

# CHAO LI

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## WORK EXPERIENCE

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### Associate Professor

2023 - Present

School of Computer and Information Technology  
Beijing Jiaotong University

### Assistant Professor

2019 - 2022

School of Computer and Information Technology  
Beijing Jiaotong University

## EDUCATION

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### University of Pittsburgh, US

2014 - 2019

PhD in Information Science with a concentration in Telecommunications  
School of Computing and Information  
Advisor: Prof. Balaji Palanisamy

### Imperial College London, UK

2012 - 2013

MSc in Communication and Signal Processing

### University of Edinburgh, UK

2010 - 2012

BEng in Electronics and Electrical Engineering  
Second part of the 3+2 Project  
First Class Honours

### Dalian University of Technology, CN

2007 - 2010

BEng in Electronics and Electrical Engineering  
First part of the 3+2 Project

## RESEARCH INTERESTS

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### Blockchain, Web 3.0, Data Privacy, Privacy-Preserving Machine Learning

I am interested in data privacy and security in general. The major theme of my research is to address privacy and security challenges through rigorous techniques such as blockchain and differential privacy.

## HONORS/AWARDS

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Best Demo Award

IEEE ICDCS 2024

Distinguished Paper Award

ACM CCS 2023

Distinguished Paper Award

China Computer Federation 2023

Best Paper Award

BigData Congress 2018

Best Paper Award

IEEE BigData Congress 2017

## PUBLICATIONS

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### Journal Publications

- [TSC] **Chao Li** and Balaji Palanisamy. “T-Watch: Towards Timed Execution of Private Transaction in Blockchains.” *IEEE Transactions on Services Computing*, 17(3), 1279-1292, 2024.
- [TDSC] Guorong Chen, **Chao Li**, Wei Wang, Li Duan, Bin Wang, Zhen Han and Xiangliang Zhang. “FairReward: Towards Fair Reward Distribution using Equity Theory in Blockchain-based Federated Learning.” *IEEE Transactions on Dependable and Secure Computing*, 2024.

3. [TDSC] Xiangrui Xu, Wei Wang, Zheng Chen, Bin Wang, **Chao Li**, Li Duan, Zhen Han, and Yufei Han. “Finding the PISTE: Towards Understanding Privacy Leaks in Vertical Federated Learning Systems.” IEEE Transactions on Dependable and Secure Computing, 2024.
4. [TDSC] Runhua Xu, Bo Li, **Chao Li**, James Joshi, Shuai Ma, Tyler Zhou, Jin Dong and Jianxin Li. “TAPFed: Threshold Secure Aggregation for Privacy-Preserving Federated Learning.” IEEE Transactions on Dependable and Secure Computing, 2024.
5. [TWEB] **Chao Li**, Runhua Xu, Balaji Palanisamy, Li Duan, Meng Shen, Jiqiang Liu, Wei Wang. “Blockchain Takeovers in Web 3.0: An Empirical Study on the TRON-Steem Incident.” ACM Transactions on the Web, 2024.
6. [TDSC] Runhua Xu, **Chao Li** and James Joshi. “Blockchain-based Transparency Framework for Privacy Preserving Third-party Services.” IEEE Transactions on Dependable and Secure Computing, 20 (3), 2302-2313, 2023.
7. [TSC] **Chao Li** and Balaji Palanisamy. “SilentDelivery: Practical Timed-delivery of Private Information using Smart Contracts.” IEEE Transactions on Services Computing, 15 (6), 3528-3540, 2022.
8. [TDSC] Runhua Xu, James B.D. Joshi and **Chao Li**. “NN-EMD: Efficiently Training Neural Networks using Encrypted Multi-sourced Datasets.” IEEE Transactions on Dependable and Secure Computing, 19 (4), 2807-2820, 2022.
9. [ComCom] **Chao Li** and Balaji Palanisamy. “Reversible spatio-temporal perturbation for protecting location privacy.” Elsevier Computer Communications 135, 16-27, 2019.
10. [COSE] Lei Jin, **Chao Li**, Balaji Palanisamy and James Joshi. “k-Trustee: Location injection attack-resilient anonymization for location privacy.” Elsevier Computers & Security 78, 212-230, 2018.
11. [IoTJ] **Chao Li** and Balaji Palanisamy. “Privacy in Internet of Things: from Principles to Technologies.” IEEE Internet of Things Journal 6 (1), 488-505, 2018.

## Conference Publications

12. [CCS’23] **Chao Li**, Balaji Palanisamy, Runhua Xu, Li Duan, Jiqiang Liu, Wei Wang. “How Hard is Takeover in DPoS Blockchains? Understanding the Security of Coin-based Voting Governance.” ACM SIGSAC Conference on Computer and Communications Security, Copenhagen, Denmark. (*Received Distinguished Paper Award*)
13. [BigDataSec’23] **Chao Li**, Balaji Palanisamy, Runhua Xu, and Li Duan. “Cross-Consensus Measurement of Individual-level Decentralization in Blockchains.” In 2023 IEEE 9th Intl Conference on Big Data Security on Cloud, New York, USA.
14. [BigDataSec’23] Rui Sun, **Chao Li**, Jingyu Liu, and Xingchen Sun. “Exploring Downvoting in Blockchain-based Online Social Media Platforms.” In 2023 IEEE 9th Intl Conference on Big Data Security on Cloud, New York, USA.
15. [HPC’22] Yufang Wu, Guorong Chen, Yuhao Liu, **Chao Li**, Mingqing Hu, and Wei Wang. “TBFL: A Trusted Blockchain-based Federated Learning System.” In 2022 IEEE 24th Int Conf on High Performance Computing & Communications, Chengdu, China.
16. [CODASPY’21] **Chao Li**, Balaji Palanisamy, Runhua Xu, Jinlai Xu and Jingzhe Wang. “SteemOps: Extracting and Analyzing Key Operations in Steemit Blockchain-based Social Media Platform.” Proc. of 11th ACM Conference on Data and Application Security and Privacy, Virtual Event, USA.

17. [SRDS'20] **Chao Li**, Balaji Palanisamy, Runhua Xu, Jian Wang and Jiqiang Liu. "NF-Crowd: Nearly-free Blockchain-based Crowdsourcing." Proc. of 39th IEEE International Symposium on Reliable Distributed Systems, Shanghai, China.
18. [ICWS'20] **Chao Li** and Balaji Palanisamy. "EventWarden: A Decentralized Event-driven Proxy Service for Outsourcing Arbitrary Transactions in Ethereum-like Blockchains." Proc. of 27rd IEEE International Conference on Web Services, Beijing, China.
19. [ICBC'20] **Chao Li** and Balaji Palanisamy. "Comparison of Decentralization in DPoS and PoW Blockchains." Proc. of 2020 International Conference on Blockchain, Honolulu, Hawaii, USA.
20. [CIC'19] Balaji Palanisamy and **Chao Li**. "Self-emerging Data Infrastructures." Proc. of 5th IEEE International Conference on Collaboration and Internet Computing, Los Angeles, California, USA.
21. [ICDCS'19] Runhua Xu, James BD Joshi, and **Chao Li**. "CryptoNN: Training Neural Networks over Encrypted Data." Proc. of 39th IEEE International Conference on Distributed Computing Systems, Dallas, Texas, USA.
22. [WebSci'19] **Chao Li** and Balaji Palanisamy. "Incentivized Blockchain-based Social Media Platforms: A Case Study of Steemit." Proc. of 11th ACM International Web Science Conference, Boston, MA, USA.
23. [HiPC'18] **Chao Li** and Balaji Palanisamy. "Decentralized Privacy-preserving Timed Execution in Blockchain-based Smart Contract Platforms." Proc. of 25th IEEE International Conference on High Performance Computing, Data, and Analytics, Bengaluru, India.
24. [SRDS'18] **Chao Li** and Balaji Palanisamy. "Decentralized release of self-emerging data using smart contracts." Proc. of 37th IEEE International Symposium on Reliable Distributed Systems, Salvador, Brazil.
25. [BigData Congress'18] **Chao Li**, Balaji Palanisamy and Prashant Krishnamurthy. "Reversible Data Perturbation Techniques for Multi-level Privacy-preserving Data Publication." Proc. of 7th International Congress on Big Data, Seattle, USA.  
(*Received Best Paper Award*)
26. [Big Data'17] Balaji Palanisamy, **Chao Li** and Prashant Krishnamurthy, "Group Privacy-aware Disclosure of Association Graph Data." Proc. of 5th IEEE International Conference on Big Data, Boston, USA.
27. [Cloud'17] **Chao Li** and Balaji Palanisamy, "Emerge: Self-emerging Data Release using Cloud Data Storage." Proc. of 10th IEEE International Conference on Cloud Computing, Honolulu, USA.
28. [BigData Congress'17] **Chao Li**, Balaji Palanisamy and James Joshi, "Differentially Private Trajectory Analysis for Points-of-Interest Recommendation." Proc. of 6th IEEE International Congress on Big Data, Honolulu, USA.  
(*Received Best Paper Award*)
29. [ICDCS'17] **Chao Li** and Balaji Palanisamy, "Timed-release of Self-emerging Data using Distributed Hash Tables." Proc. of 37th IEEE International Conference on Distributed Computing Systems, Atlanta, USA.
30. [ICWS'16] **Chao Li**, Balaji Palanisamy and James Joshi, "SocialMix: Supporting Privacy-aware Trusted Social Networking Services." Proc. of 23rd IEEE International Conference on Web Services, San Francisco, USA.
31. [NSS'15] **Chao Li** and Balaji Palanisamy, "De-anonymizable Location Cloaking for Privacy-controlled Mobile Systems." Proc. of 9th International Conference on Network and System Secu-

rity, New York, USA.

32. [CIKM'15] **Chao Li** and Balaji Palanisamy, "ReverseCloak: Protecting Multi-level Location Privacy over Road Networks." Proc. of 24th ACM International Conference on Information and Knowledge Management, Melbourne, Australia.

### Workshop Publications

33. [BSCI'23] **Chao Li**, Runhua Xu, and Li Duan. "Liquid democracy in DPoS blockchains." In Proceedings of the 5th ACM International Symposium on Blockchain and Secure Critical Infrastructure, Melbourne, Australia.
34. [ICDEW'21] Qinwei Lin, **Chao Li**, Xifeng Zhao and Xianhai Chen. "Measuring Decentralization in Bitcoin and Ethereum using Multiple Metrics and Granularities." In 2021 IEEE 37th International Conference on Data Engineering Workshops.
35. [ICDEW'19] **Chao Li**, Balaji Palanisamy and Runhua Xu. "Scalable and Privacy-preserving Design of On/Off-chain Smart Contracts." In 2019 IEEE 37th International Conference on Data Engineering Workshops.

### Conference Posters, System Demonstrations and Tutorials

36. [ICDCS'24] Jingzhe Wang, Haocheng Wang, **Chao Li** and Balaji Palanisamy,. "Timed Data Release using Smart Contracts." In 44th IEEE International Conference on Distributed Computing System, Jersey City, New Jersey, USA . (System Demonstration)  
*(Received Best Demo Award)*
37. [ICWSM'23] **Chao Li**, Runhua Xu, and Li Duan. "Characterizing Coin-Based Voting Governance in DPoS Blockchains." In Proceedings of the International AAAI Conference on Web and Social Media, Limassol, Cyprus. (Poster)
38. [ICWS'23] Jiasheng Cui, Li Duan, Wei Ni, **Chao Li**. "Secure Cross-domain Medical Data Sharing based on Distributed Cloud and Blockchain Services." In 20th IEEE International Conference on Web Services, Chicago, IL, USA. (Poster)
39. [ICBC'23] Jingyu Liu, Lu Liu, Zijing Li, and **Chao Li**. "DeMonitor: Monitoring Decentralization in Blockchains using BigQuery." In 2023 IEEE International Conference on Blockchain and Cryptocurrency, Dubai, United Arab Emirates. (System Demonstration)
40. [ICISS'20] Balaji Palanisamy and **Chao Li**. "Timed data release using Blockchain smart contracts." In 16th International Conference on Information Systems Security, Patna, India. (Tutorial)
41. [ICDCS'17] **Chao Li**, Balaji Palanisamy, Aravind A. Kalaivanan and Sriram Raghunathan, "ReverseCloak: A Reversible Multi-level Location Privacy Protection System." Proc. of 37th IEEE International Conference on Distributed Computing Systems, Atlanta, USA. (System Demonstration)
42. [ICDCS'17] Balaji Palanisamy, **Chao Li** and Prashant Krishnamurthy, "Group Differential Privacy-preserving Disclosure of Multi-level Association Graphs." Proc. of 37th IEEE International Conference on Distributed Computing Systems, Atlanta, USA. (Poster)

## PATENTS

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### United States Patents

- Wei Wang, Guorong Chen, Pengrui Liu, Xiaoting Lyu, Xiangrui Xu, **Chao Li**, Li Duan, Dawei Zhang, Jiqiang Liu, Yi Jin, Yidong Li, "Method for distributing equity reward for federated learning based on equity theory", United States Patent, No. US11935137B2, 2024.

## GRANTS/ FUNDING

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**National Natural Science Foundation of China** *2023 - Present*  
PI, Grant No. 62202038

**Beijing National Science Foundation** *2022 - 2023*  
PI, Grant No. M22039

**National Key R&D Program of China** *2023 - Present*  
Co-PI, Grant No. 2023YFB2703800

**National Key R&D Program of China** *2023 - Present*  
Co-PI, Grant No. 2023YFB2704100

**National Key R&D Program of China** *2020 - 2023*  
Co-PI, Grant No. 2020YFB2103800

## TEACHING EXPERIENCE

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### Courses

Blockchain *Fall 2020 - Present*  
Big Data Security and Data Privacy Protection *Spring 2023 - Present*  
Computer Forensics *Fall 2021 - Present*  
Financial Data Security *Fall 2020*

### Guest Lecturer

Financial Data Security (Instructor: Prof. Wenjia Niu). *Fall 2019*  
Cloud Computing (Instructor: Prof. Balaji Palanisamy). *Spring 2018*  
Information Security and Privacy (Instructor: Prof. Balaji Palanisamy). *Spring 2018*

### Teaching Assistant

Network Security (Instructor: Prof. Prashant Krishnamurthy) *Spring 2017*  
Computer Security (Instructor: Prof. Balaji Palanisamy) *Fall 2016*  
Intro to Wireless Networks (Instructor: Prof. David Tipper) *Summer 2016, Spring 2015*  
Computer Networking (Instructor: Usman Anjum) *Spring 2016*  
Network Performance (Instructor: Prof. David Tipper) *Fall 2015, Fall 2014*

### Research Assistant

NSF project 'Cyber Training: CDL: Security-Assured Data Science Workforce Development in Pennsylvania', PI: Prof. Balaji Palanisamy. *2017-2019*

## PROFESSIONAL SERVICES

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### Journal Youth Editorial Board Member

ELSP Blockchain

### Journal Guest Editor

IET Blockchain (Special Issue on: Security, Privacy, and Trust in Blockchain and Web 3.0)

### Journal reviews

IEEE Transactions on Services Computing (TSC)  
IEEE Transactions on Dependable and Secure Computing (TDSC)  
IEEE Transactions on Information Forensics and Security (TIFS)  
IEEE Transactions on Parallel and Distributed Systems (TPDS)  
IEEE Transactions on Network Science and Engineering (TNSE)  
ACM Transactions on Privacy and Security (TOPS)

ACM Transactions on Internet Technology (TOIT)  
Elsevier Computers & Security  
Journal of Network and Computer Applications  
International Journal of Cooperative Information Systems

#### **Conference Program Committees**

ACM CIKM 2023, 2024  
IEEE BigData 2021, 2022, 2023, 2024  
ICA3PP 2023, 2024  
IEEE MSN 2024  
ACM BSCI 2024  
IEEE TPS 2022, 2023, 2024  
IEEE CIC 2024  
ICBC 2020, 2021, 2022, 2023  
METAVERSE 2022, 2023  
BlockDM 2021  
SERVICES 2020, 2021

#### **Conference External Reviewers**

IEEE ICDCS 2017, 2019  
WWW 2019  
IEEE Big Data 2016, 2017  
ACM CIKM 2015, 2016, 2017, 2018  
ACM CODASPY 2015, 2017  
IEEE CloudCom 2015

#### **Conference Volunteers**

IEEE ICDCS 2017  
IEEE IRI 2016, 2017  
IEEE CIC 2016

### **INVITED TALKS**

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CCF China Blockchain Technology and Application Summit Forum, 2024  
National Blockchain Technology Innovation Center, 2024  
InForSec Cyberspace Security Academic Conference, 2024  
Fourth Xia Peisu Young Scholars Forum, 2023  
Greater Bay Area Computer Innovation Technology Conference, 2023  
CCF China Blockchain Technology and Application Summit Forum, 2023  
CCF China National Computer Congress (CNCC), 2023  
CCF China Digital Service Conference (China Service), 2023  
CCF China Blockchain Technology Conference (CBCC), 2023