Haolin Xiong

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EDUCATION

University of Southern California (USC) – Los Angeles, CA
Ph.D. student in Computer Science *08/2025 – present*

University of California, Los Angeles (UCLA) – Los Angeles, CA
M.S. in Electrical & Computer Engineering *09/2022 – 06/2024*

Rensselaer Polytechnic Institute (RPI) – Troy, NY
M.S. in Business Analytics *01/2021 – 12/2021*

B.S. in Computer & System Engineering *09/2017 – 12/2020*
Dual B.S. in Economics

RESEARCH EXPERIENCE

USC, Vision & Graphics Lab (VGL) – Supervisor: Assistant Prof. Yajie Zhao

Research Engineer *– 3D Computer Vision* *07/2024 – present*

- Conduct 3D Computer Vision research in ICT Vision & Graphics Lab, focusing on enhancing techniques for scene reconstruction, content generation, and spatial understanding for robotic applications.
- Lead a comprehensive survey on long-range Dynamic Occlusion, exploring depth perception improvements in VR/AR.
- Investigate diffusion models and Score-Distillation Sampling (SDS) for lighting-aware editing in 3D Gaussian Splatting (3DGS).

UCLA, Visual Machines Group (VMG) – Supervisor: Associate Prof. Achuta Kadambi

Graduate Researcher *– 3D Computer Vision* *01/2023 – 06/2024*

- Conduct 3D Computer Vision research in UCLA Visual Machines Group, focusing on novel view synthesis and 3D reconstruction.
- Perform broad literature and post-implementation reviews in Neural Radiance Field (NeRF) and 3D Gaussian Splatting (3DGS).
- Develop original methods, such as incorporating depth loss and generative priors, to improve 3DGS performance in sparse-view settings for up to 18% in PSNR, 30% in LPIPS, and achieving SOTA.

WORK EXPERIENCE

Meta, Reality Labs *02/2025 – 08/2025*

Machine Learning Engineer *– Computer Vision* *Los Angeles, CA*

- Work as contractor at Meta Reality Labs via staffing agency DigitalFish.
- Design and implement machine learning modules to refine VR/AR camera pose estimation, increasing pose **pass rate** by more than **40%** and **cutting computation** cost by **20%.**
- Productize 3D Gaussian Splatting (3DGS), Neural Radiance Fields (NeRF), and diffusion-based generative models to generate large-scale pseudo-ground truth VR datasets for downstream ML tasks.

SRI International, Center for Vision Technologies *03/2024 – 06/2024*

Computer Vision Intern *– Neural Rendering and Gaussian Splatting* *Princeton, NJ*

- Contribute to the development of a novel view synthesis pipeline for an IARPA challenge, enhancing the system's capability to handle diverse datasets with varying complexities.
- Design and implement algorithms for datasets featuring varying numbers of input views, altitudes, and artifact-injected inputs, improving the robustness and accuracy of the synthesized views.
- Enhance existing Structure-from-Motion (SFM) components by incorporating advanced Multi-View Stereo (MVS) techniques such as robust feature detectors and Bundle Adjustment, significantly reducing pose estimation errors.

PUBLICATIONS

1. **Haolin Xiong**, Sairisheek Muttukuru, Hanyuan Xiao, Rishi Upadhyay, Pradyumna Chari, Yajie Zhao, Achuta Kadambi. "SparseGS: Sparse View Synthesis using 3D Gaussian Splatting". *3DV 2025* (arXiv: 2312.00206)
2. Hanyuan Xiao, Yingshu Chen, Huajian Huang, **Haolin Xiong**, Jing yang, Pratusha Prasad, Yajie Zhao. "Localized Gaussian Splatting Editing with Contextual Awareness". *WACV 2025* (arXiv: 2408.00083)
3. Shuang Song, Debao Huang, **Haolin Xiong**, Deyan Deng, Yang Tang, Yajie Zhao, Rongjun Qin. "Olbedo: An Albedo and Shading Aerial Dataset for Large-Scale Outdoor Environments". *CVPR 2026* (arXiv: 2602.22025)

KEY SKILLS

- Programming Language: Python, C++, C, CUDA, SQL, R
- Scientific Libraries: NumPy, Pandas, Matplotlib, etc.
- Deep Learning Frameworks: PyTorch, TensorFlow
- 3D Computer Vision (e.g., NVS, 3D Reconstruction, etc.)
- 3D Computer Graphics (e.g., Ray Tracing, Rasterization, etc.)
- Graphics Software: Maya, Blender