Zijian (Longino) ZHAO 赵子健

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Education

The Hong Kong University of Science and Technology (Clearwater Bay Campus, Hong Kong) Sep. 2024 – Present
Ph.D. in Civil Engineering (Scientific Computation) *GPA: 3.8/4.2*
Supervisor: *Prof. Sen Li*
Main Research Directions: *Deep Learning, Reinforcement Learning, Intelligent Transportation, Smart City, AI Ethics*

Sun Yat-sen University (Guangzhou Campus) Sep. 2020 – Jul. 2024
B.Eng. in Computer Science and Technology (National Basic Subject Talent Training Plan) *GPA: 4.0/5.0, Rank: Top 10%*
Supervisors: *Prof. Kai Huang, Prof. Chengying Gao, Prof. Ning Liu*
Main Research Directions: *Deep Learning, Domain Adaptation, Wireless Sensing, Music Information Retrieval, Robot Control*
Ranking First in: *Computer Programming, Principles of Compilers, Distributed Systems, Embedded Systems, Complex Variables, Mathematical Analysis, Advanced Algebra, Data Structures and Algorithms, Probability and Statistics, Discrete Mathematics*

Experience

Industry-Academia-Research Student Feb. 2024 – Aug. 2024
Likelihood Lab, Guangzhou WenSight Intelligent Technology Co., Ltd. *Online, Part-time*
Visiting Student Aug. 2023 – Aug. 2024
Shenzhen Research Institute of Big Data, The Chinese University of Hong Kong (Shenzhen) *Supervisor: Prof. Guangxu Zhu*

Research Interest

I have a broad interest in topics related to Deep Learning, like **Multi-Agent Reinforcement Learning (MARL)**, **Cross-Domain Learning**, and **Large Models (LMs)**. My focus is particularly on **cross-subject and cross-field AI**, with previous research spanning transportation, communication, sensing, music, education, finance, and robotics. I excel at transferring knowledge flexibly across different areas and adapting quickly to new fields.

Publications

A. Journal Papers:

[1] **Zijian Zhao**, Sen Li*, "The Impacts of Data Privacy Regulations on Food-Delivery Platforms", Transportation Research Part C: Emerging Technologies (TR_C), 2025 (JCR-Q1) [Paper] [Code]

[2] **Zijian Zhao**, Sen Li*, "Discriminatory Order Assignment and Payment-Setting of On-Demand Food-Delivery Platforms: A Multi-Action and Multi-Agent Reinforcement Learning Framework", Transportation Research Part E: Logistics and Transportation Review (TR_E), 2025 (JCR-Q1) [Paper] [Code]

[3] **Zijian Zhao**, Fanyi Meng, Zhonghao Lyu, Hang Li, Xiaoyang Li, Guangxu Zhu*, "CSI-BERT2: A BERT-Inspired Framework for Efficient CSI Prediction and Recognition in Wireless Communication and Sensing", IEEE Transactions on Mobile Computing (TMC), 2025 (JCR-Q1) [Paper] [Code] [Dataset] [Hugging Face]

[4] **Zijian Zhao**, Zhijie Cai, Tingwei Chen, Xiaoyang Li, Hang Li, Qimei Chen, Guangxu Zhu*, "KNN-MMD: Cross Domain Wireless Sensing via Local Distribution Alignment", IEEE Transactions on Mobile Computing (TMC), 2025 (JCR-Q1) [Paper] [Code] [Dataset]

[5] **Zijian Zhao**, Tingwei Chen, Zhijie Cai, Xiaoyang Li, Hang Li, Qimei Chen, Guangxu Zhu*, "CrossFi: A Cross Domain Wi-Fi Sensing Framework Based on Siamese Network", IEEE Internet of Things Journal (IOT-J), 2025 (JCR-Q1) [Paper] [Code]

[6] Haolong Chen, Hanzhi Chen, **Zijian Zhao**, Kaifeng Han*, Guangxu Zhu*, Yichen Zhao, Ying Du, Wei Xu, Qingjiang Shi, "An Overview of Domain-Specific Foundation Model: Key Technologies, Applications and Challenges", Science China Information Sciences (SCIS), 2025 (JCR-Q1) [Paper]

B. Conference Papers:

[1] **Zijian Zhao**, Sen Li*, "Triple-BERT: Do We Really Need MARL for Ride-Sharing Order Dispatch?", 2026 International Conference on Learning Representations (ICLR), 2026 [Paper] [Code]

[2] **Zijian Zhao**, Dian Jin, Zijing Zhou, Xiaoyu Zhang*, "Automatic Stage Lighting Control: Is it a Rule-Driven Process or a Generative Task?", 2026 International Conference on Learning Representations (ICLR), 2026 [Paper] [Code] [Dataset] [Hugging Face]

[3] **Zijian Zhao**, "Towards Fairness in Transportation Gig Markets: Identifying, Imitating, and Mitigating Algorithm Discrimination via Deep Reinforcement Learning", 2026 Annual AAAI Conference on Artificial Intelligence (AAAI) / Special Interest Group on Artificial Intelligence (SIGAI) Doctoral Consortium, 2026 [Paper] [Code] [Interview]

[4] **Zijian Zhao**, Jing Gao*, Sen Li, "Ride-Hailing Order Dispatching with A Mixture of On-Demand and Pre-Booked Requests via Reinforcement Learning", 2026 COTA International Conference of Transportation Professionals (CICTP), 2026 [Paper] [Code]

[5] **Zijian Zhao***, "Let Network Decide What to Learn: Symbolic Music Understanding Model Based on Large-Scale Adversarial Pre-Training", 2025 ACM International Conference on Multimedia Retrieval (ICMR), 2025 [Paper] [Code] [Hugging Face]

[6] **Zijian Zhao**, Zhijie Cai, Tingwei Chen, Xiaoyang Li, Hang Li, Qimei Chen, Guangxu Zhu*, "Does MMD Really Align? A Cross Domain Wireless Sensing Method via Local Distribution", 2025 IEEE/CIC International Conference on Communications in China (ICCC), 2025 [Paper] [Code]

[7] **Zijian Zhao**, Tingwei Chen, Fanyi Meng, Zhijie Cai, Hang Li, Xiaoyang Li, Guangxu Zhu*, "LoFi: Vision-Aided Label Generator for Wi-Fi Localization and Tracking Sensing", 2025 IEEE Global Communications Conference (GLOBECOM) GenAI NGN Workshop, 2025 [Paper] [Code] [Dataset]

[8] **Zijian Zhao**, Sen Li*, "Multi-Agent Reinforcement Learning for Order Assignment and Payment Setting on Food-Delivery Platforms: The Implicit Algorithmic Biases", 2025 International Symposium on Transportation Data & Modeling (ISTDM) [Paper] [Code]

[9] Tingwei Chen, Yantao Wang, Hanzhi Chen, **Zijian Zhao**, Xinhao Li, Nicola Piovesan, Guangxu Zhu*, Qingjiang Shi, "Modeling the 5G Energy Consumption using Real-World Data: Energy Fingerprint is All You Need", 2025 IEEE Global Communications Conference (GLOBECOM) Mutual Facilitation of GenAI NGN Workshop, 2025 [Paper] [Code]

[10] Chuxue Cao, Mengze Li, Juntao Dai, Jinluan Yang, **Zijian Zhao**, Shengyu Zhang, Weijie Shi, Chengzhong Liu, Sirui Han, Yike Guo, "Towards Advanced Mathematical Reasoning for LLMs via First-Order Logic Theorem Proving", 2025 Conference on Empirical Methods in Natural Language Processing (EMNLP), 2025 [Paper]

[11] **Zijian Zhao**, Tingwei Chen, Fanyi Meng, Hang Li, Xiaoyang Li, Guangxu Zhu*, "Finding the Missing Data: A BERT-Inspired Approach Against Package Loss in Wireless Sensing", 2024 IEEE International Conference on Computer Communications (INFOCOM) DeepWireless Workshop, 2024 [Paper] [Code] [Dataset] [Hugging Face]

[12] Xiao Liang (supervisor), **Zijian Zhao**, Weichao Zeng, Yutong He, Fupeng He, Yiyi Wang, Chengying Gao*, "PianoBART: Symbolic Piano Music Understanding and Generating with Large-Scale Pre-Training", 2024 IEEE Conference on Multimedia Expo (ICME), 2024 (**oral**) [Paper] [Code] [Hugging Face]

[13] Zitao Zhang, Yuhong Huang, **Zijian Zhao**, Zhenshan Bing, Chenglin Cai, Alois Knoll and Kai Huang*, "Autonomous Locomotion of a Rat Robot Based on Model-Free Reinforcement Learning", 2024 IEEE International Conference on Advanced Robotics and Mechatronics (ICARM), 2024 [Paper]

[14] Zitao Zhang, Yuhong Huang, **Zijian Zhao**, Zhenshan Bing, Alois Knoll and Kai Huang*, "A Hierarchical Reinforcement Learning Approach for Adaptive Quadruped Locomotion of a Rat Robot", 2023 IEEE International Conference on Robotics and Biomimetics (ROBIO), 2023 (**Best Paper Finalist**) [Paper]

[15] Zitao Zhang*, Yuhong Huang, **Zijian Zhao**, Zhenshan Bing, Kai Huang, "Autonomous Locomotion of a Rat Robot Based on Reinforcement Learning", 2023 CCF China Intelligent Robotics Annual Conference (CIRAC), 2023 [Paper]

C. Working Journal Papers:

[1] **Zijian Zhao**, Sen Li*, "Beyond Multi-Agent Reinforcement Learning: Scalable Centralized Control for Large-Scale Dynamic Trip-Vehicle Assignment" (under review, Nature Communications (NC))

[2] **Zijian Zhao**, Sen Li*, "OSPO: One-Step Policy Optimization for Real-Time Order Assignment on Ride-Sharing Platforms with Autonomous Vehicles" (under review, Transportation Research Part C: Emerging Technologies (TR_C))

[3] **Zijian Zhao**, Jing Gao*, Sen Li, "Real-Time Order Assignment for Ride-Sharing Platforms with a Mixture of Pre-booked and On-Demand Requests" (under review, Transportation Research Part C: Emerging Technologies (TR_C))

[4] **Zijian Zhao**, Sen Li*, "Discriminatory Labor Management for On-Demand Meal Delivery Platforms with a Mixture of AVs and Human Couriers" (in preparation, Transportation Research Part C: Emerging Technologies (TR_C))

[5] **Zijian Zhao**, Yitong Shang, Sen Li*, "Bridging Heterogeneity in Federated Traffic Prediction: A Joint Client and Graph Node Personalization Approach" (in preparation, IEEE Transactions on Knowledge and Data Engineering (TKDE))

D. Working Conference Papers:

[1] **Zijian Zhao**, Sen Li*, "One Step is Enough: Multi-Agent Reinforcement Learning Based on One-Step Policy Optimization for Order Dispatch on Ride-Sharing Platforms" (under review, 2026 International Conference on Machine Learning (ICML)) [ArXiv] [Code]

[2] **Zijian Zhao**, Yitong Shang, Sen Li*, "AutoFed: Manual-Free Federated Traffic Prediction via Personalized Prompt" (under review, 2026 International Conference on Machine Learning (ICML)) [ArXiv] [Code]

[3] **Zijian Zhao***, Dian Jin, Zijing Zhou, "Zero-Effort Image-to-Music Generation: An Interpretable RAG-Based VLM Approach" (under review, 2026 ACM International Conference on Multimedia Retrieval (ICMR)) [ArXiv] [Code]

[4] Shiting Chen*, **Zijian Zhao**, Jinsong Chen*, "Confident RAG: Enhancing the Performance of LLMs for Mathematics Question Answering through Multi-Embedding and Confidence Scoring" (under review, 2026 Annual Meeting of the Association for Computational Linguistics (ACL)) [ArXiv] [Code]

[5] Chuxue Cao, Jinluan Yang, Haoran Li, Kunhao Pan, **Zijian Zhao**, Zhengyu Chen, Yuchen Tian, Lijun Wu, Conghui He, Sirui Han, Yike Guo, "Pushing the Boundaries of Natural Reasoning: Interleaved Bonus from Formal-Logic Verification" (under review, 2026 International Conference on Machine Learning (ICML)) [ArXiv]

[6] **Zijian Zhao**, Sen Li*, "Bridging MARL to SARL: Order-Independent Multi-Agent Transformer via Consensus Mechanism" (in preparation, 2026 Annual Conference on Neural Information Processing Systems (NeurIPS))

E. Reports:

[1] **Zijian Zhao**, Xuming Zhang, Jiayu Wen, Mingwen Liu, Xiaoteng Ma, "Label Unbalance in High-Frequency Trading", 2025 (reported by QuantML) [ArXiv] [Code]

[2] **Zijian Zhao**, "A Short Overview of Multi-Modal Wi-Fi Sensing", 2025 [ArXiv] [Code]

[3] Tingwei Chen, Jiayi Chen, **Zijian Zhao**, Haolong Chen, Liang Zhang*, Guangxu Zhu*, "First Token Probability Guided RAG for Telecom Question Answering", 2025 [ArXiv]

[4] **Zijian Zhao**, Zitao Zhang, Kai Huang, "A Trajectory-Based Reinforcement Learning Approach for Autonomous Locomotion of a Rat Robot", 2024 [Report] [Code]

Patents

A. Granted Patents:

[1] **Zijian Zhao**, Guangxu Zhu, Qimei Chen, Kaifeng Han, "Method for Object Recognition Using Model Based on Few-Shot Learning and Related Equipment", Chinese Patent, Patent Number: ZL202411074110, 2024 [PDF]

[2] **Zijian Zhao**, Kaifeng Han, Qimei Chen, Guangxu Zhu, Xiaoyang Li, Hang Li, "Channel State Information Recovery Method and Apparatus, Equipment, Storage Medium", Chinese Patent, Patent Number: ZL2024102321250, 2024 [PDF]

B. Published Patents:

[1] **Zijian Zhao**, Guangxu Zhu, Kaifeng Han, Xiaoyang Li, Hang Li, "Method for Classifying Data Using Model Based on Few-Shot Learning and Related Equipment", Chinese Patent, Application Number: 2024108392137, 2024 [PDF]

[2] **Zijian Zhao**, Guangxu Zhu, Shen Chao, Shi Qingjiang, Han Kaifeng, "Personnel Detection Method, Device, Electronic Equipment, and Storage Medium", Chinese Patent, Application Number: 2024105419689, 2024 [PDF]

[3] Kai Huang, Zitao Zhang, **Zijian Zhao**, Ruoyi Tao, "A Motion Control Method for Small Bionic Rat Based on Reinforcement Learning", Chinese Patent, Application Number: 2023116499786, 2023 [PDF]

Talks and Presentation

[1] "A Lost Packet Recovery Technique for Robust Wireless Sensing", 7^{th} IMT-2030 (6G) Plenary Meeting of Wireless Technology Group, 2024, Shanghai, China [PDF]

Main Honors And Awards

[1] The Hong Kong University of Science and Technology RedBird PhD Award, 2024

[2] Runner Up Prize (No.2 out of 776 teams) in AI/ML for 5G-Energy Consumption Modeling by ITU AI/ML in 5G Challenge, 2023

[3] Third Prize (No.6 out of 287 teams) in The First Wi-Fi Sensing Contest by Huawei, 2023

[4] Best Paper Award Finalist of Biomimetics in IEEE International Conference on Robotics and Biomimetics (ROBIO) 2023, 2023

[5] Provincial Second Prize in SPSS University Contest in Modeling, 2022

[6] Second Prize in Asia and Pacific Mathematical Contest in Modeling, 2022

[7] First-class Scholarship for Outstanding Student of Sun Yat-sen University, 2021 (also won scholarship in 2022, 2023)

[8] Meritorious Winner in the Mathematical Contest in Modeling, 2021 (also won the award in 2022)

[9] Provincial First Prize in the Chinese Mathematics Competitions, 2021

[10] Second Prize & Provincial First Prize in the National High School Mathematics League, 2019

Professional Services

1. Society Membership:

• Computer Society: IEEE Student Membership, ACM Student Membership, AAAI Student Membership, CCF Student Membership

2. TPC Membership:

• Computer & Communication Conferences: IEEE WCNC Workshop 2024-2026, IEEE PIMRC Workshop 2024-2025, IEEE GLOBECOM Workshop 2025, IEEE/CIC ICCC Workshop 2025

3. Technical Reviewer:

• Journals & Books: IEEE TPAMI, IEEE TMC, IEEE IOTJ, IEEE WCL, MTAP, Book Manuscript from Bentham Science

• Computer & Communication Conferences: IEEE ICASSP 2024-2026, IEEE ICME 2024-2026, IEEE WCNC 2024-2026, ICLR 2025-2026, ACL ARR 2025-2026, IEEE IJCNN 2025-2026, ICML 2026, AAAI 2026, IEEE PIMRC 2024-2025, IEEE AVSS 2025, IEEE GLOBECOM 2025, IEEE/CIC ICCC 2025, IEEE MLSP 2025, IET IRC 2025, IEEE SMC 2023

• Transportation Conferences: HKSTS 2024-2025, BTR 2025

Teaching Activities

1. Teaching Assistant:
- HKUST: CIVL 4640 Introduction to Smart City Economics (Undergraduate, Spring 2026)

2. Interview:
- HKUST: JUPAS 2025

Skills and Interests

1. Programming Skills:
- Proficient in: Python, PyTorch, C/C++ (CCF-CSP:320, Top 0.8%)
- Familiar with: MySQL, Git, Linux, ESP32
- Knowledgeable in: TensorFlow, Matlab, Java, Web Scraping, QT

2. Language:
- English (IELTS:6.5, CET-4:605, CET-6: 561)
- Chinese (mother tongue)

3. Interests:
- Proficient in: Electric Guitar, Acoustic Guitar, Keyboard
- Familiar with: Songwriting, Extreme Vocals, Electric Bass, Piano, Hulusi, Ukulele, Music Theory
- Knowledgeable in: Drums, Harmonica

References

Prof. Sen Li: Assistant Professor; Department of Civil and Environmental Engineering, The Hong Kong University of Science and Technology; E-mail: cesli@ust.hk

Prof. Guangxu Zhu: Deputy Director & Senior Research Scientist & Adjunct Associate Professor; Shenzhen Research Institute of Big Data, The Chinese University of Hong Kong (Shenzhen); E-mail: gxzhu@sribd.cn

Prof. Xiaoyang Li: Assistant Professor; Department of Electrical and Electronic Engineering, Southern University of Science and Technology; E-mail: lixy@sustech.edu.cn