

# Zhilin Wang, Ph.D.

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## Research interests

Federated Learning, Distributed Optimization, LLM, MLSys, Search Engine

## Education

- 01/2021 – 12/2024 **Purdue University** – Indiana, USA  
Ph.D. in Computer Science  
Advisor: Prof. Qin Hu & Prof. Snehasis Mukhopadhyay
- 09/2016 – 06/2020 **Nanchang University** – Jiangxi, China  
B.S. in Management  
Advisor: Prof. Faming Zhang

## Work Experience

- 2024/04 – Present **OpenJobs** – Beijing, San Francisco  
Position: Co-Founder & CTO  
Description: I established a tech team (10+ members) dedicated to pioneering AI solutions for the recruitment industry. Driven by vision and leadership, the team has achieved remarkable success quickly.  
Key Highlights:  
  1. Conceived and implemented AI-powered recruitment workflows by integrating LLM, CV, audio, and search engines.
  2. Constructed a database of millions with high-quality labels.
  3. Fine-tune open-source large models to suit our business.

## 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

- 2024 **Can We Trust the Similarity Measurement in Federated Learning?**  
Zhilin Wang, Qin Hu, Xuakai Zou  
*IEEE Transactions on Information Forensics & Security*, 2024

- 2023 **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

Fall 2024 CSCI 49500: Capstone Project, Purdue University

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*