer

2017 – 2018

- Long-term personal research project. Created from scratch.
- Acceleration structures: binned-SAH BVH, HLBVH, and SBVH.
- Integrators: path tracing, BDPT, and VCM, with with participation media support.
- Various material and lighting features such as microfacet models, subsurface scattering, and image-based lighting.

Voxel Cone Tracing Global Illumination

Nov 2016 – Dec 2016

- Implemented real-time indirect illumination based on voxel cone tracing.
- Integrated with deferred rendering pipeline and post processing to maximize performance.

Real-time Particle-based Fluid Simulation

April 2016 – May 2016

- Implemented 3D fluid simulation based on SPH algorithm and visualized by isosurface reconstruction.
- Parallelized both algorithms on GPU which led to significant speedup and real-time performance.

Crowd Simulation by the Least-effort Approach

Jan 2015 – May 2015

- Bachelor degree project. Implemented and evaluated crowd simulation based on the Principle of Least-effort.
- Capable of simulating thousands of pedestrians in real time, creating smooth and collision-free motion.

Technical Skills

Programming Languages: C/C++, GLSL/HLSL/Cg, C#, Python

Software: Vulkan, Metal, OpenGL, DirectX, CUDA, Unity, Unreal Engine, Mitsuba, pbrt, OpenCV, SSE/AVX, CMake, Git, L^AT_EX