

Licheng Lin

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EDUCATION

Master of Computer Science

Huazhong University of Science and Technology

Overall GPA: 3.6/5 (TOP 20%)

Sep. 2022 - Jun. 2025

Core Courses: Advanced Distributed System; Design and Practice of Distributed Storage System; Natural Language Processing; Parallel Programming

Bachelor of Software Engineering

Wuhan University of Technology

Overall GPA: 4.0/5 (Top 5%)

Sep. 2018 - Jun. 2022

Core Courses: Linear Algebra; Operating System; Computer Numerical Analysis; Computer Organization and System Structure; Algorithm Design and Analysis; Principles of Database System

INTERNSHIP

Database Research Intern

Tencent Corporation, Online

Research Project: Automatic Query Optimization based on Hypothetical Index Nov. 2021 - May. 2022

- Addressed performance issues in relational databases, particularly index-related problems (missing, redundant, or ineffective indexes) in large-scale cloud database environments
- Leveraged hypothetical index and optimizer to evaluate index effectiveness across diverse scenarios. Designed Deep Q-Network Index Selection (DQNIS), a deep reinforcement learning algorithm that interacts with query workloads to generate rewards for index actions, and learns optimal policies to maximize performance gains. Experimental results show that, compared with heuristic methods, DQNIS achieves comparable query performance while reducing index size by 25%

RESEARCH PROJECTS

Research on Efficient and Verifiable Blockchain Analytical Query Method based on Trusted Hardware

Leader | National Natural Science Foundation of China

May. 2024 - Mar. 2025

- Designed an analytical query framework using Intel SGX, addressing the challenges of both query efficiency and verifiability of analytical queries in blockchain systems
- Proposed a two-phase execution strategy to combine the strengths of both Authenticated Data Structure (ADS) and Trusted Execution Environment (TEE). Devised an ADS-variant to enhance the efficiency of candidate data retrieval in a key-chaining manner, and leveraged a memory verification mechanism to manage secure memory more efficiently within TEE
- Completed a draft manuscript titled “EVA: An SGX-Enhanced Framework for Efficient and Verifiable Analytical Queries in Blockchain Systems”, under preparation for submission

Research on Efficient and Verifiable Blockchain Query Method based on Index Management

Key Contributor | National Natural Science Foundation of China

Sep. 2023 - Nov. 2024

- Addressed the query performance issues while ensuring the verifiability in blockchain systems, particularly under dynamic query workloads, which introduce prohibitively long construction time and excessive storage consumption
- Discovered the inherent characteristics of data distribution and block access frequency in blockchains. Utilized reinforcement learning to conduct optimal index maintenance and devised two Merkle tree structures to ensure query verifiability
- Published as “FlexIM: Efficient and Verifiable Index Management in Blockchain”

Research on Privacy-preserving Blockchain Query based on Distributed Point Function

Key Collaborator | National Key Research and Development Program of China Sep. 2022 - Nov. 2023





- Addressed the security of client query information in blockchain systems
- Devised a distributed query mechanism, which utilizes the distributed point function to divide queries into sub-queries and hide private retrieval information. Designed a noise-based distributed requests and smart contract-based asymmetric encryption to guarantee the correctness of query results
- Published as “Cloak: Hiding Retrieval Information in Blockchain Systems via Distributed Query Requests”

Research on Efficient Time Range Query Mechanism for Blockchain based on Learned-Index

Key Collaborator | National Key Research and Development Program of China Jun. 2022 - Nov. 2022

- Addressed the query efficiency and verifiability in blockchain systems, particularly focusing on the time range query for resource-constrained participants
- Exploited the temporal characteristics of blockchain data, where block heights and timestamps increase monotonically. Designed a learned-based index for high query performance and leveraged a digital signature for verifiable query across both inter-block and intra-block levels
- Published as “Efficient and Verifiable Query Mechanism of DAG Blockchain Based on Learned Index” and “Anole: A Lightweight and Verifiable Learned-based Index for Time Range Query on Blockchain Systems”

PUBLICATIONS

- Binhong Li, **Licheng Lin**, Shijie Zhang, Jianliang Xu, Jiang Xiao, Bo Li, Hai Jin. FlexIM: Efficient and Verifiable Index Management in Blockchain. *IEEE Transactions on Knowledge and Data Engineering*, vol. 37, no. 6, pp. 3399-3412, 2025. 
- Jiang Xiao, Jian Chang, **Licheng Lin**, Binhong Li, Xiaohai Dai, Zehui Xiong, Kim-Kwang Raymond Choo, Keke Gai, Hai Jin. Cloak: Hiding Retrieval Information in Blockchain Systems via Distributed Query Requests. *IEEE Transactions on Services Computing*, vol. 17, no. 6, pp. 3213-3226, 2024. 
- Jian Chang, **Licheng Lin**, Binhong Li, Jiang Xiao, Hai Jin. Efficient and Verifiable Query Mechanism of DAG Blockchain Based on Learned Index. *Journal of Computer Research and Development*, vol. 60, no. 11, pp. 2455-2468, 2023. 
- Jian Chang, Binhong Li, Jiang Xiao, **Licheng Lin**, Hai Jin. Anole: A Lightweight and Verifiable Learned-based Index for Time Range Query on Blockchain Systems. *Proceedings of the 2023 International Conference on Database Systems for Advanced Applications (DASFAA)*, 2023. 

HONORS AND AWARDS

- **Outstanding Graduate**, Huazhong University of Science and Technology 2025
- **Second-Class Academic Scholarship**, Huazhong University of Science and Technology 2023,2024
- **Merit Graduate Student**, Huazhong University of Science and Technology 2023
- **Mini-Course Travel Grant**, Hong Kong Baptist University 2023
- **First-Class Academic Scholarship**, Huazhong University of Science and Technology 2022
- **Outstanding Graduate**, Wuhan University of Technology 2022
- **National Encouragement Scholarship**, Wuhan University of Technology 2019,2020,2021
- **Merit Student**, Wuhan University of Technology 2019,2020,2021

SKILLS

Programming	Rust, Java, C, Python, Bash, LaTeX
Tools	Vim, Git, MacOS, Linux, Docker
Language	English (IELTS 7.0), Mandarin (Native)