

# YIBO LIU

buaayorklau@gmail.com

Personal Webpage | Google Scholar

<https://github.com/York-SDCNLab> | LinkedIn

## RESEARCH INTEREST

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My research interest lies in the domain of computer vision and generative AI.

- I began pursuing a Ph.D. degree in January 2020 with a focus on robotic vision, and during that time, my research centered on the localization and navigation of robots ([RA-L2022](#), [IROS2022](#), [TIM2025](#)).
- 2022-2024, I worked on 3D modeling and 3D content (NeRFs/3D Gaussians Splatting) generation. I had one first-author paper, [MV-DeepSDF](#), accepted to **ICCV2023** and one co-first authored paper accepted to [NeurIPS 2024 Workshop](#).
- Since mid-2023, I have been conducting research on MLLM, Vision Question Answering (VQA), and Diffusion Models intending to generate photorealistic 2D/3D assets. I had one first-author paper, [VQA-Diff](#), accepted to **ECCV2024**.
- Since 2024, I started to work on embodied AI. I had one first-author paper ([HIPPo](#)) submitted to **RA-L**.

## RESEARCH EXPERIENCE

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### Huawei Noah's Ark Lab

Jun. 2022 - Feb. 2025

*Associate Researcher (Internship).*

*Markham, Canada*

- Focused on in-the-wild object reconstruction and image/text-to-3D content generation under the background of simulation in the autonomous driving industry. My research involved Visual Question Answering models, Diffusion models, NeRFs, and Gaussian Splatting.
- Contribution:  
VQA-Diff: Exploiting VQA and Diffusion for Zero-Shot Image-to-3D Vehicle Asset Generation in Autonomous Driving (**first author, ECCV2024**), [DOI](#).  
MV-DeepSDF: Implicit Modeling with Multi-Sweep Point Clouds for 3D Vehicle Reconstruction in Autonomous Driving (**first author, ICCV2023**), [DOI](#).  
Top-3 winner of OmniObject3D challenge (Co-first author, [ArXiv](#), **NeurIPS 2024 Workshop on Symmetry and Geometry in Neural Representations**).

### York University

Jan. 2020 – Jan. 2025

*Teaching Assistant. & Graduate Research Assistant.*

*Toronto, Canada*

- Focused on robotic vision which involved camera/LiDAR-based perception, SLAM, and navigation.
- Contribution:  
Intensity Image-based LiDAR Fiducial Marker System (first author, **RA-L2022**, [DOI](#), Github **60** stars) .  
Application of Ghost-DeblurGAN to Fiducial Marker Detection (first author, **IROS2022**, [DOI](#), Github **42** stars).  
Mapping and Localization using LiDAR Fiducial Markers (first author, accepted to **TIM2025**, [DOI](#), Github **120** stars).

## EDUCATION

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### York University, Lassonde School of Engineering

Toronto, Canada

*Ph.D. Supervisor: Prof. Jinjun Shan.*

*Jan 2020-Jan 2025*

- Scholarship:  
Academic Excellence Fund (maximum amount, 2000\$, 2022&2023).  
York Graduate Scholarship (2020).

### BeiHang University, School of Aeronautic Science and Engineering

Beijing, China

*Master*

*Sep 2017-Jan 2020*

- Scholarship:  
First-class Academic Merit (Top 3%).  
Outstanding Science and Technology Competition Medal of May 4th (5 out of 22,000).  
Ministry of Industry and Information Technology Innovation and Entrepreneurship (10 out of 40,000)

- Scholarship:  
Outstanding Graduate (Top 5%);  
Outstanding Student Cadres

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 SELECTED PUBLICATION & AWARD LIST
 

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**Publication**

- [1]**Liu Y\***, Yang Z\*, Wu G, Ren Y, Lin K, Liu B, Liu Y, Shan J. "VQA-Diff: Exploiting VQA and Diffusion for Zero-Shot Image-to-3D Vehicle Asset Generation in Autonomous Driving", in Proc. European Conference on Computer Vision (**ECCV**), 2024, pp. 323-340.
- [2]**Liu Y**, Zhu K, Wu G, Ren Y, Liu B, Liu Y, Shan J. "MV-DeepSDF: Implicit Modeling with Multi-Sweep Point Clouds for 3D Vehicle Reconstruction in Autonomous Driving", in Proc. IEEE/CVF International Conference on Computer Vision (**ICCV**), 2023, pp. 8306-8316.
- [3]**Liu Y**, Shan J, Haridevan A, Zhang S. "L-PR: Exploiting LiDAR Fiducial Marker for Unordered Low Overlap Multiview Point Cloud Registration", IEEE Transactions on Instrumentation and Measurement (**TIM**), 2025, doi: 10.1109/TIM.2025.3544745
- [4]Yang Z\*, **Liu Y\***, Wu G, Cao T, Ren Y, Liu Y, Liu B. "Learning Effective NeRFs and SDFs Representations with 3D Generative Adversarial Networks for 3D Object Generation". **NeurIPS 2024** Workshop on Symmetry and Geometry in Neural Representations. Top-3 winner of **ICCV 2023** OmniObject3D Challenge.
- [5]**Liu Y**, Schofield H, Shan J. "Intensity Image-Based LiDAR Fiducial Marker System", in IEEE Robotics and Automation Letters (**RA-L**), vol. 7, no. 3, pp. 6542-6549, July 2022, doi: 10.1109/LRA.2022.3174971.
- [6]**Liu Y**, Haridevan A, Shan J. "Application of Ghost-DeblurGAN to Fiducial Marker Detection", in Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2022, pp. 6827-6832, doi: 10.1109/IROS47612.2022.9981701.
- [7]**Liu Y**, Schofield H, Shan J. "Navigation of a Self-Driving Vehicle Using One Fiducial Marker", in Proc. IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems (MFI), 2021, pp. 1-6, doi: 10.1109/MFI52462.2021.9591194.
- [8]Zhang S, Shan J and **Liu Y** "Approximate Inference Particle Filtering for Mobile Robot SLAM," in IEEE Transactions on Automation Science and Engineering, doi: 10.1109/TASE.2024.3475735
- [9]Zhang S, Shan J and **Liu Y**. "Variational Bayesian Estimator for Mobile Robot Localization With Unknown Noise Covariance," in IEEE/ASME Transactions on Mechatronics, vol. 27, no. 4, pp. 2185-2193, Aug. 2022, doi: 10.1109/T-MECH.2022.3161591.

**Award**

- [1]**Top-3 winner** of OmniObject3D Challenge at **ICCV2023** (3D Object Generation Task).
- [2]The first prize, 15th 'Challenge Cup' National Science and Technology College of extra-curricular academic competition works, second author
- [3]Excellent Grade, 9th National College Students Innovation and Entrepreneurship Training Plan, initiator

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 TECHNICAL REVIEWER
 

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- International Conference on Learning Representations (**ICLR**), Neural Information Processing Systems (**NeurIPS**)
- IEEE Robotics and Automation Letters (**RA-L**), IEEE Robotics and Automation Magazine (**RA-M**)
- IEEE International Conference on Robotics and Automation (**ICRA**), IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), Artificial Intelligence and Statistics (**AISTATS**), IEEE/ASME International Conference on Advanced Intelligent Mechatronics (**AIM**)
- IEEE Transactions on Instrumentation and Measurement (**TIM**)
- IEEE Transactions on Industrial Electronics (**TIE**), Autonomous Robots (**RAS**)