Xinhao Liu

✉ xinhao.liu@nyu.edu 📞 929-691-5341 🌐 https://gaaaavin.github.io/

📍 370 Jay St, Brooklyn, NY 11201

Research Direction

My research aims to build embodied AI systems with human-like spatial intelligence, enabling it to operate safely and effectively in complex, real-world environments. Key topics include: **Dual-System** architectures that unify fast reaction with deliberate planning, using **MLLMs for Spatial Reasoning**, and creating interactive **Digital Twins** for robust simulation and training.

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

May – Aug 2025	**Research Intern**, Waymo, Mountain View
2021 – 2023	**Research Intern**, AI4CE Lab, New York University
Jun – Aug 2021	**Intern Developer**, FNZ, Shanghai, China

Research Publications

First-authored papers (including equal contribution): 4   Citations: 133   H-index: 4
* indicates equal contribution.

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. Yiming Li*, Sihang Li*, **Xinhao Liu***, 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.

3. **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.

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. Chao Chen*, **Xinhao Liu***, 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

2025	**Deborah Rosenthal, MD Award**, New York University, New York NY. Awarded for outstanding performance on PhD qualifying exam (2 awardees per year).
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)

Invited Talks

2025	**Amazon FAR**, *CityWalker: Learning Embodied Urban Navigation from Web-Scale Videos*.

Grants

2025	**The START Program**, Samsung Research America. *Action-Conditioned Video Generation for Dynamic Environments* (Rejected). **Role**: Project Collaborator, proposal writing, leading the project.
2024	**The NVIDIA Academic Grant Program**, NVIDIA. *Open Digital Twins for New York City*. **Amont**: 8 NVIDIA RTX 6000 Ada Grafics Cards (worth of $54,400). **Role**: Project Collaborator, main proposal writing and project lead.

Professional Services

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

Technical Skills

Programming	Python, Matlab, C#, JavaScript, Shell
Library	PyTorch, JAX, ROS, OpenCV, Open3D
Text Editing	LaTeX, Markdown, MS Office