Guancheng Wan

4^{th}-year Undergraduate, Incoming UCLA CS Ph.D. Student
March 3, 2003

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Education

University of California, Los Angeles — **Los Angeles, CA, USA**
Computer Science, Ph.D. — 2025–2030 (Expected)
Advisor: (IEEE&ACM Fellow) Wei Wang, co-advised by Yizhou Sun

Wuhan University — **Wuhan, China**
Computer Science, B.S. — 2021–2025
GPA: 3.9/4.0 **Rank:** 1/250
Advisor: Mang Ye, co-advised by Bo Du

Research

I am passionate about modeling the relationships among all points (e.g., nodes, tokens, or agents). My current research interests focus on three key areas:

a) (Multimodal) Large Language Models (MLLM), Large Reasoning Models, LLM-based Multi-Agent System
b) AI for Science: Biotechnology, Physics and Chemistry...
c) Trustworthy AI: Federated (Graph) Learning, MLLM Safety and Hallucination

Publications (∗ = Co-first Author)

20 ***first or co-first author*** *peer-reviewed publications:*

1. *HYPERION: Fine-Grained Hypersphere Alignment for Robust Federated Graph Learning*
   Guancheng Wan*, Xiaoran Shang, Guibin Zhang, Jinhe Bi, Yuxin Wu, Liangtao Zheng, Xin Lin, Yue Liu, Yanbiao Ma, Wenke Huang, Bo Du
   Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2025, **Spotlight (Top 3.1%)**
2. *MOTION: Multi-Sculpt Evolutionary Coarsening for Federated Continual Graph Learning*
   Guancheng Wan*, Fengyuan Ran, Ruikang Zhang, Wenke Huang, Xuankun Rong, Guibin Zhang, Yuxin Wu, Bo Du, Mang Ye
   Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2025
3. *Multi-order Orchestrated Curriculum Distillation for Model-Heterogeneous Federated Graph Learning*
   Guancheng Wan*, Xu Cheng, Run Liu, Wenke Huang, Zitong Shi, Pinyi Jin, Guibin Zhang, Bo Du, Mang Ye
   Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2025
4. *OASIS: One-Shot Federated Graph Learning via Wasserstein Assisted Knowledge Integration*
   Guancheng Wan*, Jiaru Qian, Wenke Huang, Qilin Xu, Xianda Guo, Boheng Li, Guibin Zhang, Bo Du, Mang Ye
   Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2025
5. *G-Memory: Tracing Hierarchical Memory for Multi-Agent Systems*
   Guibin Zhang, Muxin Fu, **Guancheng Wan**, Miao Yu, Kun Wang, Shuicheng Yan
   Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2025, **Spotlight (Top 3.1%)**
6. *DKDR: Dynamic Knowledge Distillation for Reliability in Federated Learning*
   Yueyang Yuan, Wenke Huang, **Guancheng Wan**, Kaiqi Guan, He Li, Mang Ye
   Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2025
7. *Don't Forget the Enjoin: FocalLoRA for Instruction Hierarchical Alignment in Large Language Models*
   Zitong Shi, **Guancheng Wan**, Haixin Wang, Ruoyan Li, Zijie Huang, Wanjia Zhao, Yijia Xiao, Xiao Luo, Carl Yang, Yizhou Sun, Wei Wang
   Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2025
8. *Flow Field Reconstruction with Sensor Placement Policy Learning*
   Ruoyan Li, **Guancheng Wan**, Zijie Huang, Zixiao Liu, Haixin Wang, Xiao Luo, Wei Wang, Yizhou Sun
   Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2025

framework.png

9. *Protein Large Language Models: A Comprehensive Survey*
   Yijia Xiao, Wanjia Zhao, Junkai Zhang, Yiqiao Jin, Han Zhang, Zhicheng Ren, Renliang Sun, Haixin Wang, **Guancheng Wan**, Pan Lu, Xiao Luo, Yu Zhang, James Zou, Yizhou Sun, Wei Wang
   Conference on Empirical Methods in Natural Language Processing (**EMNLP Findings**), 2025
10. *Energy-based Backdoor Defense Against Federated Graph Learning*
    Guancheng Wan*, Zitong Shi*, Wenke Huang, Guibin Zhang, Dacheng Tao, Mang Ye
    International Conference on Learning Representations (**ICLR**), 2025 **Oral (Top 1.8%)**
11. *Rethink GraphODE Generalization within Coupled Dynamical System*
    Guancheng Wan, Zijie Huang, Wanjia Zhao, Xiao Luo, Yizhou Sun, Wei Wang
    International Conference on Machine Learning (**ICML**), 2025, **Spotlight (Top 2.2 %)**
12. *Sculpting LoRA for Harmonizing General and Specialized Knowledge in Multimodal Large Language Models*
    Jian Liang*, Wenke Huang*, **Guancheng Wan***, Qu Yang, Mang Ye
    IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025, **Oral (Top 3.3%)**

13. *EARTH: Epidemiology-Aware Neural ODE with Continuous Disease Transmission Graph*
Guancheng Wan, Zewen Liu, Xiaojun Shan, Max S.Y. Lau, B. Aditya Prakash, Wei Jin
International Conference on Machine Learning (**ICML**), 2025
14. *GHOST: Generalizable One-Shot Federated Graph Learning with Proxy-Based Topology Knowledge Retention*
Jiaru Qian*, **Guancheng Wan***, Wenke Huang, Guibin Zhang, Yuxin Wu, Bo Du, Mang Ye
International Conference on Machine Learning (**ICML**), 2025
15. *EAGLES: Towards Effective, Efficient, and Economical Federated Graph Learning via Unified Sparsification*
Zitong Shi*, **Guancheng Wan***, Guibin Zhang, Wenke Huang, He Li, Carl Yang, Mang Ye
International Conference on Machine Learning (**ICML**), 2025
16. *G-Safeguard: A Topology-Guided Security Lens and Treatment on LLM-based Multi-agent Systems*
Shilong Wang, Guibin Zhang, Miao Yu, **Guancheng Wan**, Fanci Meng, chongye guo, Kun Wang, Yang Wang
Annual Meeting of the Association for Computational Linguistics (**ACL Main**), 2025
17. *MasRouter: Learning to Route LLMs for Multi-Agent Systems*
Yanwei Yue, Guibin Zhang, Boyang Liu, **Guancheng Wan**, Kun Wang, Dawei Cheng, Yiyan Qi
Annual Meeting of the Association for Computational Linguistics (**ACL Main**), 2025
18. *S2FGL: Spatial Spectral Federated Graph Learning*
Zihan Tan, Suyuan Huang, **Guancheng Wan**, Wenke Huang, He Li, Mang Ye
International Conference on Machine Learning (**ICML**), 2025
19. *Be Confident: Uncovering Overfitting in MLLM Multi-Task Tuning*
Wenke Huang, Jian Liang, **Guancheng Wan**, Didi Zhu, He Li, Jiawei Shao, Mang Ye, Bo Du, Dacheng Tao
International Conference on Machine Learning (**ICML**), 2025
20. *FedPHA: Federated Prompt Learning for Heterogeneous Client Adaptation*
Chengying Fang*, Wenke Huang*, **Guancheng Wan***, Yihao Yang, Mang Ye
International Conference on Machine Learning (**ICML**), 2025
21. *Splitting with Importance-aware Updating for Heterogeneous Federated Learning with Large Language Models*
Yangxu Liao*, Wenke Huang*, **Guancheng Wan***, Jian Liang, Bin Yang, Mang Ye
International Conference on Machine Learning (**ICML**), 2025
22. *Learn from Downstream and Be Yourself in Multimodal Large Language Models Fine-Tuning*
Wenke Huang, Jian Liang, Zekun Shi, Didi Zhu, **Guancheng Wan**, He Li, Bo Du, Dacheng Tao, Mang Ye
International Conference on Machine Learning (**ICML**), 2025
23. *An Empirical Study of Federated Prompt Learning for Vision Language Model*
Zhihao Wang, Wenke Huang, Tian Chen, Zekun Shi, **Guancheng Wan**, Yu Qiao, Bin Yang, Jian Wang, Bing Li, Mang Ye
International Joint Conference on Artificial Intelligence (**IJCAI**), 2025
24. *Federated Disentangled Tuning with Textual Prior Decoupling and Visual Dynamic Adaptation*
Yihao Yang, Wenke Huang, **Guancheng Wan***, Bin Yang, Mang Ye
International Conference on Machine Learning (**ICML**), 2025
25. *G-Designer: Architecting Multi-agent Communication Topologies via Graph Neural Networks*
Guibin Zhang, Yanwei Yue, Xiangguo Sun, **Guancheng Wan**, Miao Yu, Junfeng Fang, Kun Wang, Tianlong Chen, Dawei Cheng
International Conference on Machine Learning (**ICML**), 2025, **Spotlight (Top 2.2 %)**
26. *Does One-Shot Give the Best Shot? Mitigating Model Inconsistency in One-shot Federated Learning*
Hui Zeng, Wenke Huang, Tongqing Zhou, Xinyi Wu, **Guancheng Wan**, Yingwen Chen, Zhiping Cai
International Conference on Machine Learning (**ICML**), 2025
27. *FedSPA: Generalizable Federated Graph Learning under Homophily Heterogeneity*
Zihan Tan*, **Guancheng Wan***, Wenke Huang, Guibin Zhang, He Li, Carl Yang, Mang Ye
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025
28. *EMOE: Modality-Specific Enhanced Dynamic Emotion Experts*
Yiyang Fang*, Wenke Huang*, **Guancheng Wan***, Kehua Su, Mang Ye
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025
29. *FedSSP: Federated Graph Learning with Spectral Knowledge and Personalized Preference*
Zihan Tan*,**Guancheng Wan***, Wenke Huang, Mang Ye
Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2024

30. *S3GCL: Spectral, Swift, Spatial Graph Contrastive Learning*
Guancheng Wan, Yijun Tian, Wenke Huang, Nitesh V. Chawla, Mang Ye
International Conference on Machine Learning (**ICML**), 2024
31. *Federated Graph Learning under Domain Shift with Generalizable Prototypes*
Guancheng Wan, Wenke Huang, Mang Ye
AAAI Conference on Artificial Intelligence (**AAAI**), 2024
32. *A Review of Graph Neural Networks in Epidemic Modeling*
Zewen Liu*, **Guancheng Wan***, B. Aditya Prakash, Max S. Y. Lau, Wei Jin
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), 2024
33. *Federated Graph Semantic and Structural Learning*
Wenke Huang*, **Guancheng Wan***, Mang Ye, Bo Du
International Joint Conference on Artificial Intelligence (**IJCAI**), 2023
34. *Cut the Crap: An Economical Communication Pipeline for LLM-based Multi-Agent Systems*
Guibin Zhang, ..., **Guancheng Wan**, ..., Tianlong Chen
International Conference on Learning Representations (**ICLR**), 2025
35. *Label-Free Backdoor Attacks in Vertical Federated Learning: An Embedding Gradient-Guided Approach with Selectively Sample Switching*
Wei Shen, Wenke Huang, **Guancheng Wan**, Mang Ye
AAAI Conference on Artificial Intelligence (**AAAI**), 2025
36. *A Survey on Federated Learning for Generalization, Robustness, Fairness*
Wenke Huang, Mang Ye, Zekun Shi, **Guancheng Wan**, He Li, Bo Du, Qiang Yang
IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2024
37. *Parameter Disparities Dissection for Backdoor Defense in Heterogeneous Federated Learning*
Wenke Huang, Mang Ye, Zekun Shi, **Guancheng Wan**, He Li, Bo Du
Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2024

Experience

University of California, Los Angeles *Research Internship* Sept 2024–January 2025
Topics: Ai4Science, Dynamic System, Graph Neural ODE Advisor: Yizhou Sun, Wei Wang Work with: Zijie Huang
- Rethink Graph Neural ODE through the lens of the generalized coupled systems of the physical world, employing variational inference to enable causal intervention, learning the physics rules rather than overfitting the data.

Emory University, Melody lab *Research Assistant* Jan 2024–Sept 2024
Topics: Ai4Science, Epidemiology, Graph Learning Advisor: Wei Jin Work with B. Aditya Prakash, Carl Yang
- Develop an epidemiology-aware neural ordinary differential equation method, to model physical-informed disease dynamics. Learn regional interactions in continuous time and against irregular epidemic-series data.
- Integrate machine learning into epidemic modeling with a comprehensive software: EpiLearn, offering tools for forecasting, source detection, and data simulation.
- Review the application of GNN in epidemic modeling, discuss traditional mechanics with deep learning.

Wuhan University, MARS lab *Research Assistant* Jan 2023–Sept 2024
Topics: Robustness, Backdoor Attack, Graph Learning Work with: Dacheng Tao
- Propose a defense method based on graph topology energy that effectively mitigates graph backdoor attacks, and validated its effectiveness and robustness on five datasets under both IID and non-IID settings.

Topics: Domain Generalization, Federated Learning Work with: Qiang Yang
- Develop a comprehensive software tool to benchmark three key issues for currently trustworthy federated learning: Generalization, Robustness, and Fairness. Write a Survey to discuss the status and future development.

Topics: Graph Learning, Domain Generalization, Federated Learning Advisor: Mang Ye Work with Bo Du
- Identify the domain similarities from a novel graph spectrum perspective, design a spectral sharing transformer and personalized adaptive convolution for domain-agnostic graph learning.
- Propose a framework to address the challenge of across-domain graph data shift in federated graph learning.
- Propose a novel federated graph learning frame for both node and graph-level calibration, shedding good light on future research in solving the non-IID problem in federated graph learning scenarios.

University of Notre Dame *Research Internship* Sept 2023–Jan 2024
Topics: Inference Acceleration, Heterophilic Graph, Unsupervised Learning Work with: Nitesh V Chawla

- Propose a unified framework to solve the heterophilic generalization and inference acceleration problems of graph self-supervised learning. Achieve good performance and 173x speedup for industrial-grade inference.

🖐 Skills

Python (Pytorch), Pyg, Dgl, Java, Latex, Git/Terminal, VSCode/IntelliJ, Data Analysis/Visualization

🏆 Scholarships and Honors

Luo Jia Role model (10 Students school-wide) Wuhan University Mar 2025
Lei Jun Excellence Scholarship (The **Highest** Scholarship, **Top-4** Undergraduate, 10/65000=**0.01%**) Nov 2024
Luojia Undergraduate Innovation Research Fund (4 Students department-wide) Wuhan University Oct 2024
SenseTime Scholarship (**25 Students nation-wide**) SenseTime Jun 2024
Lei Jun Computer Innovation and Development Fund and Research Fund (3 Students department-wide) Wuhan University Jun 2024
CS Pioneer (10 Students department-wide) Wuhan University Apr 2024
CCF (China Computer Federation) Elite Collegiate Award (102 Students nation-wide) Oct 2023
Pacemaker to Merit Student (60/65000+=**0.1%** school-wide) Oct 2023
National Scholarship (Twice) (Award Rate: 0.2% nation-wide) Sep 2023
National Scholarship (Award Rate: 0.2% nation-wide) Sep 2022