

YIHANG TAO

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EDUCATION

City University of Hong Kong

PhD, Department of Computer Science

Supervisor: Prof. Yuguang "Michael" Fang

JC STEM Lab of Smart City, WINET Laboratory

Hong Kong SAR

Sep. 2024 - Now

Shanghai Jiao Tong University

Master, Department of Computer Science and Engineering

Outstanding Graduate (2024)

Shanghai, China

Sep. 2021 - Apr. 2024

Southeast University

Bachelor, School of Information Engineering

GPA: 3.89/4.0

Nanjing, China

Sep. 2017 - Jul. 2021

RESEARCH INTERESTS

Multi-agent collaborative perception, autonomous driving, AI security, foundation models for multi-agent systems, parameter-efficient fine-tuning.

PUBLICATIONS

Published & Accepted: (# Equal contribution, * Corresponding author)

S. Hu, Y. Ma, **Y. Tao**, Z. Fang, Z. Fang, Y. Deng, S. Kwong, and Y. Fang. "Task-Aware Parameter-Efficient Fine-Tuning of Large Pre-Trained Models at the Edge," *IEEE Global Communications Conference (GLOBECOM)*, Taipei, Taiwan, Dec. 2025.

Z. Fang, J. Wang, Y. Ma, **Y. Tao**, Y. Deng, X. Chen, and Y. Fang. "R-ACP: Real-Time Adaptive Collaborative Perception Leveraging Robust Task-Oriented Communications," *IEEE Journal on Selected Areas in Communications (JSAC)*, 2025.

Y. Tao, S. Hu, Z. Fang, and Y. Fang. "Directed-CP: Directed Collaborative Perception for Connected and Autonomous Vehicles via Proactive Attention," *IEEE International Conference on Robotics and Automation (ICRA)*, Atlanta, USA, 2025.

S. Hu#, **Y. Tao**#, G. Xu, Y. Deng, X. Chen, Y. Fang, and S. Kwong. "CP-Guard: Malicious Agent Detection and Defense in Collaborative Bird's Eye View Perception," *The 39th Annual AAAI Conference on Artificial Intelligence (AAAI)*, Philadelphia, USA, 2025. **(Oral Presentation, <5%)**

Y. Tao, J. Wu, Q. Pan, A. K. Bashir, and M. Omar. "O-RAN-Based Digital Twin Function Virtualization for Sustainable IoV Service Response: An Asynchronous Hierarchical Reinforcement Learning Approach," *IEEE Transactions on Green Communications and Networking (TGCN)*, vol. 8, no. 3, pp. 1049-1060, Sep. 2024.

Y. Tao, J. Wu, X. Lin, S. Mumtaz, and S. Cherkaoui. "Digital Twin and DRL-Driven Semantic Dissemination for 6G Autonomous Driving Service," *IEEE Global Communications Conference (GLOBECOM)*, Kuala Lumpur, Malaysia, Dec. 2023, pp. 2075-2080.

Y. Tao, J. Wu, X. Lin, and W. Yang. "DRL-Driven Digital Twin Function Virtualization for Adaptive Service Response in 6G Networks," *IEEE Networking Letters (LNET)*, vol. 5, no. 2, pp. 125-129, Jun. 2023.

Preprints & Under Review:

Z. Fang, Z. Lin, S. Hu, **Y. Tao**, Y. Deng, X. Chen, and Y. Fang. “Dynamic Uncertainty-aware Multimodal Fusion for Outdoor Health Monitoring,” *arXiv preprint arXiv:2508.01001*, 2025.

Y. Tao[#], S. Hu[#], Y. Hu, H. An, H. Cao, and Y. Fang. “GCP: Guarded Collaborative Perception with Spatial-Temporal Aware Malicious Agent Detection,” *arXiv preprint arXiv:2501.02450*, 2025.

Y. Tao, S. Hu, H. An, Z. Fang, H. Cao, and Y. Fang. “Adaptive Attack on Multi-Agent Collaborative Perception,” *Under Review*, 2025.

S. Hu, **Y. Tao**, Z. Fang, G. Xu, Y. Deng, S. Kwong, and Y. Fang. “CP-Guard+: A New Paradigm for Malicious Agent Detection and Defense in Collaborative Perception,” *arXiv preprint arXiv:2502.07807*, 2025.

HONORS & AWARDS

Outstanding Academic Performance Award (OAPA), City University of Hong Kong	Aug. 2025
IEEE Robotics and Automation Society (RAS) Travel Grant for ICRA’25	Mar. 2025
Outstanding Graduate, Shanghai Jiao Tong University	May 2024
WEICHAI POWER Scholarship, Shanghai Jiao Tong University	Oct. 2023
Excellent League Member, Shanghai Jiao Tong University	Apr. 2022
National Student Research Training Program Excellence Award (Leader)	Oct. 2020
Excellence Prize, 2nd International Data Competition, IKCEST (top 3%)	Oct. 2020
Sun Qingyun Innovation Scholarship, Southeast University (< 1% annually)	Jun. 2020
Finalist, 36th Mathematical Contest in Modeling (MCM), COMAP (top 1%)	Apr. 2020
First Prize, 12th National Information Security Contest, China (top 8%)	Aug. 2019
First Prize, 15th Advanced Mathematics Competition, Jiangsu (top 10%)	Aug. 2018

PROJECT EXPERIENCE

- Multi-Agent Collaborative Perception for Autonomous Driving** 2024 - Present
- 1) Institution and Supervisor: City University of Hong Kong, Prof. Yuguang Fang
 - 2) Research Focus: Developing robust collaborative perception systems, designing defense mechanisms against adversarial attacks, and deploying on real-world ROS and Jetson-based autonomous driving platforms;
 - 3) Achievements: 3 first-author papers accepted/submitted to top venues (ICRA’25, AAAI’25), 1 RAS travel grant.
- Digital Twin and 6G Communications** 2021 - 2024
- 1) Institution and Supervisor: Shanghai Jiao Tong University, Prof. Jun Wu
 - 2) Research Focus: Designing digital twin function virtualization for IoV services, developing DRL-based adaptive service response mechanisms, using Unity Software to connect with real-world elevator systems;
 - 3) Achievements: 3 first-author papers published in IEEE journals/conferences, Outstanding Graduate Award.
- Ultrasonic Anti-Recording Security System** 2019 - 2020
- 1) Institution and Supervisor: Southeast University, Prof. Yubo Song
 - 2) Responsibility: Team leader. Designed ultrasonic anti-recording mechanism based on acoustic parametric array; Implemented SM4-based spread spectrum and DDS waveform generation on STM32F407 microcontroller;
 - 3) Achievements: First prize in National Information Security Contest, 1 patent (CN111064543A), Sun Qingyun Innovation Scholarship.

ACADEMIC SERVICE

Program Committee Member:

ACM MM 2025, ICML 2025, ICLR 2025, AAAI 2025, ICRA 2025, IUI 2025, IJCNN 2025

IEEE ISBI 2025, IEEE ICC 2025, IEEE GLOBECOM 2023-2025, IEEE ICC 2024

Journal Reviewer:

IEEE TMC, IEEE TITS, IEEE TCE, Pattern Recognition, Neural Networks, EAAI, IEEE JBHI, IEEE LNET

Session Chair:

IEEE GLOBECOM 2023, MWN Track, Semantic Communications Session

TECHNICAL SKILLS

Programming Languages: Python, MATLAB, C++, C#, JavaScript, Verilog HDL, \LaTeX , Markdown

Deep Learning Frameworks: PyTorch, TensorFlow, OpenMMLab (MMDetection, MMSegmentation)

Tools & Platforms: Git, Docker, Linux, CARLA Simulator, SUMO, ROS

Languages: English (IELTS 7.0), Chinese (Native)