Hongyi Chen

Website Scholar GitHub LinkedIn
trinkleg64@gmail.com (+86) 135-9918-5106

Education Background

Xiamen University (XMU), Xiamen, China 2023.9 – Present

M.E. Artificial Intelligence, Expected to graduate in 2026.6 Supervisor: *Prof. Liang Xiao (IEEE Fellow)*

- Average Score : 91.9/100
- Ranking : 1/92
- Thesis Title: Reinforcement Learning-Based Secure Collaborative Vehicular Perception

Fujian Normal University (FNU), Fuzhou, China 2019.9 – 2023.6

B.E. Computer Science and Technology

- Average Score : 88.5/100
- Ranking : 7/190
- Thesis Title: Reinforcement Learning-Based Advanced Persistent Threat Defense

Research Interests

Intelligent Communications, Collaborative Vehicular Perception, Wireless Security, Machine Learning

Research Experience

Project 1: Research on reliable and trusted communication and networking

Master's student Researcher 2023.9 – Present

- Proposed a reinforcement learning (RL)-based anti-jamming collaborative vehicular perception scheme to optimize sensing data region selection, power control, and channel allocation based on the spatial confidence of feature maps, data volume, channel gain, and jamming signal strength to enhance perception accuracy and speed.
- Proposed a collaborative vehicular perception scheme against data fabrication attacks, which designed a spatial verification scheme to detect faked sensing data by constructing region occupancy maps based on point cloud density, with hypothesis testing statistics based on the number of conflicting regions and further designed a RL-based CAV selection mechanism to choose the benign collaborators with high-quality data to enhance perception accuracy and reduce latency.
- Proposed a RL-based environment-aware anti-jamming vehicular communication scheme to choose radio channel and power based on the environmental features including traffic density and building layouts that indicate future channel gain and received signal strength under urban areas with multi-source interference and smart jamming to enhance SINR, energy consumption and frequency-hopping costs.
- Proposed a task-aware collaborative large language model (LLM) inference scheme against jamming attacks, which designed a hierarchical safe RL framework for mobile devices to jointly select the edge server, LLM sparsity ratio and quantization precision, as well as transmit power and channel to satisfy diverse task requirements, balancing the inference accuracy and speed for wireless applications. In addition, environmental features extracted by LLM are incorporated into state formulation to enhance the robustness of policy selection across heterogeneous wireless environments.
- Designed and implemented a collaborative vehicular perception system based on 10 Unmanned Ground Vehicles equipped with LiDAR and NVIDIA-Jetson computing units and a USRP controlled via GNU Radio to generate Gaussian white noise as jamming signal to verify the performance gain of proposed schemes.

Project 2: AI aided anti-jamming communications for UAV

Project leader of UAV Intelligent Anti-jamming Communication System 2023.9 – 2025.6

- Designed and implemented a Python based frame for non-blocking, multi-process and multi-threaded UDP transmission and reception framework for the multi-modal data (i.e., video, image and control commands),

along with a TCP-based performance feedback framework for reward calculation of reinforcement learning.

- Deployed seven multi-agent renforcement learning (MARL) algorithms on UAVs equipped with Raspberry Pi to optimize the channel selection and power control against jamming.
- Performance evaluation on the proposed system shows that our proposed MARL algorithms reduces transmission latency by at least 20% and communication interruption rate by at least 15%.

PUBLICATIONS & MANUSCRIPTS

Journal Articles (Accepted / Published)

1. Z. Lin, L. Xiao, **H. Chen**, Z. Lv, R. Zhao, "Collaborative Vehicular Perception Against Adversarial Attacks: Overview, Challenges and Potential Solutions," to appear *IEEE Wireless Communications*, 2026.
2. Z. Lin, L. Xiao, **H. Chen**, Z. Lv, "Collaborative Perception Against Data Fabrication Attacks in Vehicular Networks," *IEEE Transactions on Mobile Computing*, vol. 24, no. 10, pp. 10654–10667, Oct. 2025.
3. Z. Lin, L. Xiao, **H. Chen**, Z. Lv, Y. Zhu, Y. Zhang, Y. Liu, "Edge-Assisted Collaborative Perception Against Jamming and Interference in Vehicular Networks," *IEEE Transactions on Wireless Communications*, vol. 24, no. 1, pp. 860–874, Jan. 2025.
4. Z. Lin, L. Xiao, **H. Chen**, Z. Lv, "Reinforcement Learning Based Environment-Aware V2I Anti-Jamming Communications," *IEEE Transactions on Vehicular Technology*, vol. 74, no. 4, pp. 6610–6623, Apr. 2025.
5. Z. Lin, L. Xiao, **H. Chen**, X. Xu, J. Li, "Collaborative Inference for Large Language Models Against Jamming Attacks," *Journal of Electronics & Information Technology*, vol. 47, no. 11, pp. 4572–4582, Nov. 2025.
6. H. Liu, L. Xiao, W. Lin, P. Zhang, H. Chen, **H. Chen**, Z. Tang, "Anti-Jamming Maritime Communications for LLM-assisted Collaborative Perception," to appear *Chinese Journal of Electronics*, 2026.
7. H. Chen, L. Xiao, X. Xu, J. Li, Z. Wang, H. Liu, **H. Chen**, "Physical Layer Security Game for Large Language Model-Based Inference in the Maritime Network ," to appear *Journal of Electronics & Information Technology*, 2026.

Conference Papers

1. **H. Chen**, Z. Lin, Y. Zhu, J. Li, L. Xiao, Y. Tang, Y. Zhang, "Reinforcement Learning Based Collaborative Perception for Vehicular Networks," *IEEE Global Communications Conference (GLOBECOM)*, Cape Town, South Africa, Dec. 2024.
2. Z. Lin, **H. Chen**, L. Xiao, Z. Lv, L. Ye, "RLCVP: Collaborative Vehicular Perception Against Data Fabrication Attacks," *IEEE Wireless Communications and Networking Conference (WCNC)*, Kuala Lumpur, Malaysia, Apr. 2026.
3. L. Ye, C. Yu, L. Xiao, J. Li, H. Chen, **H. Chen** "LLM Based Edge-Assisted UAV Inference Against Jamming," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Barcelona, Spain, May. 2026.

Manuscripts Under Review and Ongoing

1. Z. Lin, L. Xiao, **H. Chen**, X. Xu, J. Li, "Collaborative LLM Inference for Wireless Applications Against Jamming Attacks," Submitted to *IEEE Transactions on Mobile Computing*.
2. **H. Chen**, Z. Lin, L. Xiao, "Security Verification via Spatial-Temporal Consistency for Collaborative Vehicular Perception Against Selfish Attacks," Ongoing for IEEE Journal Publication.

PATENTS

1. L. Xiao, **H. Chen**, Z. Lin, X. Xu, J. Li, "Multi-Modal Large Language Models Based Anti-Jamming Collaborative Inference Method for Intelligent Terminals," Chinese Patent, 2025107473606.

2. L. Xiao, **H. Chen**, Z. Lin, "Collaborative Vehicular Perception Data Anti-Jamming Transmission Method for High-Precision Object Detection," Chinese Patent, 2023107188966.

SELECTED AWARDS AND HONORS

20th China Post-Graduate Mathematical Contest in Modeling, *National First Prize (Top 1%)* 2024

38th Mathematical Contest in Modeling, *Finalist Winner (Top 1%)*	2022
Graduate National Scholarship (Top 1%)	2025
Ge Jiashu Scholarship (University-level, Top 1%)	2025
14th Chinese Mathematics Competitions, *Second Prize*	2022
13th Blue Bridge Cup National Programming Contest, *Second Prize*	2022
Merit Graduate Student Award of XMU	2024,2025
Outstanding Graduate Award of FNU	2023
Graduate Academic Scholarship of XMU	2023,2024,2025
ANTA innovation scholarship	2024
Outstanding Graduate Scholarship of FNU	2023
Outstanding Student Scholarship of FNU	2021,2022
Outstanding Youth League Member Award of XMU	2025
Contest of the China Graduate AI Innovation Competition of XMU, *Third Prize*	2024
Outstanding Student Leader Award of FNU	2022
Outstanding Youth League Member Award of FNU	2022
Star Volunteer Award of FNU	2022
National College Students Mathematical Contest in Modeling (Fujian Division), *Second Prize*	2021
10th Software Professional Talent Design and Innovation Competition of FNU, *First Prize*	2021

Professional Activities

Journal Reviewer

- IEEE Transactions on Wireless Communications
- IEEE Transactions on Computers
- IEEE Internet of Things Journal
- IEEE Wireless Communications
- IEEE Transactions on Machine Learning in Communications and Networking
- China Communications

Technical Program Committee (TPC) Member

- IEEE International Conference on Communications (ICC), 2025, 2026

Conference Reviewer

- IEEE INFOCOM 2026
- USENIX Security Symposium 2024

- Oral Presentation, IEEE GLOBECOM, Cape Town, South Africa, December 2024
- Assisted in the Keynote Speaker Presentation for multiple IEEE International Conferences, with acknowledgment in the speaker's presentation.
- Participated in applying for projects such as the NSFC Joint Fund Key Program and the NSFC General Program, including drafting project proposals, annual reports, and preparing defense materials.
- Teaching Assistant for Undergraduate Thesis (Graduation Project), School of Informatics, Xiamen University, Spring 2024 (Feb 2024-Jun 2024).

Skills

- Programming Language: Python, Matlab, Java, C++, SQL
- Framework: PyTorch, TensorFlow, Scikit-learn, OpenCV, Open3D, Pandas, Numpy, PyQt
- Operation System: Ubuntu, Red Hat Linux, Raspberry Pi OS, macOS, Windows
- Technical Tools: Docker, Git, Latex, GNU Radio, Wireshark