

Chengjun CAI

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Research Interests

Decentralized data-driven applications, FinTech, blockchain security, and applied cryptography.

Working Experience

- Postdoctoral Researcher, **Laboratory for AI-Powered Financial Technologies (AIFT) @ City University of Hong Kong**. July 2021- present.
- Research Assistant, **City University of Hong Kong**. September 2016 - September 2017.

Education

- **City University of Hong Kong, Hong Kong SAR, China**
Ph.D. in Computer Science, July 2021
Thesis: “Towards Secure and Decentralized Data-driven Applications”
Supervisor: Professor Cong Wang (IEEE Fellow)
- **Jinan University, Guangzhou, China**
B.Eng. in Computer Science and Technology, June 2016

Selected Publications

1. **Chengjun Cai**, Lei Xu, Anxin Zhou, and Cong Wang, “Toward a Secure, Rich, and Fair Query Service for Light Clients on Public Blockchains”, accepted by *IEEE Transactions on Dependable and Secure Computing (TDSC)*, July 2021.
CCF-A journal. JCR Rank Q1. Impact factor: 7.329. Journal ranking = 4/127=3.15%.
2. **Chengjun Cai**, Yifeng Zheng, Yuefeng Du, Zhan Qin, Cong Wang, “Towards Private, Robust, and Verifiable Crowdsensing Systems via Public Blockchains”, published by *IEEE Transactions on Dependable and Secure Computing (TDSC)*, volume: 18, Issue: 4, July-Aug. 1 2021.
CCF-A journal. JCR Rank Q1. Impact factor: 7.329. Journal ranking = 4/127=3.15%.
3. **Chengjun Cai**, Jian Weng, Xingliang Yuan, Cong Wang, “Enabling Reliable Keyword Search in Encrypted Decentralized Storage with Fairness”, published in *IEEE Transactions on Dependable and Secure Computing (TDSC)*, volume: 18, Issue: 1, Jan.-Feb. 1 2021.
CCF-A journal. JCR Rank Q1. Impact factor: 7.329. Journal ranking = 4/127=3.15%.

4. Jiasi Weng, Jian Weng, **Chengjun Cai**, Hongwei Huang, Cong Wang, “Golden Grain: Building a Secure and Decentralized Model Marketplace for MLaaS”, accepted by *IEEE Transactions on Dependable and Secure Computing (TDSC)*, May 2021.
CCF-A journal. JCR Rank Q1. Impact factor: 7.329. Journal ranking = $4/127=3.15\%$.
5. Jiasi Weng, Jian Weng, Hongwei Huang, **Chengjun Cai**, Cong Wang, “FedServing: A Federated Prediction Serving Framework Based on Incentive Mechanism”, *in the 40th International Conference on Computer Communications (INFOCOM’21)*, Virtual conference, 2021.
CCF-A conference, Acceptance ratio = $252/1266 = 19.9\%$.
6. **Chengjun Cai**, Lei Xu, Anxin Zhou, Ruochen Wang, Cong Wang and Qian Wang, “EncELC: Hardening and Enriching Ethereum Light Clients with Trusted Enclaves”, *in the 39th International Conference on Computer Communications (INFOCOM’20)*, Toronto, Canada, 2020.
CCF-A conference, Acceptance ratio = $268/1354 = 19.8\%$.
7. **Chengjun Cai**, Yifeng Zheng, Anxin Zhou, Cong Wang, “Building a Secure Knowledge Marketplace over Crowdsensed Data Streams”, accepted by *IEEE Transactions on Dependable and Secure Computing (TDSC)*, Dec. 2019.
CCF-A journal. JCR Rank Q1. Impact factor: 7.329. Journal ranking = $4/127=3.15\%$.
8. **Chengjun Cai**, Yifeng Zheng, and Cong Wang, “Leveraging Crowdsensed Data Streams to Discover and Sell Knowledge: A Secure and Efficient Realization”, *in the 38th International Conference on Distributed Computing Systems (ICDCS’ 18)*, Vienna, Austria, 2018.
CCF-B conference, Acceptance ratio = $78/378 = 20.6\%$.
9. **Chengjun Cai**, Xingliang Yuan, Cong Wang, “Towards Trustworthy and Private Keyword Search in Encrypted Decentralized Storage”, *in IEEE International Conference on Communications 2017 (ICC 17’)*, Paris, France, 2017.
CCF-C conference.
10. Shengshan Hu, **Chengjun Cai**, Qian Wang, Cong Wang, Luo Xiangyang, and Kui Ren, “Searching an Encrypted Cloud Meets Blockchain: A Decentralized, Reliable and Fair Realization”, *in the 37th International Conference on Computer Communications (INFOCOM’18)*, Honolulu, HI, USA, 2018.
CCF-A conference, Acceptance ratio = $309/1606 = 19.2\%$.
11. Shengshan Hu, **Chengjun Cai**, Qian Wang, Cong Wang, Zhibo Wang, Dengpan Ye, “Augmenting Encrypted Search: A Decentralized Service Realization with Enforced Execution”, accepted by *IEEE Transactions on Dependable and Secure Computing (TDSC)*, Dec. 2019.
CCF-A journal. JCR Rank Q1. Impact factor: 7.329. Journal ranking = $4/127=3.15\%$.
12. **Chengjun Cai**, Xingliang Yuan, Cong Wang, “Hardening distributed and encrypted keyword search via blockchain”, *in the 1st IEEE Symposium on Privacy-Aware Computing (PAC’17)*, Washington DC, USA, 2017.

13. Xingliang Yuan, **Chengjun Cai**, Qian Wang, Qi Li, “Towards a ledger-assisted architecture for secure query processing over distributed iot data”, *in the 2019 IEEE Conference on Dependable and Secure Computing (IDSC)*, Hangzhou, China, 2019 (**Best Paper Award**).
14. Xingliang Yuan, **Chengjun Cai**, Cong Wang, Qian Wang, “A scalable ledger-assisted architecture for secure query processing over distributed IoT data”, *accepted by CCF Transactions on Networking (CCF-ToN)*, Oct. 2020.
15. Jing Yao, Yifeng Zheng, Yu Guo, **Chengjun Cai**, Anxin Zhou, Cong Wang, Xiaolin Gui, “A privacy-preserving system for targeted coupon service”, *accepted by IEEE Access*, August, 2019.

Selected Awards

- **Best Paper Award** for the paper “Towards a Ledger-Assisted Architecture for Secure Query Processing over Distributed IoT Data”, co-authored with Xingliang Yuan, Qian Wang, and Qi Li, in *2019 IEEE Conference on Dependable and Secure Computing (IDSC)*, HangZhou, China, 2019.
- **Chow Yei Ching School of Graduate Studies Scholarship** (2019-2020, only around 20 awardees university wide).
- **Research Tuition Scholarships** (2017-2018 and 2018-2019).
- **Outstanding Academic Performance Awards** (2017-2018, 2018-2019, and 2019-2020).
- City University of Hong Kong **PhD Scholarship** (Sept. 2017-July 2021).
- 2018 IEEE ICDCS **Student Travel Grant**.

Professional Activities

- Invited journal reviewer:
 - Proceedings of the IEEE (PIEEE)
 - IEEE Transactions on Dependable and Secure Computing (TDSC)
 - IEEE Transactions on Mobile Computing (TMC)
 - IEEE Transactions on Computers (TC)
 - IEEE Transactions on Information Forensics and Security (TIFS)
 - IEEE Transactions on Parallel and Distributed Systems (TPDS)
 - IEEE Internet of Things Journal (IoT-J)
 - IEEE Transactions on Engineering Management (TEM)
- External reviewer for conferences: IEEE INFOCOM, ICDCS, ESORICS, ICC, ACM AsiaCCS, ACSAC, RAID, and etc. Session Chair at ICC’17 CISS-02 and student helper for AsiaCCS’21.
- Founding member of the IEEE TEMS Technical Committee (TC) on Blockchain and Distributed Ledger Technologies, online at <https://www.ieee-tems.org/tc-blockchain-dlt/>.

Teaching Activities

- Tutorial lecturer for course CS6290 (Privacy-enhancing Technologies) at Fall 2019 and 2020.
- Teaching assistant for course CS5222 (Computer Networks) at Spring 2020 and 2021.
- Teaching assistant for course CS2310 (C Programming) at Spring & Fall 2018 and Spring 2019.
- Assistant for a 90-minute tutorial at 2018 IEEE Secure Development Conference (SecDev), titled “Tutorial: building secure and trustworthy blockchain applications”.

Invited Talks

- “When Crowdsensing Meets Blockchain: Challenges, Applications, and Beyond”, Raising Star of CS Young Scholar Forum at Northwestern Polytechnical University via Tencent Meeting on 10th July 2021.
- “When Private Search Meets Blockchains”, seminar at Monash via Zoom on 14th September 2020.
- Paper presentation at IEEE INFOCOM’20, virtual via Zoom.
- ITF Project (“Enabling Trustworthy and Privacy-preserving Search Services in Encrypted Blockchain Applications”) presentation and demo at SCUT visit, November, 2018.
- CityU information day demo on 13rd October 2018.
- CityU-CS Research Student Workshop, Hong Kong, China, June 2018.
- Paper presentation at IEEE ICDCS’18, Vienna, Austria.
- Paper presentation at IEEE ICC’17, Paris, France.

Selected Involved Projects

- “Enabling Trustworthy and Privacy-preserving Search Services in Encrypted Blockchain Applications”, HK ITF/ITSP Tier 3 (100% from ITC). Duration: 1 January 2018 - 30 June 2019.
- “Enabling Privacy-preserving Content-aware Services in Cloud Social Media", National Natural Science Foundation of China (NSFC) General Grant. Duration: 1 January 2016 - 31 Dec. 2019.
- “Achieving Similarity Join Services for Outsourced Large Encrypted Datasets”, HK ITF/ITSP Tier 3 (100% from ITC). Duration: 1 July 2016 - 31 Dec. 2017.

Patents

- System and Method for Processing Data and Managing Information, WANG, C., CAI, C. & ZHENG, Y., 10 Jul 2018, (Filed) Priority No. 16/030,980.
- An Electronic Storage System and a Method of Data Management, WANG, C., CAI, C. & YUAN, X., 6 Jun 2017, (Filed) Priority No. 15/614,905.