Xinhao Liu

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Research Direction

In my research, I aim to develop **large reconstruction model** to gather real-world data, **foundational world models** that simulate dynamic environments, and **generalist policy models** based on model-predictive-control. By combining these three components, I enable autonomous systems to interpret, plan, and act effectively in complex settings. My goal is to build robust data-driven platforms that can operate reliably in areas such as autonomous driving, embodied AI, and beyond.

Education

2023 – present **Ph.D. in Computer Science**, New York University.
PhD advisor: Prof. Chen Feng

2023 **B.Sc. in Mathematics**, New York University.
Major: Honors Mathematics | Data Science

Experience

2023 – present **Research Assiatant**, AI4CE Lab, New York University
May – Aug 2025 **Software Engineer Intern**, Waymo, Mountain View
2021 – 2023 **Research Intern**, AI4CE Lab, New York University
Jun – Aug 2021 **Develop Intern**, FNZ, Shanghai, China
Jun – Aug 2020 **Data Analyst Intern**, China UnionPay, Shanghai, China

Research Publications

Conference Proceedings

1. **Xinhao Liu***, Jintong Li*, Yicheng Jiang, *et al.*, "Citywalker: Learning embodied urban navigation from web-scale videos," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2025.
2. **Xinhao Liu***, Moonjun Gong*, Qi Fang, Haoyu Xie, Yiming Li, Hang Zhao, and Chen Feng, "Lidar-based 4d occupancy completion and forecasting," in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2024.
3. **Xinhao Liu***, Yiming Li*, Sihang Li*, Moonjun Gong*, Kenan Li, Nuo Chen, Zijun Wang, Zhiheng Li, Tao Jiang, Fisher Yu, Yue Wang, Hang Zhao, Zhiding Yu, and Chen Feng, "Sscbench: Monocular 3d semantic scene completion benchmark in street views," in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2024.
4. Juexiao Zhang, Gao Zhu, Sihang Li, **Xinhao Liu**, Haorui Song, Xinran Tang, and Chen Feng, "Multiview scene graph," in *Advances in Neural Information Processing Systems (NeurIPS)*, 2024.
5. **Xinhao Liu***, Chao Chen*, Yiming Li, Li Ding, and Chen Feng, "Deepmapping2: Self-supervised large-scale lidar map optimization," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2023, pp. 9306–9316.

Journal Articles

1. Chao Chen, Zegang Cheng, **Xinhao Liu**, Yiming Li, Li Ding, Ruoyu Wang, and Chen Feng, "Self-supervised place recognition by refining temporal and featural pseudo labels from panoramic data," *IEEE Robotics and Automation Letters*, vol. 10, no. 1, pp. 248–255, 2025. DOI: 10.1109/LRA.2024.3495584.

Honors & Awards

2024 **Conference Attendance Grant**, New York University, New York, NY. ($1,500 grant)

2023 **University Honors Scholar**, New York University, New York, NY.

Student Travel Grant for Conference, NYU Shanghai, Shanghai, China. ($4,000 grant)

2022 – 2023 **Dean's List of Academic Year**, NYU Shanghai, Shanghai, China.

2022 **UGSRP Research Fund**, NYU Tandon, New York, NY. ($5,000 fund)

2020 **Best Research Project**, Undergraduate Research Symposium, NYU Shanghai, Shanghai, China. (2 out of 30+ projects)

Dean's Undergraduate Research Fund, NYU Shanghai, Shanghai, China. (¥7,000 fund)

Grants

2024 **The NVIDIA Academic Grant Program**, NVIDIA, *8 NVIDIA RTX 6000 Ada Grafics Cards (worth of $54,400)*. Role: Project Collaborator.

Profesional Services

Reviewer **ICCV**, 2025.
CVPR, 2024.
ICLR, 2024.
IROS, 2024.
ICRA, 2023.

Technical Skills

Programming Python, Matlab, C#, JavaScript, Shell

Library PyTorch, JAX, PyTorch Geometric, ROS, OpenCV, Open3D

Text Editing LaTeX, Markdown, MS Office