

Jichen Li

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Research Interest

My research focuses on blockchain, particularly game-theoretic design and security in distributed systems. I analyze the economic security of blockchain protocols using game theory, algorithm analysis, and reinforcement learning. Additionally, I apply mechanism design and cryptography to develop new protocols. Current interests include blockchain auction protocols, selfish mining attacks, the Maximal Extractable Value (MEV) problem, and transaction fee mechanism design.

Educations

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|---|------------------------|
| Peking University, Department of Computer Science | Sept. 2020 – Present |
| <ul style="list-style-type: none">Supervisors: Xiaotie DengResearch Area: Blockchain and Algorithmic Game Theory | |
| Peking University, Electronics Engineering and Computer Science Engineering | Sept. 2016 – Jul. 2020 |
| <ul style="list-style-type: none">B.Sc. in Computer ScienceThesis: <i>Game Theory Based Blockchain Sharding Protocol</i>Advisor: Xiaotie Deng | |

Internship

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| Zhongguancun Laboratory | Jan. 2024 – Present |
| <ul style="list-style-type: none">Visiting StudentProject: Blockchain Consensus | |
| Hong Kong Polytechnic University, Department of Computing | Jan. 2023 – May 2023 |
| <ul style="list-style-type: none">Research AssistantHost: Bin Xiao | |

Publications

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| Decentralized Funding of Public Goods in Blockchain System: Leveraging Expert Advice | 2024 |
| <ul style="list-style-type: none">Jichen Li, Yukun Cheng, Wenhan Huang, Mengqian Zhang, Jiarui Fan, Xiaotie Deng, Jie ZhangIEEE Trans. Cloud Comput. 12(2): 725-736 (2024) | |
| n-MVTL Attack: Optimal Transaction Reordering Attack on DeFi | 2023 |
| <ul style="list-style-type: none">Jianhuan Wang, Jichen Li, Zecheng Li, Xiaotie Deng, Bin XiaoESORICS 2023 | |
| A Provable Softmax Reputation-Based Protocol for Permissioned Blockchains | 2023 |
| <ul style="list-style-type: none">Hongyin Chen, Zhaohua Chen, Yukun Cheng, Xiaotie Deng, Wenhan Huang, Jichen Li, Hongyi Ling, Mengqian ZhangIEEE Trans. Cloud Comput. 11(1): 1065-1077 (2023) | |
| An Efficient and Robust Committee Structure for Sharding Blockchain | 2023 |
| <ul style="list-style-type: none">Mengqian Zhang, Jichen Li, Zhaohua Chen, Hongyin Chen, Xiaotie DengIEEE Trans. Cloud Comput. 11(3): 2562-2574 (2023) | |
| Altruism, Collectivism and Egalitarianism: On a Variety of Prosocial Behaviors in Binary Networked Public Goods Games | 2023 |
| <ul style="list-style-type: none">Jichen Li, Xiaotie Deng, Yukun Cheng, Yuqi Pan, Xuanzhi Xia, Zongjun Yang, Jan XieAAMAS 2023: 609-624 | |
| MEV Makes Everyone Happy under Greedy Sequencing Rule | 2023 |
| <ul style="list-style-type: none">Yuhao Li*, Mengqian Zhang*, Jichen Li*, Xiaotie DengDeFi@CCS 2023: 9-15 | |

- Funding Public Goods with Expert Advice in Blockchain System** 2022
- Jichen Li, Yukun Cheng, Wenhan Huang, Mengqian Zhang, Jiarui Fan, Xiaotie Deng, Jan Xie
 - ICDCS 2022: 180-190
- Insightful Mining Equilibria** 2022
- Mengqian Zhang, Yuhao Li, Jichen Li
 - WINE 2022: 21-37
- CycLedger: A Scalable and Secure Parallel Protocol for Distributed Ledger via Sharding** 2020
- Mengqian Zhang, Jichen Li, Zhaohua Chen, Hongyin Chen, Xiaotie Deng
 - IPDPS 2020: 358-367

Working Papers

Sealed-bid Auctions on Blockchain with Timed Commitment Outsourcing

- Jichen Li*, Yuan Chen Tang*, Jing Chen, Xiaotie Deng

Multi-Block Withholding Attacks on Ethereum 2.0: An MDP Approach with Reinforcement Learning

- Wanying Zeng, Binfeng Song, Bo Zhou, Jichen Li*, Lijia Xie, Xiaotie Deng

Composition of Authenticated Byzantine Agreement with Man-in-middle Attack

- Jichen Li*, Xuanzhi Xia, Jing Chen, Xiaotie Deng

Stop Bidding! Disincentivizing Priority Gas Price Auction

- Hongyin Chen, Jichen Li*, Yubin Ke, Ittay Eyal

Networked Public Goods Games with Prosocialism

- Jichen Li*, Yukun Cheng, Xiaotie Deng

Honors and Awards

- Excellent Paper Award of CMTGA, 2023
- Best Student Paper Award of CSIAM, 2023
- Excellent Student of CFCIS, Peking University, 2023
- Excellent Doctoral Student in Theoretical Computing, CCF, 2024

Services

Conference Reviewer

AFT 2024, WINE 2024, FOCS 2024, ICDCS 2023

Conference Organization

- CSIAM Blockchain Technology and Application Forum 2023-2024(Chair of Student Track)
- IJTCS 2024(Track chair of CSIAM)
- CACC 2024 Algorithm Ability Competition(Question Setter)

Student's Work

Counselor of Peking University Undergraduate Class

Sept. 2020 – Jul. 2022

Monitor of Peking University CSCF PhD Class

Sept. 2020 – Sept. 2022