Zhilin Wang (王智林)

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Education

Jan 2021 - Present
Purdue University Indianapolis, IN, USA — Computer Science (PhD)

- Advisor: Prof. Qin Hu
- Research Interests: Federated Learning, Edge Computing, Blockchain, Optimization Theory

Sep 2016 - Jun 2020
Nanchang University, Jiangxi, China — Management (Bachelor)

- Research Interests: Game Theory, Decision Theory, Optimization Theory

Publications

1. Wang Z, Hu Q, Li R, et al. Incentive Mechanism Design for Joint Resource Allocation in Blockchain-based Federated Learning[J]. IEEE TPDS 2023.
2. Wang Z, Qin Hu, et al. Blockchain-based Edge Resource Sharing for Metaverse. IEEE MASS 2022.
3. Wang Z, Kang Q, Zhang X, et al. Defense Strategies Toward Model Poisoning Attacks in Federated Learning: A Survey[C]//2022 IEEE Wireless Communications and Networking Conference (WCNC). IEEE, 2022: 548-553.
4. Wang Z, Hu Q, Wang Y, et al. Transaction pricing mechanism design and assessment for blockchain[J]. High-Confidence Computing, 2022, 2(1): 100044.
5. Peng C, Hu Q, Wang Z, et al. "Online Learning based Fast-Convergent and Energy-Efficient Device Selection in Federated Edge Learning." IEEE Internet of Things Journal (2022).
6. Hu Q, Wang Z, Xu M, et al. Blockchain and Federated Edge Learning for Privacy-Preserving Mobile Crowdsensing[J]. IEEE Internet of Things Journal, 2021.
7. Hu Q, Nigam Y, Wang Z, et al. A correlated equilibrium based transaction pricing mechanism in blockchain[C]//2020 IEEE International Conference on Blockchain and Cryptocurrency (ICBC). IEEE, 2020: 1-7.
8. Wang Z, Hu Q, Xiong Z, Resource Optimization for Blockchain-based Federated Learning in Mobile Edge Computing[J]. arXiv preprint arXiv:2206.02243, 2022 (submitted to IEEE IoTJ).
9. Wang Z, and Qin Hu. "Blockchain-based federated learning: A comprehensive survey." arXiv preprint arXiv:2110.02182 (2021).

Project Experience

May 2022 - Aug 2022

HFL: hierarchical federated learning framework based on TensorFlow. (https://github.com/wzljerry/Hierarchical-Federated-Learning).

Mar 2022 - Jun 2022

Metaverse: blockchain-based Edge Resource Sharing for Metaverse. It provides a learning-based solution of multiple knapsacks problem, which can get the approximate optimal solutions in polynomial time. (https://github.com/wzljerry/Blockchain-based-Edge).

Feb 2022 - May 2022

FBFL: a user-friendely and robust blockchain-based federated learning framework in MEC, which will be applied to facilitate research and practical applications. (https://github.com/wzljerry/FBFL-A-Flexible-Blockchain-based-Federated-Learning-Framework in-Mobile-Edge-Computing).

Nov 2019 - Jan 2020

Blockchain: correlated equbirum for blockchain transaction. An Approximationmethod is provided. (https://github.com/wzljerry/Correlated Equilibrium-for-Blockchain-Transaction).

Talks

1. Oct 2022: I presented our paper in IEEE MASS 2022 held in Denver, USA.
2. Apr 2022: I presented our paper in IEEE WCNC 2022 held in Austin, USA.

Professional Services

1. Reviewer: IEEE TPDS, IEEE IoTJ, IEEE Access, JNCA, IEEE ICC, Elsevier HCC.
2. Tutor: Undergraduate Capstone Project 2022, Undergraduate Summer Research Project 2022 (NSF).
3. TPC member: IEEE ICC 2022 Workshop.
4. Research Assistant: 2021-present, CS department, Purdue University Indianapolis.
5. Graduate Student Council Member: Purdue School of Science, Purdue University Indianapolis.

Professional Skills

Mathematics: Linear Algebra, Calculus, Probability Theory, Statistics, Convex Optimization, Game Theory, Complex Analysis, Fuzzy Mathematics.
Programming Languages: Python, Java, C/C++, R, Matlab.
Machine Learning: TensorFlow, PyTorch