

# Xiuwei Xu

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## Education

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- Department of Automation, Tsinghua University** Beijing, China  
PhD in Control Science and Engineering 2021-  
Advisor: Prof. Jiwen Lu
- Department of Automation, Tsinghua University** Beijing, China  
B.S. in Automation 2017-2021

## Experience

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- BOSCH China** Shanghai, China  
Intern in Autonomous Driving Department 2023  
Engineer topic: multi-task scene understanding, semi-supervised object detection.
- Cambricon** Beijing, China  
Intern in Intelligent Processor Research Center 2020  
Engineer topic: CNN acceleration and deployment on microserver with C-based language.

## Research Interests

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**My research interest is 3D vision and robotics.** In particular, I am interested in 3D scene understanding and its application in embodied tasks like navigation and manipulation. I believe embodied intelligence will reshape the society and benefit our lives. My long-term goal is to construct general embodied agents with the ability to perceive, plan and act in 3D space.

## Publications

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\* Equal contribution, † Project leader.

### First-Authored Top Conference/Journal

- [1] Hang Yin\*, **Xiuwei Xu**\*†, Linqing Zhao, Ziwei Wang, Jie Zhou, Jiwen Lu  
**UniGoal: Towards Universal Zero-shot Goal-oriented Navigation**  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2025
- [2] Wenxuan Guo\*, **Xiuwei Xu**\*, Ziwei Wang, Jianjiang Feng, Jie Zhou, Jiwen Lu  
**Text-guided Sparse Voxel Pruning for Efficient 3D Visual Grounding**  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2025
- [3] **Xiuwei Xu**, Huangxing Chen, Linqing Zhao, Ziwei Wang, Jie Zhou and Jiwen Lu  
**EmbodiedSAM: Online Segment Any 3D Thing in Real Time**  
The Thirteenth International Conference on Learning Representations (ICLR, **Oral**), 2025
- [4] Hang Yin\*, **Xiuwei Xu**\*†, Zhenyu Wu, Jie Zhou, Jiwen Lu  
**SG-Nav: Online 3D Scene Graph Prompting for LLM-based Zero-shot Object Navigation**  
Thirty-seventh Conference on Neural Information Processing Systems (NeurIPS), 2024
- [5] **Xiuwei Xu**\*, Zhihao Sun\*, Ziwei Wang, Hongmin Liu, Jie Zhou, Jiwen Lu  
**3D Small Object Detection with Dynamic Spatial Pruning**  
European Conference on Computer Vision (ECCV), 2024
- [6] **Xiuwei Xu**, Ziwei Wang, Jie Zhou, Jiwen Lu  
**Back to Reality: Learning Data-Efficient 3D Object Detector with Shape Guidance**  
IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2024

- [7] **Xiuwei Xu\***, Chong Xia\*, Ziwei Wang, Linqing Zhao, Yueqi Duan, Jie Zhou, Jiwen Lu  
**Memory-based Adapters for Online 3D Scene Perception**  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024
- [8] **Xiuwei Xu**, Ziwei Wang, Jie Zhou, Jiwen Lu  
**Binarizing Sparse Convolutional Networks for Efficient Point Cloud Analysis**  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023
- [9] **Xiuwei Xu**, Yifan Wang, Yu Zheng, Yongming Rao, Jie Zhou, Jiwen Lu  
**Back to Reality: Weakly-supervised 3D Object Detection with Shape-guided Label Enhancement**  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022

### Peer-Reviewed Conference Publications

- [10] Zhenyu Wu, Yuheng Zhou, **Xiuwei Xu**, Ziwei Wang, Haibin Yan  
**MoManipVLA: Transferring Vision-language-action Models for General Mobile Manipulation**  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2025
- [11] Yinan Liang, Ziwei Wang, **Xiuwei Xu**, Jie Zhou, Jiwen Lu  
**EfficientLLaVA: Generalizable Auto-Pruning for Large Vision-language Models**  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2025
- [12] Changyuan Wang, Ziwei Wang, **Xiuwei Xu**, Yansong Tang, Jie Zhou and Jiwen Lu  
**Q-VLM: Post-training Quantization for Large Vision-Language Models**  
Thirty-eighth Conference on Neural Information Processing Systems (NeurIPS), 2024
- [13] Changyuan Wang, Ziwei Wang, **Xiuwei Xu**, Yansong Tang, Jie Zhou and Jiwen Lu  
**Towards Accurate Post-training Quantization for Diffusion Models**  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR, **Highlight**), 2024
- [14] Linqing Zhao, **Xiuwei Xu**, Ziwei Wang, Yunpeng Zhang, Borui Zhang, Wenzhao Zheng, Dalong Du, Jie Zhou and Jiwen Lu  
**LowRankOcc: Tensor Decomposition and Low-Rank Recovery for Vision-based 3D Semantic Occupancy Prediction**  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024
- [15] Yinan Liang, Ziwei Wang, **Xiuwei Xu**, Yansong Tang, Jie Zhou and Jiwen Lu  
**MCUFormer: Deploying Vision Transformers on Microcontrollers with Limited Memory**  
Thirty-seventh Conference on Neural Information Processing Systems (NeurIPS), 2023

### Peer-Reviewed Journal Publications

- [16] Ziwei Wang, Changyuan Wang, **Xiuwei Xu**, Jie Zhou and Jiwen Lu  
**Quantformer: Learning Extremely Low-precision Vision Transformers**  
IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2023
- [17] Yu Zheng, **Xiuwei Xu**, Jie Zhou and Jiwen Lu  
**PointRas: Uncertainty-Aware Multi-Resolution Learning for Point Cloud Segmentation**  
IEEE Transactions on Image Processing (T-IP), 2022

### Honors and Awards

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- NSFC Youth Student Research Grant (PhD) 2024
  - Chinese National Scholarship 2024
  - Outstanding Graduate of Beijing 2021
  - Innovation Award of Science and Technology, Tsinghua University 2020
  - Innovation Award of Science and Technology, Tsinghua University 2019

## Teaching Experience

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<b>Department of Automation, Tsinghua University</b> Teaching assistant for Computer Vision	Beijing, China 2024-2025
<b>Department of Automation, Tsinghua University</b> Teaching assistant for Pattern Recognition and Machine Learning	Beijing, China 2022-2023
<b>Department of Automation, Tsinghua University</b> Teaching assistant for Numerical Analysis	Beijing, China 2021

## Academic Services

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### Conference Reviewer

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2025)
- Neural Information Processing Systems (NeurIPS 2024-2025)
- IEEE/CVF International Conference on Computer Vision (ICCV 2023, 2025)
- European Conference on Computer Vision (ECCV 2024)
- International Conference on Machine Learning (ICML 2025)
- International Conference on Representation Learning (ICLR 2025)

### Journal Reviewer

- International Journal of Computer Vision (IJCV)
- IEEE Transactions on Image Processing (T-IP)
- IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)
- IEEE Transactions on Multimedia (T-MM)
- IEEE Transactions on Intelligent Transportation Systems (T-ITS)