

Zelin Gao

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EDUCATION

Zhejiang University

M.S. In Control Science and Engineering (GPA: 3.78/4.00)

Hangzhou, Zhejiang Province, China

Sep. 2021 - Mar. 2024

- State Key Lab of Industrial Control Technology | Co-Advisors: Prof. Yu Zhang & Prof. Weichen Dai
- {2021-2022} Academic Scholarship & First Prize Scholarship

Jilin University

B.S. in Instrument Science and Engineering (Rank: 2/129, Grade: 87.5/100)

Changchun, Jilin Province, China

Sep. 2017 - Jun. 2021

- State Key Lab of Geophysical Exploration | Advisor: Prof. Chuandong Jiang
- {2020-2021} Outstanding Graduates & Outstanding Graduation Projects
- {2017-2021} National Scholarship & Xin Wang Scholarship & First Prize of Annual Scholarship
- {2018-2019} First Prize in Mathematical Competition & Second Prize in National Mathematical Modeling Competition

RESEARCH INTERSHIP

Xiaolong Wang's Lab, University of California, San Diego

Apr. 2024 - Nov. 2024

- Research Supervisor: Prof. Xiaolong Wang & Dr. Jiarui Xu

- Research Result:
 1. One paper has been submitted to CVPR2025 (under review).

Berkeley Artificial Intelligence Research (BAIR) Lab, University of California, Berkeley

Apr. 2023 - Nov. 2023

- Research Supervisor: Prof. Angjoo Kanazawa & Dr. Yutong Bai

- Research Result:
 1. One paper has been submitted to CVPR2024 (accepted as spotlight).

RESEARCH EXPERIENCE

CVPR2025 (Under Review & 1st Author) AHA: Expressive Human Animation Driven by Audio

- Research Motivation: Talking upper-body human animation with only audio-driven conditions.
- Research Method:
 1. We propose Hybrid Encoder, which serves as a potential motion dictionary learned from the training dataset.
 2. We propose a talking human dataset, TalkingFOX, with various talking upper bodies and their SMPL-X annotations.

CVPR2024 (Spotlight & 1st Author) SPA3D: More View in 2D, More Perceive in 3D

- Research Motivation: 2D view-consistent generation and 3D reconstruction with arbitrary number of input images.
- Research Method:
 1. Jointly fine-tuning pose and Zero 1-to-3 for object-driven generation, enhancing geometry information of latent space.
 2. Stochastic condition images and stochastic SDS are thus introduced in this paper for generation and reconstruction.

ARXIV2023 (1st Author) HG³-NeRF for Sparse View Inputs

- Research Motivation: The optimization problem of reconstructing neural radiance fields from sparse view inputs.
- Research Method:
 1. Hierarchical Geometric Guidance (HGG), incorporating depth to the scene representations with local-to-global regions.
 2. Hierarchical Semantic Guidance (HSG), incorporating coarse-to-fine semantic content to the scene representations.

ICCV2023 (Poster & 1st Author) Adaptive Positional Encoding for BA-NeRF

- Research Motivation: The joint optimization problem of reconstructing neural radiance fields from unknown camera parameters.
- Research Method:
 1. Adaptive Positional Encoding with its frequency diversity loss, taking inspiration from Fourier series regression.
 2. Brand new implicit network, consisting of PMLP for fine-grain gradient propagation.

IROS2022 (Oral & 3rd Author) Thermal-Inertial SLAM for the Environments with Challenging Illumination

- Research Motivation: The frame-based association of thermal images in the simultaneous localization and mapping.
- Research Method:
 1. The SVD-based image processing method, establishing accurate data association by singular value computation.
 2. Real-Time Optical Flow Tracking on RAFT, a light-weight cost-volume for tracking dense optical flow.

PROJECT EXPERIENCE

D⁴-Dreamer: Text to Non-Rigid Scene Generation

May. 2023 - Nov. 2023

- Research Motivation: 4D (XYZ + Temporal) radiance fields generation of fine details.
- Research Method:
 1. We introduce scene content and motion guidance to distill prior from diffusion model to generate non-rigid scenes.
 2. VSD-T of scene motion guidance is proposed to realize smooth motion and further finetune video diffusion model.

Omni Registration Cross-View Registration for OmniObject3D (CVPR2023 Award Candidate)

Apr. 2023 - May. 2023

- Project Abstract: The registration problem of computing the transform matrix between two different coordinate systems.
- Project Solution:
 1. Global Registration for Initializing Transform Matrix, taking inspiration from point cloud feature matching.
 2. Coarse-to-fine Iterative Closet Point, linearly adjusting the convergence loss for ICP including scale factor estimation.

APPENDIX/SUPPLYMENTARY

RESEARCH EXPERIENCE

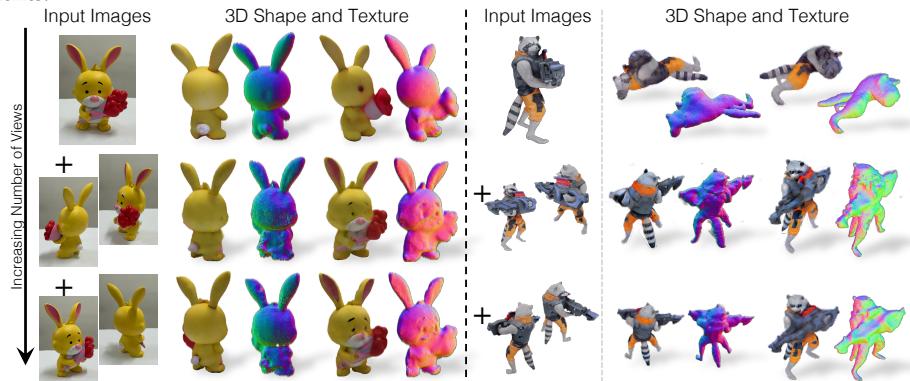
CVPR2025 (Under Review) AHA: Expressive Human Animation Driven by Audio

- Research Experiments:



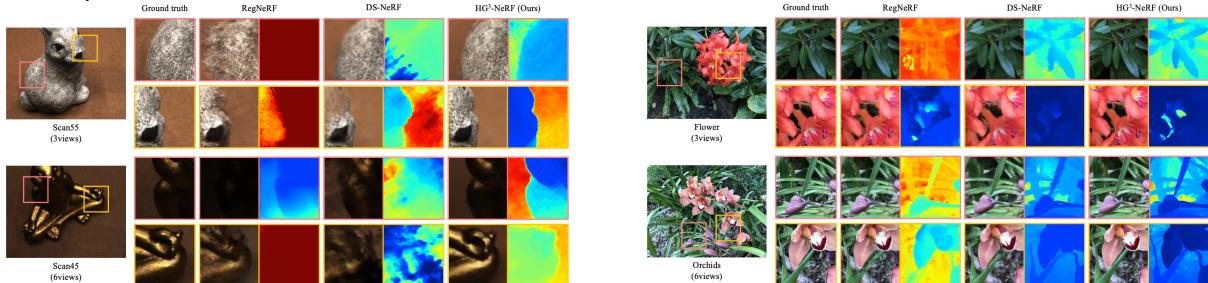
CVPR2024 (Spotlight) SPA3D: More View in 2D, More Perceive in 3D

- Research Experiments:



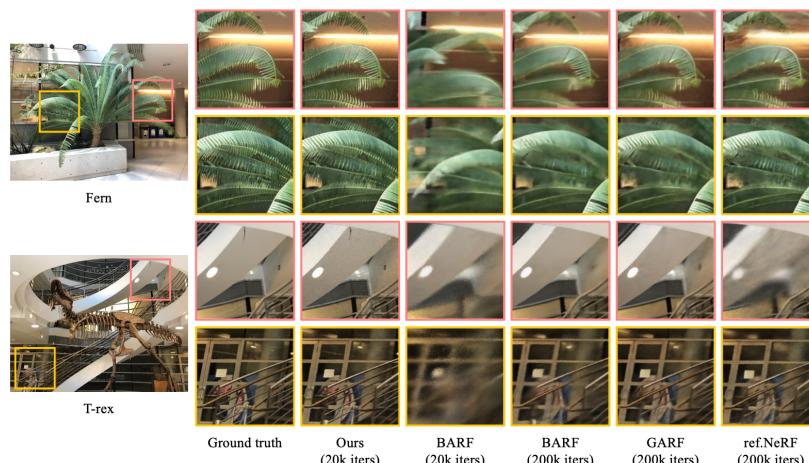
ARXIV2023 HG³-NeRF for Sparse View Inputs

- Research Experiments:



ICCV2023 (Poster) Adaptive Positional Encoding for BA-NeRF

- Research Experiments:



IROS2022 (Oral) Thermal-Inertial SLAM for the Environments with Challenging Illumination

- Research Experiments:

