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 — Sep. 2018 - July 2022
Supervised by Prof. Lu Sheng — **GPA**: 3.8/4.0

TECHINICAL SKILLS

3D 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 INTERESTS

3D Computer Vision: reconstruction, understanding, and rendering of 3D scenes.

RESEARCH EXPERIENCE

3D Scene Segmentation Using Open Vocabulary Texts — Dec. 2022 - May 2023
Advisor: Prof. Shijian Lu, Nanyang Technological University

- Presented a new pipeline for 3D open-vocabulary segmentation.
- Our approach distills 3D open-vocabulary segmentation from foundation models.
- Our method is capable of segmenting 3D scenes without any segmentation annotations.

3D Scene Appearance Editing through Style Transfer — Aug. 2022 - Mar. 2023
Advisor: Prof. Shijian Lu, Nanyang Technological University

- Introduced an innovative framework that can generate zero-shot high-quality 3D stylization.
- Resolved the three-way dilemma over geometry reconstruction, high-quality stylization, and zero-shot ability.
- Designed novel algorithms to maintain multi-view consistency and improve stylization efficiency.

2D Image Synthesis through Style Transfer — July 2021 - July 2022
Advisor: Prof. Lu Sheng, Beihang University

- Developed a zero-shot 2D style transfer algorithm utilizing Transformer and Bilateral Grid.
- Implemented a per-style-per-model style transfer algorithm using Transformer and Markovian discriminator.

PUBLICATIONS

Kunhao Liu, Fangneng Zhan, Christian Theobalt, Ling Shao, Shijian Lu. *StyleGaussian: Instant 3D Style Transfer with Gaussian Splatting.* arXiv preprint arXiv:2403.07807 (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.

Jiahui Zhang, Fangneng Zhan, Yingchen Yu, **Kunhao Liu**, Rongliang Wu, Xiaoqin Zhang, Ling Shao, and 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, and Shijian Lu. *AI-Generated Images as Data Source: The Dawn of Synthetic Era.* arXiv preprint arXiv:2310.01830 (2023).

ACADEMIC SERVICES

Reviewer: WACV 2025, Siggraph Aisa 2024, NeurIPS 2024, ECCV 2024, CVPR 2024, BMVC 2024, IEEE TVCG

Program committee member: 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