KUNHAO LIU

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https://kunhao-liu.github.io/

EDUCATION

Ph.D. Student of Computer Science, Nanyang Technological University, Singapore — Aug. 2022 - Now
Supervised by Prof. Shijian Lu — **GPA**: 4.5/5.0

Bachelor of Software Engineering, Beihang University, Beijing, China — Sep. 2018 - July 2022
Supervised by Prof. Lu Sheng — **GPA**: 3.8/4.0

TECHINICAL SKILLS

Radiance Fields	Familiar with the reconstruction, rendering, and downstream tasks (e.g. editing, understanding, etc.) of Neural Radiance Fields and 3D Gaussian Splatting.
Diffusion Models	Familiar with the training and inference of diffusion models as well as their applications in 3D (e.g. generation, geometry estimation, etc.).

RESEARCH EXPERIENCE

Diffusion Generative Priors for 3D Reconstruction. Mar. 2024 - Now
Project: Novel View Extrapolation with Video Diffusion Priors.

- We leverage the generative capabilities of video diffusion models to enhance novel view synthesis.
- We repurpose video diffusion models to refine artifact-prone renderings from radiance fields without finetuning.
- Our method demonstrates broad applicability, supporting multiview images, single views, and monocular videos.

Open-vocabulary 3D Segmentation Dec. 2022 - May 2023
Project: Weakly Supervised 3D Open-vocabulary Segmentation.

- We present the first 3D open-vocabulary segmentation method for radiance fields.
- Our approach leverages early foundation models, i.e. CLIP and DINO, to distill segmentation.
- Our method is capable of segmenting 3D scenes with open-world queries.

Feed-forward 3D Scene Editing Aug. 2022 - Mar. 2023
Project: StyleRF: Zero-shot 3D Style Transfer of Neural Radiance Fields; StyleGaussian: Instant 3D Style Transfer with Gaussian Splatting.

- We introduce an innovative framework that can generate zero-shot high-quality 3D stylization.
- Our method is feed-forward and requires no additional training for each editing.
- We design novel algorithms to maintain multi-view consistency and improve efficiency.

PUBLICATIONS

Kunhao Liu, Ling Shao, Shijian Lu. *Novel View Extrapolation with Video Diffusion Priors.* arXiv preprint arXiv: 2411.14208, 2024

Kunhao Liu, Fangneng Zhan, Christian Theobalt, Ling Shao, Shijian Lu. *StyleGaussian: Instant 3D Style Transfer with Gaussian Splatting.* In Proceedings of **SIGGRAPH Asia** Conference, 2024.

Kunhao Liu, Fangneng Zhan, Jiahui Zhang, Muyu Xu, Yingchen Yu, Abdulmotaleb El Saddik, Christian Theobalt, Eric Xing, Shijian Lu. *Weakly Supervised 3D Open-vocabulary Segmentation.* Advances in Neural Information Processing Systems (**NeurIPS**), 2023.

Kunhao Liu, Fangneng Zhan, Yiwen Chen, Jiahui Zhang, Yingchen Yu, Abdulmotaleb El Saddik, Shijian Lu, Eric Xing. *StyleRF: Zero-shot 3D Style Transfer of Neural Radiance Fields.* IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023.

Weijing Tao, Biwen Lei, **Kunhao Liu**, Shijian Lu, Miaomiao Cui, Xuansong Xie, Chunyan Miao. *DivAvatar: Diverse 3D Avatar Generation with a Single Prompt.* IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), 2025

Jiahui Zhang, Fangneng Zhan, Yingchen Yu, **Kunhao Liu**, Rongliang Wu, Xiaoqin Zhang, Ling Shao, Shijian Lu. *Pose-Free Neural Radiance Fields via Implicit Pose Regularization.* IEEE/CVF International Conference on Computer Vision (**ICCV**), 2023.

Zuhao Yang, Fangneng Zhan, **Kunhao Liu**, Muyu Xu, Shijian Lu. *AI-Generated Images as Data Source: The Dawn of Synthetic Era.* arXiv preprint arXiv:2310.01830, 2023.

ACADEMIC SERVICES

Reviewer: ICLR 2025, AAAI 2025, WACV 2025, SIGGRAPH Asia 2024, NeurIPS 2024, ECCV 2024, CVPR 2024, BMVC 2024, IEEE TVCG, Computer Graphics Forum, TPAMI

Program committee: CVPR 2023 workshop (Generative Models for Computer Vision), CVPR 2024 workshops (Neural Rendering Intelligence, 2nd Generative Models for Computer Vision)

AWARDS AND HONORS

Outstanding Graduate of Beihang University July 2022

Outstanding Graduation Thesis July 2022

Scholarship for Academic Records Sept. 2019-2021

SKILLS AND OTHERS

Languages: Chinese (native), English (fluent)

Programming Languages: Python, C/C++, Java, Swift, JavaScript, HTML, CSS

Tools: Pytorch, CUDA, Vue, Swift UI, Blender