Zhilin Wang

Email: wang5327@purdue.edu
Homepage: https://wzljerry.github.io
GitHub: https://github.com/wzljerry
Address: 625 W Michigan St, Indianapolis, IN 46202, USA

Research interests

Federated Learning, Distributed Optimization, LLM, MLSys

Education

01/2021 – 12/2024 (expected)	**Purdue University** – West Lafayette, Indiana, USA Ph.D. in Computer Science Advisor: Prof. Qin Hu
09/2016 – 06/2020	**Nanchang University** – Nanchang, Jiangxi, China B.S. in Management Advisor: Prof. Faming Zhang

Work Experience

2024/04 – Present	**Havi** – Beijing, China Position: Co-Founder & AI Team Leader (Remote) Description: I established an AI team (10+ members) dedicated to pioneering AI solutions for the recruitment industry. Driven by vision and leadership, the team has achieved remarkable success in a short span. Key Highlights: 1. Conceived and implemented AI-powered recruitment workflows by integrating LLM, CV, and recommendation engines. 2. Constructed a database of millions with high-quality labels. 3. Fine-tune open-source large models to suit our business.
2023/10 – Present	**Leago AI** – California, USA Position: Co-Founder & AI Team Leader (Remote) Description: Leago AI is a startup focused on the legal domain. We aim to help our users to quickly complete legal documents, thus simplifying the process of obtaining legal services and saving time.

Projects

Spring 2024	**Anton: AI-powered Resume Generation Tool.**
	Based on job descriptions and user preferences, Anton can quickly generate resumes that meet the requirements and allow customization of resume templates.
Fall 2023	**xiezhi: The Anomaly Detection Tool for One-dimensional Data**
	This is a released Python package, which can be applied to conduct anomaly detection for one-dimensional data, especially when the data size is large while only a few of them are abnormal.
Spring 2023	**NEXT: A Flexible Federated Learning Framework for Security Analysis**
	This framework integrates dozens of the latest and most popular defense and attack methods in federated learning, supporting more than a dozen datasets and deep models. Based on this framework, researchers can monitor the security of the whole process of FL. (It will be released soon.)
Summer 2022	**HFL: Hierarchical Federated Learning Framework**
	A benchmark of hierarchical federated learning.
Spring 2022	**RL-based Knapsack Problem Solver**
	We provide a reinforcement learning based solution to multiple knapsack problems, which can get the approximate optimal solutions in polynomial time.
Spring 2022	**Blockchain-based Federated Learning Framework**
	A user-friendly and robust blockchain-based federated learning framework in MEC will be applied to facilitate research and practical applications.

Research experience

2021 – Present	**Research Assistant**
	Advisor: Prof. Qin Hu.
	There are two main research directions, one is to design efficient decentralized federated learning systems, and the other is to improve the robustness of federated learning systems.
2017 – 2019	**Research Assistant**
	Advisor: Prof. Faming Zhang
	Mainly engaged in studies and research on decision science, optimization theory, and game theory.

Selected Papers

2023 **Can We Trust the Similarity Measurement in Federated Learning?**
Zhilin Wang, Qin Hu, Xuakai Zou
Submitted to USENIX Security 2024

Incentive Mechanism Design for Joint Resource Allocation in Blockchain-Based Federated Learning
Zhilin Wang, Qin Hu, Ruinian Li, Minghui Xu, Zehui Xiong
IEEE Transactions on Parallel and Distributed Systems, 2023

Resource Optimization for Blockchain-based Federated Learning in Mobile Edge Computing
Zhilin Wang, Qin Hu, Zehui Xiong, Yuan Li, Dusit Niyato
IEEE Internet of Things Journal, 2023

Straggler Mitigation and Latency Optimization in Blockchain-based Hierarchical Federated Learning
Zhilin Wang, Qin Hu, Minghui Xu, Zehui Xiong
Submitted to IEEE Transactions on Computers

PoFEL: Energy-efficient Consensus for Blockchain-based Hierarchical Federated Learning
Shengyang Li, Qin Hu, Zhilin Wang
Submitted to IEEE Transactions on Mobile Computing

Blockchain-based Federated Learning: A Comprehensive Survey
Zhilin Wang, Qin Hu
Submitted to IEEE Communications Surveys & Tutorials.

2022 **Blockchain-based Edge Resource Sharing for Metaverse**
Zhilin Wang, Qin Hu, Minghui Xu, Honglu Jiang
2022 IEEE 19th International Conference on Mobile Ad Hoc and Smart Systems (MASS)

Online-Learning-Based Fast-Convergent and Energy-Efficient Device Selection in Federated Edge Learning
Cheng Peng, Qin Hu, Zhilin Wang, Ryan Wen Liu, Zehui Xiong
IEEE Internet of Things Journal

Defense Strategies Toward Model Poisoning Attacks in Federated Learning: A Survey
Zhilin Wang, Qiao Kang, Xinyi Zhang, Qin Hu
2022 IEEE Wireless Communications and Networking Conference (WCNC)

Transaction Pricing Mechanism Design and Assessment for Blockchain

Zhilin Wang, Qin Hu, Yawei Wang, Yinhao Xiao

High-Confidence Computing

2021 **Blockchain and Federated Edge Learning for Privacy-Preserving Mobile Crowdsensing**

Qin Hu, Zhilin Wang, Minghui Xu, Xiuzhen Cheng

IEEE Internet of Things Journal

2020 **A Correlated Equilibrium based Transaction Pricing Mechanism in Blockchain**

Qin Hu, Yash Nigam, Zhilin Wang, Yawei Wang, Yinhao Xiao

2020 IEEE International Conference on Blockchain and Cryptocurrency (ICBC)

Teaching

Spring 2024 CSCI 59000/49000: Wireless And Mobile Security, *Purdue University*

Talks

05/2024 How GenAI can Influence the Recruitment Industry?
Falcon Talent, Beijing, China

10/2022 Blockchain-based Edge Resource Sharing for Metaverse
IEEE MASS 2022, Denver, CO, USA

04/2022 Defense strategies toward model poisoning attacks in federated learning: A survey
IEEE WCNC 2022, Austin, TX, USA

Professional Services

Reviewer IEEE TPDS, IEEE IoTJ, Elsevier JNCA, IEEE TCCN, and IEEE ICC, IEEE Access

TPC Member IEEE ICC'22 Workshop

Professional Memberships

2021 – Present Institute of Electrical and Electronics Engineers (IEEE)
Graduate Student Member

2021 – Present   The Center for Education and Research in Information Assurance and Security at Purdue (CERIAS)
PhD Student Member