

JIE ZHANG

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📌 SHORT BIO

I am currently a **Research Assistant Professor** at **HKUST**. My research lies broadly in *learning and intelligent systems*, with a focus on enabling AI to move from passive perception and response toward active interaction, continual adaptation, and autonomous improvement. I study how intelligent systems can reason about their environments, learn from feedback and experience, evolve their capabilities over time, and collaborate across humans, models, and machines. My long-term goal is to develop broadly deployable intelligence that can continuously improve while operating reliably and efficiently in real-world environments.

🏢 WORKING EXPERIENCE

The Hong Kong University of Science and Technology (HKUST) 2024.09 – Now
Research Assistant Professor

The Hong Kong Polytechnic University (PolyU) 2022.10 – 2024.08
Post-doctoral Fellow, Supervisor: Prof. Song Guo, IEEE Fellow

🎓 EDUCATION

The Hong Kong Polytechnic University (PolyU), Hong Kong SAR 2019.01 – 2022.09
P.h.D in Computer Science
Thesis: Towards Efficient and Personalized Federated Learning on Heterogeneous Environment

China University of Geosciences (CUG), Wuhan, China 2015.09 – 2018.06
M.E. in Computer Science and Technology

China University of Geosciences (CUG), Wuhan, China 2011.09 – 2015.06
B.E. in Network Engineering

📖 REFEREED PUBLICATIONS

Publication Summary

- 50+ peer-reviewed papers, including 30+ as first, co-first, or corresponding author.
- Publications in leading ML, CV, and distributed computing venues (including NeurIPS, ICML, ICLR, CVPR, ACL, AAI, INFOCOM, IEEE TMC, TC, and TPDS).
- h-index: 24; citations: 2700+ (Google Scholar, September 2026).

*: co-first author (equal contribution); †: corresponding author.

AI Agents & LLMs & VLMs:

C1. [NeurIPS] Yongjiang Liu, **Jie Zhang**[†], Haoyue Zhang, Jingcai Guo, Deze Zeng, and Song Guo. “Beyond Prediction: Steering VLM Agents with Retrospective World Modeling.” *The 40th Annual Conference on Neural Information Processing Systems*, 2026.

C2. [ICML] Haoxi Li, Qinglin Hou, Jianfei Ma, Jinxiang Lai, Tao Han, Sikai Bai, Jingcai Guo, **Jie Zhang**[†], and Song Guo. “What You Think is What You See: Driving Exploration in VLM Agents via Visual-Linguistic Curiosity.” *the 43rd International Conference on Machine Learning*, 2026.

C3. [ACL] Yongjiang Liu, Haoxi Li, Xiaosong Ma, **Jie Zhang**[†], and Song Guo. “Think How to Think: Mitigating Overthinking with Autonomous Difficulty Cognition in Large Reasoning Models.” *The 64th Annual Meeting of the Association for Computational Linguistics*, 2026.

C4. [Findings of ACL] Sikai Bai, Haoxi Li, **Jie Zhang**[†], Yongjiang Liu, Song Guo. “TTVS: Boosting Self-Exploring Reinforcement Learning via Test-time Variational Synthesis.” *The 64th Annual Meeting of the Association for Computational Linguistics Findings*, 2026.

C5. [ACM MM] Jinxiang Lai, **Jie Zhang**, Jun Liu, Jian Li, Xiaocheng Lu, Bohai Gu, and Song Guo. “SpiderPTG: Any-to-Many Multimodal LLM.” *The 34th ACM International Conference on Multimedia*, 2026.

C6. [NeurIPS] Jinxiang Lai, Wenzhe Zhao, Hualei Zhang, Zexin Lu, Jian Liu, **Jie Zhang**, Qinglin Lu, and Song Guo. “VisionCreator-S1: Evolving Visual-Generation Agents via Skill-GRPO Optimization.” *The 40th Annual Conference on Neural Information Processing Systems*, 2026.

C7. [ICML] Quanxin Shou, Fangqi Zhu, Shuang Chen, Puxin Yan, Zhengyang Yan, Yikun Miao, Xiaoyi Pang, Zicong Hong, Ruikai Shi, Hao HUANG, **Jie Zhang**, and Song Guo. “HALO: A Unified Vision-Language-Action Model for Embodied Multimodal Chain-of-Thought Reasoning.” *the 43rd International Conference on Machine Learning*, 2026.

J1. [TMLR] Xiaocheng Lu, Ziyue Ma, **Jie Zhang**, Jian Liu, and Song Guo. “Unifying Understanding and Generation in Vision-Language Models: Advances, Challenges, and Opportunities.” *Transactions on Machine Learning Research*, 2026.

J2. [TMLR] Haoyang Shang, Xuan Liu, Zi Liang, **Jie Zhang**, Haibo Hu, and Song Guo. “United Minds or Isolated Agents? Exploring Coordination of LLMs under Cognitive Load Theory.” *Transactions on Machine Learning Research*, 2026.

C8. [ICLR] Xuan Liu (UG), **Jie Zhang**[†], Song Guo, Chengxu Yang and Quanyan Zhu. “Exploring Prosocial Irrationality for LLM Agents: A Social Cognition View.” *The 13th International Conference on Learning Representations*, 2025.

C9. [ICLR] Haoxi Li, Xueyang Tang, **Jie Zhang**[†], Song Guo, Sikai Bai, Peiran Dong and Yue Yu. “Causally Motivated Sycophancy Mitigation for Large Language Models.” *The 13th International Conference on Learning Representations*, 2025.

Efficient & Adaptive Foundation Models:

J3. [TNNLS] Haoyue Zhang, **Jie Zhang**[†], Chenyu Hu, and Song Guo. “ToFe: Lagged Token Freezing and Reusing for Efficient Vision Transformer Inference.” *IEEE Transactions on Neural Networks and Learning Systems*, 2026.

C10. [ACL] Haoyue Zhang, Hualei Zhang, Xiaosong Ma, **Jie Zhang**[†], and Song Guo. “LazyEviction: Lagged KV Eviction with Attention Pattern Observation for Efficient Long Reasoning.” *The 64th Annual Meeting of the Association for Computational Linguistics*, 2026.

C11. [NeurIPS] Xiaocheng Lu, Shuhan Guo, Ziyue Ma, **Jie Zhang**, Jian Liu, Jingcai Guo, Haoxuan Che, and Song Guo. “PACE-dLLM: Elastic Block Decoding via Confidence Cliff Estimation for Diffusion Language Models.” *The 40th Annual Conference on Neural Information Processing Systems*, 2026.

C12. [NeurIPS] Sikai Bai, **Jie Zhang**[†], Haoxi Li, Zicong Hong, Song Guo. “DiEP: Adaptive Mixture-of-Experts Compression through Differentiable Expert Pruning.” *The 39th Annual Conference on Neural Information Processing Systems*, 2025.

C13. [ICML] **Jie Zhang**, Xiaosong Ma, Song Guo, Peng Li, Wenchao Xu, Xueyang Tang and Zicong Hong. “Amend to Alignment: Decoupled Prompt Tuning for Mitigating Spurious Correlation in Vision-Language Models.” *International Conference on Machine Learning*, 2024.

C14. [INFOCOM] Jinyu Chen, Wenchao Xu, Zicong Hong, Song Guo, Haozhao Wang, **Jie Zhang**, Deze Zeng. “OTAS: An Elastic Transformer Serving System via Token Adaptation.” *In IEEE Conference on Computer Communications*, 2024.

C15. [ICML] Jiewei Zhang, Song Guo, Peiran Dong, **Jie Zhang**, Ziming Liu, Yue Yu, and Xiaoming Wu. “Easing Concept Bleeding in Diffusion via Entity Localization and Anchoring.” *International Conference on Machine Learning*, 2024.

C16. [NeurIPS] Peiran Dong, Bingjie Wang, Song Guo, Junxiao Wang, **Jie Zhang**, Zicong Hong, Xiao-Ming Wu. “Towards Safe Concept Transfer of Multi-Modal Diffusion via Causal Representation Editing.” *the 38th Annual Conference on Neural Information Processing Systems*, 2024.

C17. [NeurIPS] Xiaosong Ma, **Jie Zhang**[†], Song Guo, Wenchao Xu. “SwapPrompt: Test-Time Prompt Adaptation for Vision-Language Models.” *Advances in Neural Information Processing Systems*, 2023.

Federated & Distributed Learning:

- J4. [TMC]** Kang Wei, Xin Yuan, Zicong Hong, **Jie Zhang**, Jingcai Guo, Ming Ding, Jun Li, and Song Guo. “Towards Fair Federated Edge Learning Through Prototype-Guided Distributed Adversarial Networks.” *IEEE Transactions on Mobile Computing*, 2026.
- J5. [TNNLS]** Yi Liu, Song Guo, **Jie Zhang**[†], Qihua Zhou, Yingchun Wang. “Feature Correlation-guided Knowledge Transfer for Federated Self-supervised Learning.” *IEEE Transactions on Neural Networks and Learning Systems*, 2025.
- J6. [TMC]** **Jie Zhang**, Song Guo, Xiaosong Ma, Wenchao Xu, Qihua Zhou, Jingcai Guo, Zicong Hong and Shan Jun. “Model Decomposition and Reassembly for Purified Knowledge Transfer in Personalized Federated Learning.” *IEEE Transactions on Mobile Computing* (2024).
- J7. [TC]** Yi Liu, Song Guo, **Jie Zhang**[†], Zicong Hong, Yufeng Zhan, and Qihua Zhou. “Collaborative Neural Architecture Search for Personalized Federated Learning.” *IEEE Transactions on Computers* (2024).
- C18. [CVPR]** Sikai Bai*, **Jie Zhang***, Song Guo, Jingcai Guo, Shuaicheng Li, Jun Hou, Tao Han, Xiaocheng Lu. “DiPro-mpts: Disentangled Prompts for Multiple Latent Domain Generalization in Federated Learning.” *IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2024.
- C19. [ICML]** Xueyang Tang, Song Guo, Jingcai Guo, **Jie Zhang**[†] and Yue Yu. “Causally Motivated Personalized Federated Invariant Learning with Shortcut-Averse Information-Theoretic Regularization.” *International Conference on Machine Learning*, 2024.
- C20. [ICLR]** Xueyang Tang, Song Guo, **Jie Zhang**[†], Jingcai Guo. “Learning Personalized Causally Invariant Representations for Heterogeneous Federated Clients.” *International Conference on Learning Representations*, 2024.
- C21. [AAAI]** Sikai Bai, Shuaicheng Li, Weiming Zhuang, **Jie Zhang**[†], Kunlin Yang, Jun Hou, Shuai Yi, Shuai Zhang, Junyu Gao. “Combating Data Imbalances in Federated Semi-supervised Learning with Dual Regulators.” *Annual AAAI Conference on Artificial Intelligence*, 2024.
- J8. [TC]** **Jie Zhang**, Song Guo, Jing Guo, Deze Zeng, Jingren Zhou and Albert Zomaya. “Towards Data-independent Knowledge Transfer in Model-heterogeneous Federated Learning.” *IEEE Transactions on Computers* (2023).
- C22. [ICML]** **Jie Zhang**, Xiaosong Ma, Song Guo, and Wenchao Xu. “Toward Unbiased Training in Federated Open-world Semi-supervised Learning.” *International Conference on Machine Learning*, 2023.
- J9. [TPDS]** Feijie Wu, Song Guo, Haozhao Wang, Haobo Zhang, Zhihao Qu, **Jie Zhang**, Ziming Liu. “From Deterioration to Acceleration: A Calibration Approach to Rehabilitating Step Asynchronism in Federated Optimization.” *IEEE Transactions on Parallel and Distributed Systems* (2023).
- C23. [IJCNN]** Yingchun Wang, Jingcai Guo, **Jie Zhang**, Song Guo, Weizhan Zhang, Qinghua Zheng. “Towards Fairer and More Efficient Federated Learning via Multidimensional Personalized Edge Models.” *2023 International Joint Conference on Neural Networks*. IEEE, 2023: 1-8.
- J10. [TPDS]** **Jie Zhang**, Song Guo, Zhihao Qu, Deze Zeng, Haozhao Wang and Albert Zomaya. “Adaptive Vertical Federated Learning on Unbalanced Features.” *IEEE Transactions on Parallel and Distributed Systems* (2022), 33(12), pp.4006-4018.
- C24. [CVPR]** Xiaosong Ma*, **Jie Zhang***, Song Guo, and Wenchao Xu. “Layer-wised Model Aggregation for Personalized Federated Learning.” *IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2022.
- J11. [IEEE Network]** Leijie Wu, Song Guo, Junxiao Wang, Zicong Hong, **Jie Zhang**, Yaohong Ding. “Federated Unlearning: Guarantee the Right of Clients to Forget.” *IEEE network* 36, no. 5 (2022): 129-135.
- C25. [NeurIPS]** Qihua Zhou, Song Guo, Yi Liu, **Jie Zhang**, Jiwei Zhang, Tao GUO, Zhenda XU, Xun Liu, Zhihao Qu. “Hierarchical Channel-spatial Encoding for Communication-efficient Collaborative Learning.” *Advances in Neural Information Processing Systems*, 2022.
- C26. [DAC]** Feijie Wu, Shiqi He, Song Guo, Zhihao Qu, Haozhao Wang, Weihua Zhuang, **Jie Zhang**. “Sign Bit is Enough: A Learning Synchronization Framework for Multi-hop All-reduce with Ultimate Compression.” *In 2022 59th ACM/IEEE Design Automation Conference*, 2022.
- J12. [TC]** **Jie Zhang**, Song Guo, Zhihao Qu, Deze Zeng, Yufeng Zhan, Qifeng Liu, and Rajendra Akerkar. “Adaptive federated learning on Non-IID data with resource constraint.” *IEEE Transactions on Computers* (2021), 71(7), pp.1655-1667.
- J13. [CSUR]** **Jie Zhang**, Zhihao Qu, Chen Chen, Haozhao Wang, Yufeng Zhan, Baoliu Ye, and Song Guo. “Edge learning: The enabling technology for distributed big data analytics in the edge.” *ACM Computing Surveys* 54, no. 7 (2021): 1-36.

C27. [NeurIPS] Jie Zhang, Song Guo, Xiaosong Ma, Haozhao Wang, Wenchao Xu, and Feijie Wu. “Parameterized Knowledge Transfer for Personalized Federated Learning.” *Advances in Neural Information Processing Systems*, 2021.

J14. [TETC] Yufeng Zhan, Jie Zhang, Zicong Hong, Leijie Wu, Peng Li, and Song Guo. “A survey of incentive mechanism design for federated learning.” *IEEE Transactions on Emerging Topics in Computing* (2021).

AI4S & AI Applications:

C28. [ICML] Hao Chen, Tao Han, Jie Zhang[†], Song Guo, Fenghua Ling, and Lei Bai. “EMFormer: Efficient Multi-Scale Transformer for Accumulative Context Weather Forecasting.” *the 43rd International Conference on Machine Learning*, 2026.

C29. [CVPR] Hao Chen, Tao Han, Jie Zhang[†], Song Guo, Lei Bai. “STCast: Adaptive Boundary Alignment for Global and Regional Weather Forecasting.” *IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2026.

C30. [ICCV] Hao Chen, Tao Han, Song Guo, Jie Zhang, Yonghan Dong, Yunlong Yu, and Lei Bai. “VA-MoE: Variables-Adaptive Mixture of Experts for Incremental Weather Forecasting.” *International Conference on Computer Vision*, 2025.

J15. [IEEE Network] Yan Hong, Song Guo, Xianyi Zeng, Jie Zhang[†]. “Human Cognition Modeling for the Metaverse-oriented Design System.” *IEEE Network*, 2024.

C31. [AAAI] Qihua Zhou, Jingcai Guo, Song Guo, Ruibin Li, Jie Zhang, Bingjie Wang, Zhenda Xu. “On the Robustness of Neural-enhanced Video Streaming Against Adversarial Attacks.” *Annual AAAI Conference on Artificial Intelligence*, 2024.

C32. [ACM MM] Yingchun Wang, Jingcai Guo, Song Guo, Yi Liu, Jie Zhang, Weizhan Zhang. “SFP: Spurious Feature-Targeted Pruning for Out-of-Distribution Generalization.” *ACM International Conference on Multimedia*, 2024.

C33. [IJCAI] Jingcai Guo, Qihua Zhou, Xiaocheng Lu, Ruibin Li, Ziming Liu, Jie Zhang, Bo Han, Junyang Chen, Xin Xie, and Song Guo. “ParsNets: A Parsimonious Composition of Orthogonal and Low-Rank Linear Networks for Zero-Shot Learning.” *The 33rd International Joint Conference on Artificial Intelligence*, 2024.

C34. [ACM MM] Jingcai Guo, Shiheng Ma, Jie Zhang, Qihua Zhou, Song Guo. “Dual-view Attention Networks for Single Image Super-Resolution.” *In Proceedings of the 28th ACM International Conference on Multimedia*, 2020.

Edge Computing & Systems

J16. [TSC] Yue Zeng, Zhihao Qu, Song Guo, Bin Tang, Baoliu Ye, Jing Li, Jie Zhang. “RuleDRL: Reliability-Aware SFC Provisioning with Bounded Approximations in Dynamic Environments.” *IEEE Transactions on Services Computing* (2023).

C35. [INFOCOM] Zicong Hong, Song Guo, Enyuan Zhou, Jianting Zhang, Chen Wuhui, Jinwen Liang, Jie Zhang, Albert Zomaya. “PROPHET: Conflict-Free Sharding Blockchain via Byzantine-Tolerant Deterministic Ordering.” *In IEEE Conference on Computer Communications*, 2023.

C36. [ICPADS] Jie Zhang, Song Guo, Deze Zeng, and Zhihao Qu. “Multi-Path Routing Oriented Flow Statistics Collection in Software Defined Networks.” *In 2019 IEEE 25th International Conference on Parallel and Distributed Systems*, pp. 101-108. IEEE, 2019.

J17. [TVT] Deze Zeng, Jie Zhang, Lin Gu, Song Guo, and Jiangtao Luo. “Energy-efficient coordinated multipoint scheduling in green cloud radio access network.” *IEEE Transactions on Vehicular Technology* 67, no. 10 (2018): 9922-9930.

C37. [SECON] Deze Zeng, Jie Zhang, Lin Gu, and Song Guo. “Stochastic scheduling towards cost efficient network function virtualization in edge cloud.” *In 2018 15th Annual IEEE International Conference on Sensing, Communication, and Networking*, pp. 1-9. IEEE, 2018.

C38. [GLOBECOM] Jie Zhang, Deze Zeng, Lin Gu, Hong Yao, and Muzhou Xiong. “Joint optimization of virtual function migration and rule update in software defined NFV networks.” *In GLOBECOM 2017-2017 IEEE Global Communications Conference*, pp. 1-5. IEEE, 2017.

J18. [IEEE Network] Deze Zeng, Jie Zhang, Song Guo, Lin Gu, and Kun Wang. “Take renewable energy into CRAN toward green wireless access networks.” *IEEE network* 31, no. 4 (2017): 62-68.

C39. [GLOBECOM] Deze Zeng, Jie Zhang, Lin Gu, Peng Li, and Hong Yao. “Minimize Coflow Completion Time via Joint Optimization of Flow Scheduling and Processor Placement.” *In GLOBECOM 2017-2017 IEEE Global Communications Conference*, pp. 1-5. IEEE, 2017.

C40. [CollaborateCom] Jie Zhang, Deze Zeng, Lin Gu, Hong Yao, and Yuanyuan Fan. “On rule placement for multi-path routing in software-defined networks.” *In International Conference on Collaborative Computing: Networking, Applications and Worksharing*, pp. 59-71. Springer, Cham, 2015.

PROJECT EXPERIENCE

国家自然科学基金-重点项目 (Co-PI) 2026.01 – 2030.12

面向多模态联邦学习多层异质性问题的软硬件协同优化关键技术研究

Budget: RMB 750,000

RGC General Research Fund (GRF) (PI) 2025.09 – 2028.08

Evolving Edge Foundation Models via Adaptive Knowledge Editing in Diverse Environments

Budget: HKD 1,063,466

MetaX Integrated Circuits (Shanghai) Co, Ltd. (Co-PI) 2024 – 2025

Study on Inference Adaptation and Acceleration for Multimodal LLMs Based on MetaX GPU

Budget: HKD 210,000.00

MetaX Integrated Circuits (Shanghai) Co, Ltd. (Co-PI) 2024 – 2025

Study on Inference Adaptation and Acceleration for Multimodal LLMs Based on MetaX GPU

Budget: HKD 835,000.00

ACADEMIC SERVICE

- Area Chair for AAAI (2027) and ICLR (2027).
- Reviewer for The IEEE / CVF Computer Vision and Pattern Recognition Conference (**CVPR**).
- Reviewer for the Conference on Neural Information Processing Systems (**NeurIPS**).
- Reviewer for The International Conference on Machine Learning (**ICML**).
- Reviewer for The International Conference on Learning Representations (**ICLR**).
- Reviewer for IEEE Transactions on Parallel and Distributed Systems (**IEEE TPDS**).
- Reviewer for IEEE Transactions on Mobile Computing (**IEEE TMC**).
- Reviewer for IEEE Transactions on Computers (**IEEE TC**).

HONORS AND AWARDS

- Jun. 2013 *2nd Prize*, Contemporary Undergraduate Mathematical Contest in Modeling
- Jun. 2014 *National Encouragement Scholarship*, China University of Geosciences, Wuhan
- Jun. 2015 *The Outstanding Undergraduate Student Honor*, China University of Geosciences, Wuhan
- Oct. 2017 *1st Prize*, Science and Technology Paper Seminar, China University of Geosciences, Wuhan
- Jun. 2018 *The Outstanding Graduate Student Honor*, China University of Geosciences, Wuhan
- Jan. 2023 *PolyU Postdoc Matching Fund Scheme*, The Hong Kong Polytechnic University, Hong Kong

TEACHING

As Instructor:

- COMP 1021 - Introduction to Computer Science, HKUST, Spring 2025.
- COMP 1021 - Introduction to Computer Science, HKUST, Fall 2025.
- COMP 1021 - Introduction to Computer Science, HKUST, Fall 2026.

As Teaching Assistant:

- Programming Fundamentals, PolyU, Spring 2019, Autumn 2019.
- Big Data Analytics, PolyU, Spring 2020, Spring 2021.
- Big Data Computing, PolyU, Fall 2020, Fall 2021.