Haotian Wang

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

RESEARCH INTERESTS

Computer Vision & Multi-Modal Vision

3D Vision & Scene Depth Perception

EDUCATION

• Ph.D. Xi'an Jiaotong University [) College of Artificial Intelligence, advised by Prof. Meng Yang. 09 2019 - 06 2025 Xi'an, China

Nanyang Technological University [Joint Ph.D. College of Computing and Data Science, advised by Prof. Shijian Lu. 12 2023 - 12 2024

North China Electric Power University [

Singapore 09 2013 - 06 2017

School of Electrical and Electronic Engineering

Beijing, China

RESEARCH EXPERIENCE

• Thesis Topic: General and Generalized Depth Perception Framework

09 2019 - 06 2025

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

12 2023 - 12 2024

Singapore

Nanyang Technological University

o 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

PUBLICATIONS AND PATENTS

comprehensive 3D scene understanding.

A=Paper, B=Patent(* denotes advisor)

H. Wang, A. Xiao, X. Zhang, M. Yang, and S. Lu. PacGDC: Label-Efficient Generalizable Depth Completion from Projective Ambiguity and Consistency. In IEEE/CVF CVPR, 2025. In submission

approach demonstrates impressive generalization on multiple benchmarks, providing reliable metric depth data for

- [A.4]H. Wang, M. Yang, X. Zheng, and G. Hua. Scale Propagation Network for Generalizable Depth Completion. *IEEE T-PAMI*, 2025. [♠]
- 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 T-PAMI*, vol. 46, pp. 3753-3771, 2024. []
- [A.2] H. Wang, M. Yang, C. Zhu, and N. Zheng. RGB-Guided Depth Map Recovery by Two-Stage Coarse-to-Fine Dense CRF Models. *IEEE T-IP*, vol. 32, pp. 1315-1328, 2023. []
- 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 T-IP*, vol. 31, pp. 7020-7035, 2022. []
- M. Yang*, H. Wang, and N. Zheng. Zero-Shot Depth Completion Based on Scale Propagation Normalization [B.4]Layer: Method and System. Chinese Patent, Patent No. 2023101807430, 2024.
- [B.3] M. Yang*, H. Wang, and N. Zheng. Generalizable Depth Map Inference with Single-View: Method and System. Chinese Patent, Patent No. 2023101807430, 2023.
- M. Yang*, H. Wang, and N. Zheng. Depth Map Structure Restoration Method Based on the Fully Connected [B.2]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 Responsibility: Core Member. Source: The National Natural Science Foundation of China

12 2022 - 06 2025 Xi'an, China

• A General Depth Perception Model

01 2022 - 12 2023

Responsibility: Project Leader. Source: The Basic Research Foundation of Xi'an Jiaotong University.

Xi'an, China

HONORS AND AWARDS

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	10 2023
Xi'an Jiaotong University	
• Joint Ph.D. Scholarship	07 2023
China Scholarship Council (CSC)	
• Invited Oral Presenter	07 2023
Xi'an Jiaotong University	
College Scholarship	11 2015
North China Electric Power University	

RESEARCH SKILLS

- Programming Languages: Python, Pytorch, Matlab, C, LATEX
- Operation System: Linux, Windows, MacOS
- Languages: Chinese, English

REFERENCES

1. **Prof. Meng Yang** (Email:mengyang@mail.xjtu.edu.cn)

College of Artificial Intelligence, Xi'an Jiaotong University, China *Relationship:* [Ph.D Advisor]

2. **Prof. Shijian Lu** (Email:Shijian.Lu@ntu.edu.sg)

College of Computing and Data Science, Nanyang Technological University, Singapore Relationship: [Joint Ph.D Advisor]