Xinyu *Wang*

PhD Candidate · End-to-End Autonomous Driving · Multi-modal Perception · Vision-Language Models

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EDUCATION

2021.09 – Present **Ph.D. in Vehicle Engineering** (combined M.S.–Ph.D. programme)
School of Automotive and Transportation Engineering, Hefei University of Technology
Advisor: Prof. Fusong Wang. Affiliated with Anhui Intelligent Vehicle Technology Laboratory.

2025.11 – 2026.11 **Visiting Ph.D. Student**
James Watt School of Engineering, University of Glasgow, UK

2016.09 – 2020.06 **B.Eng. in Vehicle Engineering**
School of Automotive and Transportation Engineering, Hefei University of Technology
Cumulative GPA across undergraduate and doctoral studies: 93.58 / 100.

RESEARCH INTERESTS

Primary — End-to-end autonomous driving · Multi-modal perception (LiDAR + camera + IMU) · Planning & control for intelligent vehicles

Emerging — Vision-language models for driving · Role-specialised multi-agent systems · Intelligent transportation systems

SELECTED PUBLICATIONS

Underlined author = me. First-author papers marked with a filled tag.

JOURNAL ARTICLES (PEER-REVIEWED)

J1 **AFMCT: Adaptive Fusion Module Based on Cross-Modal Transformer Block for 3D Object Detection.** Bingli Zhang, Yixin Wang, Chengbiao Zhang, Junzhao Jiang, Zehao Pan, Jin Cheng, Yangyang Zhang, **Xinyu Wang**, Chenglei Yang, Yanhui Wang. *Machine Vision and Applications, vol. 35, no. 40, 2024.* SCI DOI: 10.1007/s00138-024-01509-3

J2 **Path Planning for Unmanned Load–Haul–Dump Machines Based on a VHF_A* Algorithm.** Bingli Zhang, Yangyan Zhang, et al., **Xinyu Wang**. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, 2024.* SCI DOI: 10.1177/09544062241228391

J3 **Research on Single-Stage Multi-Task YOLO-Parking Algorithm Based on Obstacle and Parking Space Detection.** Bingli Zhang, Yanhui Wang, Zehao Pan, Yixin Wang, Chenglei Yang, **Xinyu Wang**. *Journal of Hefei University of Technology (Natural Science), 47(1), 2024.* EI

CONFERENCE PAPERS (PEER-REVIEWED)

C1 **AffectMind: Proactive Knowledge Grounding with Affective Multimodal Signals for Aligned Marketing Dialogue.** **Xinyu Wang**, Xiaomin Zhao, Yifei Kang, Zhihao Lin, Xiang Luo, Zhang Chengbiao, Jin Cheng, Yixin Wang, Yangyang Zhang, Ernie Tian, Zhiguo Tao, Xiaofei Han, Xiaotong Ding. *ICLR 2026 Workshop on Multimodal Algorithmic Reasoning (MALGAI), 2026.* FIRST AUTHOR Accept · Poster

C2 **LLM-VR: A Generative Framework for Biometric-Aware Personalization in Extended Reality.** Bingli Zhang, **Xinyu Wang**, Xingyu Liu, Guozhong Zhang, Yifan Wang, Yangyang Zhang, Zhang Chengbiao, Yixin Wang, Jin Cheng, Gan Shen, Zhen Tian, Zhiguo Tao. *CVPR 2026 Workshop on Generative XR & Identity (GenXR-ID), 2026.* Oral

C3 **Consensus Matrix: A Role-Specialized Multi-Agent Framework for Structured Collaborative Decision-Making in Agentic Visual Media Workflows.** Bingli Zhang, **Xinyu Wang**, Hsiang Lun Kao, Guozhong Zhang, Yijian Wu, Chenkai

Gao, Yifan Wang, Zhengda, Ning Lyu, Kaijie Chen. *CVPR 2026 Workshop on Agentic Audiovisual Media (AAVM), 2026.* Oral

C4 **Physics-Guided Multimodal Multi-Agent Learning for Intelligent Transportation Systems.** Zhen Tian, Yaqiong Zhang, Zhihao Lin, Fujiang Yuan, Yijun Lu, Wangjie Lang, **Xinyu Wang**, Ning Lyu, Zhiguo Tao, Kaijie Chen, Aaron Wang. *ICLR 2026 Workshop on AI for Wildlife & Infrastructure under Distribution Shift (AIWILD), 2026.*

C5 **Multi-Agent Collaborative Framework for Intelligent IT Operations: An AOI System with Context-Aware Compression and Dynamic Task Scheduling.** Yixin Wang, Yingxin Su, Bingli Zhang, Zishan Bai, Guozhong Zhang, Junzhao Jiang, **Xinyu Wang**, Zhang Chengbiao, Yifan Wang, Xiang Luo, Jin Cheng, Ernie Tian, Xiaotong Ding. *ICLR 2026 Workshop on Memory-Augmented Agents (MemAgents), 2026.*

C6 **Cognitive Digital Twin Framework: Modeling and Real-Time Decision Making.** Yangyang Zhang, Mengtong Li, **Xinyu Wang**, Zhihao Lin, Xiang Luo, Ernie Tian, Ning Lyu, Zhiguo Tao, Xiaotong Ding, Chuanzhen Wang. *ICLR 2026 Workshop on World Models, 2026.*

PATENTS (GRANTED)

P1 **A Longitudinal Control Method for Intelligent Vehicles Based on Dynamic Feature Learning Optimization.** *Chinese Invention Patent ZL202511097394.1, granted 2025.*

P2 **A Target Detection Method Based on LiDAR and Machine Vision Fusion.** *Chinese Invention Patent CN 115032651 B, granted Apr 2024.*

RESEARCH PROJECTS

Yangtze River Delta Joint Programme

Fully Automated Parking System Based on High-Accuracy Environmental Perception and High-Precision Localization

Trajectory planning and control strategy optimisation for fully automated parking; system integration meeting functional-safety and AUTOSAR requirements.

National Level

High-Accuracy Environment Recognition and Parking Trajectory Planning & Control in Complex Environments

Perception, planning, and control for parking systems in cluttered, dynamic urban scenarios.

Provincial Level

Heterogeneous Multi-Source Fusion and Adaptive Environmental Perception Based on Camera, LiDAR and Radar

Sensor-fusion architectures and adaptive perception for autonomous driving; cross-modal transformer fusion modules and joint sensor calibration methods.

2017 – 2020
Project Leader

Intelligent Monitoring and Active Warning System for Hazards in Vehicle Cabin

National College Students' Innovation and Entrepreneurship Training Program, Ministry of Education of China

Led integrated monitoring-processing-warning architecture; sensor integration (human micro-motion, CO, CO_2, temperature), embedded firmware, and PCB layout. Outcomes: 1 publication, 1 granted patent.

INVITED TALKS & PRESENTATIONS

Oct 2023

Perception Fusion Algorithms for High-Level Autonomous Driving

2023 National Graduate Academic Forum on Intelligent Electric Vehicles · School of Vehicle and Mobility, Tsinghua University

2023

National Science & Technology Programme Achievements Roadshow

Hefei–Wuhu–Bengbu High-Tech Zone Roadshow on Next-Generation Information Technologies

2023

Invited Guest — 2nd Forum on Industrial Chain & Innovation Chain Collaborative Development

Keynote by Academician Keqiang Li (Tsinghua University)

HONOURS & AWARDS

2026	IEEE Graduate Student Member — Robotics and Automation Society; Young Professionals
2022–2023	First-Class Academic Scholarship, Hefei University of Technology
2017–2018	National Endeavor Scholarship (国家励志奖学金), MOE China
2017	Project Leader, National Innovation & Entrepreneurship Training Program, MOE China
2021–2023	Class Monitor & Counsellor Assistant, PhD Class of 002, HFUT
2017–2018	Outstanding Student Cadre, Hefei University of Technology
multiple	Merit Student (Sānhǎo), Hefei University of Technology
multiple	Other named scholarships: Changrui Scholarship, Qiantu Smart-Driving Scholarship, Chunyuan Scholarship

PROFESSIONAL MEMBERSHIP

IEEE	Graduate Student Member (2026–present)
	Member, IEEE Robotics and Automation Society (RAS)
	Member, IEEE Young Professionals

TECHNICAL SKILLS & LANGUAGES

Programming	Python · C · MATLAB
Simulation	Simulink · CarSim · ROS
ML Stack	PyTorch · multi-modal perception · transformer architectures · path-planning algorithms
Languages	Chinese (native) · English (CET-6, 513; PETS-5 / WSK certified)