Jinfeng Xu

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Research Area and Interests

3D Computer Vision, Point Cloud Semantic Segmentation, Open-World 3D Understanding, Semantic Scene Completion, Continual Learning, Representation Learning

Education

Huazhong University of Science and Technology *Sep 2020 – Expected Jun 2026*
Ph.D. student in Computer Science and Technology, Supervisor: Xianzhi Li. *Wuhan, China*

Shandong University *Sep 2016 – Jun 2020*
Bachelor of Engineering in Automation, Rank: 13/131 (10%). *Shandong, China*

Published Paper

[1] **Jinfeng Xu**, Xianzhi Li, Yuan Tang, Xu Han, Qiao Yu, Yixue Hao, Long Hu, Min Chen. SASep: Saliency-Aware Structured Separation of Geometry and Feature for Open Set Learning on Point Clouds. In **CVPR** 2025.
⋆ *Addressed the underexplored problem of 3D open-set recognition by introducing a saliency-aware part-based framework that advances unknown-class discovery. [Code]*

[2] **Jinfeng Xu**, Siyuan Yang, Xianzhi Li, Yuan Tang, Yixue Hao, Long Hu, Min Chen. PDF: A Probability-Driven Framework for Open World 3D Point Cloud Semantic Segmentation. In **CVPR** 2024.
⋆ *Filled the gap in 3D open-world segmentation with a probability-driven framework that unifies uncertainty estimation and continual learning by pseudo-labeling and knowledge distillation, significantly outperforming the existing approaches. [Code]*

[3] **Jinfeng Xu**, Xianzhi Li, Yuan Tang, Qiao Yu, Yixue Hao, Long Hu, Min Chen. CasFusionNet: A Cascaded Network for Point Cloud Semantic Scene Completion by Dense Feature Fusion. In **AAAI** 2023.
⋆ *Proposed a cascaded dense-fusion network for point-cloud semantic scene completion and contributed two new benchmark datasets, enabling comprehensive evaluation of SSC methods. [Code]*

[4] Xu Han, Yuan Tang, **Jinfeng Xu**, Xianzhi Li. MoST: Efficient Monarch Sparse Tuning for 3D Representation Learning. In **CVPR** 2025.

[5] Yuan Tang, Xianzhi Li, **Jinfeng Xu**, Qiao Yu, Long Hu, Yixue Hao, Min Chen. Point-LGMask: Local and Global Contexts Embedding for Point Cloud Pre-Training With Multi-Ratio Masking. **IEEE Trans. Multimedia** 2023.

[6] Qiao Yu, Xianzhi Li, Yuan Tang, **Jinfeng Xu**, Long Hu, Yixue Hao, Min Chen. JIMR: Joint Semantic and Geometry Learning for Point Scene Instance Mesh Reconstruction. **IEEE Trans. Vis. Comput. Graph.** 2024.

[7] Qiao Yu, Xianzhi Li, Yuan Tang, Xu Han, **Jinfeng Xu**, Long Hu, Min Chen. PointDreamer: Zero-Shot 3D Textured Mesh Reconstruction From Colored Point Cloud. **IEEE Trans. Vis. Comput. Graph.** 2025.

[8] Yuan Tang, Xu Han, Xianzhi Li, Qiao Yu, **Jinfeng Xu**, Yixue Hao, Long Hu, Min Chen. More Text, Less Point: Towards 3D Data-Efficient Point-Language Understanding. In **AAAI** 2025.

[9] Yuan Tang, Xu Zhang, Rui Wang, **Jinfeng Xu**, Long Hu, Yixue Hao. Crowd Intelligent Grouping Collaboration Evacuation via Multi-agent Reinforcement Learning. In **CSCWD** 2023.

[10] Rui Wang, **Jinfeng Xu**, Jia Liu, Di Wu, Yixue Hao, Xianzhi Li, Min Chen. TIF: Trajectory and Information Flow Coupling Mechanism for Behavior Analysis in Autonomous Driving. **IEEE Trans. Intell. Transp. Syst.** 2022.

[11] Yiming Miao, **Jinfeng Xu**, Min Chen, Kai Hwang. Drone enabled Smart Air-Agent for 6G Network. **IEEE ICC** 2022.

[12] Gaoxiang Wu, Qiang Liu, **Jinfeng Xu**, Yiming Miao, Matevž Pustišek. Energy Efficient Task Caching and Offloading in UAV-Enabled Crowd Management. **IEEE Sens. J.** 2022.

[13] Rui Wang, **Jinfeng Xu**, Yujun Ma, Muhammad Talha, Mabrook S Al-Rakhami, Ahmed Ghoneim. Auxiliary Diagnosis of COVID-19 Based on 5G-Enabled Federated Learning. **IEEE Netw.** 2021.

Projects

3D Scene Reconstruction and Understanding with Weak Labels | *NSFC (China)* *Aug 2022 – Now*

- Participated in a national research project (China), focusing on 3D scene reconstruction and semantic understanding under weakly-labeled data conditions.
- Contributed to algorithm development for semantic scene completion, open-world 3D segmentation, and open-set recognition, leading to three first author publications (AAAI'23, CVPR'24, CVPR'25).

Semantic-Prior-Driven Building Facade Modeling | *Invention Patent* *Oct 2023 – Dec 2023*

- Proposed a semantic segmentation–based pipeline with prior-guided optimization for facade element modeling.
- Resulted in a Chinese patent application (202410270767X, under examination).

Large-Scale Crowd Monitoring and Management Platform with UAVs | *Collaboration with KAUST* *Feb 2021 – May 2022*

- Designed and implemented a customized image transmission protocol using socket data frames and JSON encapsulation for low-latency and reliable video streaming.
- Integrated compression and concurrency control into a ROS-based UAV system, ensuring stable video streaming and enabling real-time target tracking for large-scale crowd monitoring.

Vision-Guided Robotic Manipulation System | *Research Collaboration* *Feb 2020 – Dec 2021*

- Developed an autonomous robotic pick-and-place pipeline integrating RGB-D perception, calibration, and robotic control for shelf-based item retrieval.
- Implemented hand–eye calibration to map 3D object poses from depth cameras to the robotic arm coordinate system, enabling precise grasp execution.

Honors and Awards

- 2024 Huawei Scholarship.
- 2021-2024 Ph.D. First Class Academic Scholarship.
- 2019 National Special Prize, National Engineering Training Competition (Robotics), Ministry of Education.
- 2018 National Second Prize, National Intelligent Vehicle Competition (NXP Cup), Ministry of Education.