Yifan Zhou

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Education

Huazhong University of Science and Technology Sept 2023 – Present
Ph.D. Candidate in Computer Science, Advisor: Prof. Jiang Xiao *Wuhan, China*

Huazhong University of Science and Technology Sept 2022 – June 2023
M.S. in Computer Science, Advisor: Prof. Jiang Xiao *Wuhan, China*

Huazhong University of Science and Technology Sept 2018 – June 2022
B.E. in Software Engineering *Wuhan, China*

Research Interests

Blockchain, BFT Protocol, Blockchain Interoperability, Incentive Mechanism

Short Bio

I'm currently a third-year PhD student at HUST. I'm broadly interested in blockchain security, especially techniques that construct secure and scalable blockchain systems.
Specifically, I have explored BFT protocols, formalizing an asynchronous BFT protocol with a good-case 2δ latency under sub-optimal resilience. Also, I proposed cross-chain protocols with general atomicity guarantees and low latency, respectively. My current research focuses on transaction fee mechanisms (TFM) and truly scalable sharding protocols. I also closely follow the Web3 community, with practical experience and knowledge in decentralized finance.

Projects

Transaction Fee Mechanism Dec 2024 – Present

- Currently developing a control-theoretic model to analyze the stability of adaptive fee mechanisms (e.g., EIP-1559). This work identifies protocol-layer flaws of permissionless blockchains and offers actionable insights.

Blockchain Interoperability Jan 2024 – Nov 2024

- Proposed a novel framework for generalized cross-chain atomicity, extending beyond simple asset transfers to complex smart contract logic. This is constructed with a middle two-phase commit layer across blockchains. Logics are implemented with the Cosmos contract in Rust. Published a research paper on this topic, which was accepted by SRDS'24.
- Formulated an execution protocol with low latency for multi-hop cross-chain transactions. This work was accepted by IEEE TDSC.

Asynchronous DAG-based BFT Protocol Jan 2023 – Dec 2023

- Developed a fully asynchronous DAG-based BFT protocol, emphasizing the use of best-effort broadcast to achieve lower latency. Published a research paper on this topic, which was accepted by IEEE TIFS.
- I engineered a blockchain prototype integrating network, execution, and sharding modules to validate its performance.

Publications

As primary contributor:

- **Yifan Zhou**, Jiang Xiao, Xiaohai Dai, and Hai Jin, "PlainDAG: A Low-Latency Asynchronous DAG BFT Protocol With Best-Effort Broadcast," *IEEE TIFS*, 2025.
- **Yifan Zhou**, Jiang Xiao, Enping Wu, and Hai Jin, "Turbo: Optimistic Execution Framework for Low-Latency Cross-Chain Transactions," *IEEE TDSC*, 2025.

- Yuandi Cai, Ru Cheng, **Yifan Zhou**, Shijie Zhang, Jiang Xiao, and Hai Jin, "Enabling Complete Atomicity for Cross-chain Applications Through Layered State Commitments," *SRDS*, 2024.

As participant:

- Feng Cheng, Jiang Xiao, Cunyang Liu, Shijie Zhang, **Yifan Zhou**, Bo Li, Baochun Li, and Hai Jin, "Shardag: Scaling DAG-based blockchains via adaptive sharding," *ICDE*, 2024.
- Xiaohai Dai, **Yifan Zhou**, Jiang Xiao, Feng Cheng, Xia Xie, Hai jin, and Bo Li, "GeckoDAG: Towards a lightweight DAG-Based blockchain via reducing data redundancy," *ICDCS*, 2023.