

Yan Xiao

675 Tasman Drive, Sunnyvale, CA, 94089
(608)960-1652, Alston_xiao@outlook.com

EDUCATION

M.S. Computer Science and Engineering, Advisor: Ravi Ramamoorthi
University of California, San Diego. GPA: 4.0

June 2023

B.S. Computer Science and Engineering & Economy,
University of Wisconsin-Madison. GPA: 4.0

May 2021

PUBLICATIONS

“Neural Free-Viewpoint Relighting for All-Frequency Indirect Illumination”, Co-First Author
EGSR 2023

- **Introduced a novel volumetric neural representation** in wavelet space for precomputed radiance transfer (PRT) in synthetic scenes, achieving significant improvements over prior neural PRT methods, allowing full-frequency indirect illumination.
- **Compressed the wavelet PRT tensor** from gigabytes to approximately 100 MB by incorporating tools from neural radiance fields, such as tensor decomposition and view direction encodings.
- **Implemented a real-time neural relighting demo** using CUDA and C++, showcasing the practical application of the method in interactive settings.

EXPERIENCE

AR/VR Graphics/Machine Learning Engineer, Persona, Apple

September 2023 - Now

- **Designed and trained a robust autoencoder** to represent realistic hair for digital humans, leveraging the body light stage data and emulated enrollment images.
- **Optimized Gaussian Splat performance** by regularizing the distribution and learning a visibility function for efficient rendering of 3D gaussians.
- **Led neural rendering experiments**, exploring alternative representations such as neural radiance fields to model digital humans, while analyzing the visual fidelity and performance of these representations.
- **Developed neural deformation models** based on SMPL-like linear blend skinning, enabling non-linear realistic human body deformations.

GPU Architecture, RT-Core, NVIDIA

Ray-Tracing Hardware Engineering Intern,

June 2022 – September 2022

- **Developed a generic per-ray performance visualizer** for a ray-tracing hardware simulator in C++, which handles various per-ray statistics and provides improved visualization over the old tool.
- **Created and executed a debug plan** for another unreleased feature and fixed several bugs.

Teacher Assistant, UCSD

Jan 2022 – Dec 2022

- **TA-ed** in Advanced Computer Graphics & Image Synthesis, Parallel computing, and Graduate Level Computer Architecture.

Projects

Inverse rendering in dynamic neural radiance field

- Integrated state-of-the-art dynamic neural radiance fields with inverse rendering techniques using custom synthetic video sequences, analyzing performance in challenging lighting scenarios with hard and interlacing shadows.
- Proposed a novel regularizer using neural scene flow and enforced albedo consistency between consecutive frames, reducing artifacts and improving accuracy in reconstructed albedos for enhanced relighting results.
- Built a modular pipeline based on the NeRFStudio framework, contributing several fixes and features to the libraries while ensuring efficient implementation.

Neural Denoiser

- Trained a U-Net Convolution Neural Network to learn a denoising kernel for each pixel, using noisy image, normal map, depth map, etc. as the input.
- Achieved real-time performance with slight artifacts and demonstrated the ability to denoise any image.