MINGYANG ZHAO

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RESEARCH INTERESTS AND BRIEF STATEMENTS

My research mainly focuses on data security in cloud-edge systems, applied cryptography, and blockchain. Specifically, I have published papers in the field of task allocation, data sharing, data analysis, and access control in journals/conferences such as IEEE TIFS, IEEE JSAC, China Communications, and IEEE ISPA.

EDUCATION

M.E. Cyberspace Science and Technology (083900) **September 2021 - Present**
Beijing Institute of Technology, Beijing, China
Supervisor: Prof. Chuan Zhang.

B.E. Internet of Things Engineering (080905) **September 2017 - June 2021**
Beijing Institute of Technology, Beijing, China
Ranking: 2/32.

HONORS AND AWARDS

Personal Awards

- National Scholarship of China (No.BZK202017043), Ministry of Education of the P. R. China, 2020.
- National Scholarship of China, Ministry of Education of the P. R. China, 2022.
- Outstanding Student Award (No. 20182107121), Beijing Institute of Technology, 2018.
- Outstanding Student Award (No. 20192107002), Beijing Institute of Technology, 2019.
- Outstanding Student Award (No. 20202107008), Beijing Institute of Technology, 2020.
- Outstanding Graduate Award (No. 20210207038), Beijing Institute of Technology, 2021.
- Outstanding Graduation Design Paper Award, Beijing Institute of Technology, 2021.
- Outstanding Master Award, Beijing Institute of Technology, 2022.

Competition Prizes

- National First Prize (No. 2022010129), 2022 Shenzhen International Fintech Competition (Fintechathon), Shenzhen University Webank Institute of Fintech, 2022.
- Provincial First Prize, 2022 "Challenge Cup" of National College Student Entrepreneurship Plan Competition, Beijing Municipal Education Commission, 2022.
- Provincial First Prize, 2022 "JingCaiDaChuang" Beijing College Student Innovation and Entrepreneurship Competition, Beijing Municipal Education Commission, 2022.
- Provincial Third Prize (No. 2021100691), 8th China "Internet+" Innovation and Entrepreneurship Competition, Beijing Municipal Education Commission, 2022.

- Provincial Third Prize (No. 2021100687), 8th China "Internet+" Innovation and Entrepreneurship Competition, Beijing Municipal Education Commission, 2022.

BEST PAPER AWARDS

- **Best Paper Award,** "Achieving Efficient and Privacy-Preserving Arbitrary Geographic Range Query for Cloud," IEEE International Conference on Data Intelligence and Security (ICDIS), Shenzhen, China, August 2022.
- **Outstanding Paper Award,** "Achieving a Blockchain-based Privacy-preserving Quality-aware Knowledge Marketplace in Crowdsensing," IEEE International Conference on Embedded and Ubiquitous Computing (EUC), Wuhan, China, December 2022.

PUBLICATIONS

Journal Papers

J1. (JSAC 2022) C. Zhang, M. Zhao, L. Zhu, W. Zhang, T. Wu, and J. Ni, "FRUIT: A Blockchain-based Efficient and Privacy-preserving Quality-aware Incentive Scheme," IEEE Journal on Selected Areas in Communications, vol. 40, no. 12, pp. 3343 - 3357, 2022, (CCF A, IF: 13.081, JCR: Q1).

J2. (TIFS 2022) C. Zhang, M. Zhao, L. Zhu, T. Wu, and X. Liu, "Enabling Efficient and Strong Privacy-Preserving Truth Discovery in Mobile Crowdsensing," IEEE Transactions on Information Forensics and Security, vol. 17, pp. 3569 - 3581, 2022, (CCF A, IF: 7.231, JCR: Q1).

J3. (China Communications 2022) C. Zhang, M. Zhao, Y. Xu, T. Wu, Y. Li, L. Zhu, and H. Wang, "Achieving Fuzzy Matching Data Sharing for Secure Cloud-edge Communication," China Communications, vol. 19, no. 7, pp. 257 - 276, 2022, (IF: 3.170, JCR: Q2).

J4. (OJ-CS 2022) Z. Li, M. Zhao, G. Chen, C. Zhang, T. Wu, and L. Zhu, "Towards Efficient and Privacy-Preserving Versatile Task Allocation for Internet of Vehicles," IEEE Open Journal of the Computer Society, vol. 3, pp. 295 - 303, 2022.

Conference Papers

C1. (ICDIS 2022) C. Zhang, C. Hu, M. Zhao, Y. Wu, and T. Wu, "Achieving Efficient and Privacy-Preserving Arbitrary Geographic Range Query for Cloud," in proceedings of IEEE International Conference on Data Intelligence and Security (ICDIS), pp. 142 - 147, 2022.

C2. (EUC 2022) Y. Li, M. Zhao, Z. Li, W. Zhang, J. Dong, T. Wu, C. Zhang, and L. Zhu, "Achieving a Blockchain-based Privacy-preserving Quality-aware Knowledge Marketplace in Crowdsensing," in proceedings of IEEE International Conference on Embedded and Ubiquitous Computing (EUC), pp. 90 - 97, 2022.

C3. (ISPA 2022) C. Zhang, M. Zhao, T. Wu, W. Zhang, Q. Fan, and L. Zhu, "Towards Secure Bilateral Friend Query with Conjunctive Policy Matching in Social Networks," in proceedings of IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA), pp. 1 - 8, 2022.

Ongoing Papers

O1. (IEEE Wireless Communications 2023) C. Zhang, X. Luo, M. Zhao, W. Zhang, T. Wu, and L. Zhu, "Data Rights Governance for Semantic Communications in Blockchain-powered Metaverse," IEEE Wireless Communications, pp. 1 - 7, 2023, (Under review, IF: 12.777, JCR: Q1).

O2. (TMC 2023) C. Zhang, M. Zhao, Q. Fan, J. Ni, and L. Zhu, "Enabling Conjunctive Matching Data Sharing with Bilateral Access Control in Mobile Crowdsensing," IEEE Transactions on Mobile Computing, pp. 1 - 14, 2023, (Under review, IF: 6.075, JCR: Q1).

O3. (WWW 2023) C. Zhang, M. Zhao, J. Liang, X. Liu, and L. Zhu, "Fine-grained Data Ownership Assurance in Web 3.0," in proceedings of the Web Conference (WWW), pp. 1 - 10, 2023, (Under review).

PATENTS

P1. C. Zhang, M. Zhao, T. Wu, and L. Zhu, "A Privacy-preserving Content-based Task Allocation Method," No. 202111325422.2, 2021.11.10, (一种基于任务内容的隐私保护任务分配方法).

P2. C. Zhang, M. Zhao, T. Wu, and L. Zhu, "An Arbitrary Geometric Range Query-based Task Allocation Method," No. 202111404538.5, 2021.11.24, (一种支持任意地理范围查询的用户选择方法).

P3. C. Zhang, M. Zhao, T. Wu, and L. Zhu, "An Arbitrary Geometric Range Query-based Task Allocation Method with Non-linear Efficiency," No. 202210828801.1, 2022.07.15, (一种支持任意地理范围查询的非线性效率用户选择方法).

P4. C. Zhang, M. Zhao, T. Wu, and L. Zhu, "A Data Sharing Method with Bilateral Access Control and Policy Fuzzy Matching," No. 202211360060.5, 2022.11.02, (一种支持策略模糊匹配和双向访问控制的数据共享方法).

P5. M. Zhao, C. Zhang, T. Wu, and L. Zhu, "A Blockchain-based Privacy-preserving User Incentive Method," No. 202211366648.1, 2022.11.03, (一种基于区块链的隐私保护用户激励方法).

P6. C. Zhang, M. Zhao, T. Wu, and L. Zhu, "A Privacy-preserving Truth Discovery Method for Mobile Crowdsensing," No. 202211499739.2, 2022.11.29, (一种面向移动群智感知的隐私保护真值发现方法).

SELECTED PROJECT EXPERIENCES

Research on Privacy-preserving Task Allocation in Mobile Crowdsensing
National Natural Science Foundation of China — January 2023 - December 2025

- Wrote a proposal for project application.
- Published several related papers and applied several patents.
- Developed content-based and arbitrary geometric range-based privacy-preserving task allocation schemes.

Research on Large-scale Distributed Blockchain Data Security Collaboration Technology
Shandong Provincial Key Research and Development Program — May 2021 - December 2024

- Published several related papers and applied several patents.
- Developed fuzzy matching-based and conjunctive matching-based data sharing schemes with bilateral access control.

Research on Key Technologies of Privacy Protection for Mobile Crowdsensing
China Postdoctoral Science Foundation — November 2021 - November 2023

- Wrote a proposal for project application.
- Published several related papers and applied several patents.
- Developed privacy-preserving truth discovery schemes for mobile crowdsensing.

Research on Key Technologies of Cross-domain Data Security Sharing

BIT Research and Innovation Promoting Project September 2022 - September 2023

- Wrote a proposal for project application.
- Published several related papers and applied several patents.
- Developed blockchain-based privacy-preserving user incentive schemes.