Haotian Wang

🗹 Email | 🏠 Homepage | 🖓 Github | 🞓 Google Scholar

National Key Laboratory of Human-Machine Hybrid Augmented Intelligence, Xi'an Jiaotong University, China

Research interests

EDUCATION			
• Ph.D.	Xi'an Jiaotong University [🏶]	09 2019 - 06 2025	
College of Artificial Intelligence, advised by Prof. Meng Yang.		Xi'an, China	
• Visiting Ph.	D. Nanyang Technological University []	12 2023 - 12 2024	
College of Computing and Data Science, advised by Prof. Shijian Lu.		Singapore	
• B.S.	North China Electric Power University [09 2013 - 06 2017	
School of Electrical and Electronic Engineering		Beijing, China	
DECEADOU	EVDEDIENCE		

KESEARCH EXPERIENCE

Thesis Topic: General and	d Generalized Depth Perception Framework
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Xi'an Jiaotong University

Xi'an, China • My research focuses on developing a unified model for perceiving diverse 3D scenes in open environments for embodied intelligence. Autonomous agents, equipped with sensors like cameras, LiDAR, ToF, structured-Light, or their combinations, must function effectively across diverse indoor and outdoor scenes. To address these challenges, we propose a general and generalized framework to robustly perform depth estimation/completion/enhancement using a single model, enabling accurate scene depth perception across varying scenes and sensors.

• Thesis Topic: Generalizable Depth Completion Model

Computer Vision & Multi-Modal Vision

Nanyang Technological University

• This research focuses on robustly acquiring accurate dense metric depths from sparse depth measurements, supporting precise spatial perception for downstream applications. We have developed an advanced and highly generalizable depth completion technique capable of performing effectively in zero-shot and few-shot scenarios. Our approach demonstrates impressive generalization on multiple benchmarks, providing reliable metric depth data for comprehensive 3D scene understanding.

PUBLICATIONS AND PATENTS

A=PAPER, B=PATENT(* DENOTES ADVISOR)

- H. Wang, A. Xiao, X. Zhang, M. Yang, and S. Lu. "PacGDC: Label-Efficient Generalizable Depth Completion [A.5] from Projective Ambiguity and Consistency." submitted to ICCV 2025.
- [A.4] H. Wang, M. Yang, X. Zheng, and G. Hua. "Scale Propagation Network for Generalizable Depth Completion." IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), vol. 47, pp.1908-1922, 2025. [Paper] [
- H. Wang, M. Yang, and N. Zheng. "G2-MonoDepth: A General Framework of Generalized Depth Map Inference [A.3] from Monocular RGB-X Data." IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), vol. 46, pp. 3753-3771, 2024. [Paper] [**?**]
- H. Wang, M. Yang, C. Zhu, and N. Zheng. "RGB-Guided Depth Map Recovery by Two-Stage Coarse-to-Fine [A.2] Dense CRF Models." *IEEE Transactions on Image Processing (T-IP)*, vol. 32, pp. 1315-1328, 2023. [Paper]
- H. Wang, M. Yang, X. Lan, C. Zhu, and N. Zheng. "Depth Map Recovery based on a Unified Depth Boundary [A.1] Distortion Model." *IEEE Transactions on Image Processing* (**T-IP**), vol. 31, pp. 7020-7035, 2022. [Paper]
- **[B.4]** M. Yang*, H. Wang, and N. Zheng. "Zero-Shot Depth Completion Based on Scale Propagation Normalization Layer: Method and System." Chinese Patent, Patent No. 2023101807430, 2024.
- M. Yang*, H. Wang, and N. Zheng. "Generalizable Depth Map Inference with Single-View: Method and Sys-[**B**.3] tem." Chinese Patent, Patent No. 2023101807430, 2023.
- [B.2] M. Yang*, H. Wang, and N. Zheng. "Depth Map Structure Restoration Method Based on the Fully Connected Conditional Random Field Model." Chinese Patent, Patent No. ZL202111057715.2, 2021.
- [B.1] M. Yang*, H. Wang, and N. Zheng. "An Iterative Method of Depth Map Structure Restoration based on Structural Similarity between RGB and Depth." Chinese Patent, Patent No. ZL200010007508.X, 2020.

RESEARCH PROJECTS

• A General Model of Single-View 3D Perception for Multi-Modal Autonomous Agents	12 2022 - 06 2025
Responsibility: Core Member. Source: No. 62373298, The National Natural Science Foundation of China	Xi'an, China
A General Depth Perception Model	01 2022 - 12 2023
Responsibility: Project Leader. Source: No. xzy022022061, The Basic Research Foundation of Xi'an Jiaotong University	. Xi'an, China

12 2023 - 12 2024 Singapore



3D Vision & Scene Depth Perception

HONORS AND AWARDS

Academic Star of the IAIR (Top 1%)	01 2025	
Xi'an Jiaotong University		
Outstanding Graduate Student	10 2024	
Xi'an Jiaotong University		
• Baosheng Hu Scholarship (Top 5%, 1st Place)	09 2024	
Xi'an Jiaotong University		
• Academic Star of the IAIR (Top 1%)	01 2024	
Xi'an Jiaotong University		
 Academic Scholarship (Top 5%, 1st Place) 	10 2023	
Xi'an Jiaotong University		
• Qianheng Huang Scholarship		
Xi'an Jiaotong University		
• Joint Ph.D. Scholarship (6700 people in China)		
China Scholarship Council (CSC)		
Invited Oral Presenter		
Xi'an Jiaotong University		
College Scholarship		
North China Electric Power University		

RESEARCH SKILLS

- **Programming Languages:** Python / Pytorch / Matlab / C / LATEX
- Operation Systems: Linux / Windows / MacOS
- Languages: English / Chinese
- Certificates: College English Test Band 6 / National Computer Rank Examination Level 2 (C language) / National Computer Rank Examination Level 3 (Network technology)

REFERENCES

- 1. **Prof. Meng Yang** (Email:mengyang@mail.xjtu.edu.cn) College of Artificial Intelligence, Xi'an Jiaotong University, China *Relationship:* [*Ph.D Advisor*]
- Prof. Shijian Lu (Email:Shijian.Lu@ntu.edu.sg) College of Computing and Data Science, Nanyang Technological University, Singapore *Relationship: [Joint Ph.D Advisor]*