

# Shan Jiang

Postdoctoral Fellow

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## EDUCATION

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### The Hong Kong Polytechnic University

Ph.D. in Computer Science

Thesis: High-performance Packing and Searching for Blockchain-based Big Data Sharing

Supervisor: Prof. Jiannong Cao

Hong Kong SAR

Jul 2016 – Jun 2021

### Imperial College London

Visiting Student in Department of Computing

Advisor: Prof. Julie A. McCann

London, UK

Nov 2018 – Mar 2019

### Sun Yat-sen University

B.Sc. in Computer Science and Technology

Guangzhou, China

Sep 2011 – Jun 2015

## PROFESSIONAL EXPERIENCES

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### Postdoctoral Fellow

Department of Computing, The Hong Kong Polytechnic University

Advisor: Prof. Jiannong Cao

Jul 2021 – Present

### Research Assistant

Department of Computing, The Hong Kong Polytechnic University

Advisor: Prof. Jiannong Cao

Apr 2015 – Jun 2016

## RESEARCH INTERESTS

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- Distributed Systems and Blockchain
- Blockchain-based Big Data Sharing
- Blockchain as a Service

## PUBLICATIONS

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\* means corresponding author

1. Hanqing Wu, **Shan Jiang\***, Jiannong Cao  
High-efficiency Blockchain-based Supply Chain Traceability  
Under *Major Revision* in *IEEE Transactions on Intelligent Transportation Systems*
2. **Shan Jiang**, Jiannong Cao, Hanqing Wu  
Reliable and Efficient IoT Data Management via Blockchain-based Searchable Encryption  
Manuscript submitted to *IEEE Internet of Things Journal*
3. **Shan Jiang**, Juncen Zhu, Jiannong Cao, Hanqing Wu  
Big Data Sharing: A Comprehensive Survey  
Manuscript submitted to *IEEE Transactions on Big Data*
4. **Shan Jiang**, Jiannong Cao, Hanqing Wu  
Dynamic Ring Signature: Achieving Provable Anonymity in Blockchain-based E-voting  
Manuscript submitted to *ACM Transactions on Software Engineering and Methodology*

5. Juncen Zhu, Jiannong Cao, Divya Saxena, **Shan Jiang\***, Houda Ferradi  
Blockchain-empowered Federated Learning: Challenges, Solutions and Future Directions  
Manuscript submitted to *ACM Computing Surveys*
6. Houda Ferradi, Jiannong Cao, **Shan Jiang\***, Divya Saxena, Yinfeng Cao  
Security and Privacy in Big Data Sharing: State-of-the-Art and Research Directions  
Manuscript submitted to *ACM Computing Surveys*
7. **Shan Jiang**, Jiannong Cao, Hanqing Wu, Yanni Yang  
Fairness-based Packing of Industrial IoT Data in Permissioned Blockchains  
In *IEEE Transactions on Industrial Informatics 2020*, doi:10.1109/TII.2020.3046129
8. **Shan Jiang**, Jiannong Cao, Juncen Zhu, Yinfeng Cao  
PolyChain: a Generic Blockchain as a Service Platform  
To appear in *BlockSys 2021* (**Oral Presentation and Best Paper Award**)
9. **Shan Jiang**, Junbin Liang, Jiannong Cao, Jia Wang, Jinlin Chen, and Zhixuan Liang  
Decentralized Algorithm for Repeating Pattern Formation by Multiple Robots  
In *IEEE ICPADS 2019* (**Oral Presentation**), doi:10.1109/ICPADS47876.2019.00090
10. **Shan Jiang**, Jiannong Cao, Julie A. McCann, Yanni Yang, Yang Liu, Xiaoqing Wang, Yuming Deng  
Privacy-preserving and Efficient Multi-keyword Search Over Encrypted Data on Blockchain  
In *IEEE Blockchain 2019* (**Oral Presentation**), doi:10.1109/Blockchain.2019.00062
11. **Shan Jiang**, Jiannong Cao, Hanqing Wu, Yanni Yang, Mingyu Ma, Jianfei He  
BloCHIE: a BLOCKchain-based platform for Healthcare Information Exchange  
In *IEEE SMARTCOMP 2018* (**Citations: 158**), doi:10.1109/SMARTCOMP.2018.00073
12. **Shan Jiang**, Jiannong Cao, Jia Wang, Milos Stojmenovic, Julien Bourgeois  
Uniform Circle Formation by Asynchronous Robots: A Fully-Distributed Approach  
In *IEEE ICCCN 2017* (**Oral Presentation**), doi:10.1109/ICCCN.2017.8038468
13. **Shan Jiang**, Jiannong Cao, Yang Liu, Jinlin Chen, Xuefeng Liu  
Programming Large-Scale Multi-Robot System with Timing Constraints  
In *IEEE ICCCN 2016* (**Oral Presentation**), doi:10.1109/ICCCN.2016.7568563
14. **Shan Jiang**, Junbin Liang, Jiannong Cao, Rui Liu  
An ensemble-level programming model with real-time support for multi-robot systems  
In *IEEE PerCom Workshops 2016* (Demo), doi:10.1109/PERCOMW.2016.7457070
15. Xiulong Liu, Jiuwu Zhang, **Shan Jiang**, Yanni Yang, Keqiu Li, Jiannong Cao, Jiangchuan Liu  
Accurate Localization of Tagged Objects Using Mobile RFID-augmented Robots  
In *IEEE Transactions on Mobile Computing 2019*, doi:10.1109/TMC.2019.2962129
16. Yuvraj Sahni, Jiannong Cao, **Shan Jiang**  
Middleware for Multi-Robot System  
*Mission-Oriented Sensor Networks and Systems: Art and Science*, Springer, doi:10.1007/978-3-319-92384-0\_18
17. Hanqing Wu, Jiannong Cao, Yanni Yang, Cheung Leong Tung, **Shan Jiang**, Bin Tang, Yang Liu, Xiaoqing Wang, Yuming Deng  
Data Management in Supply Chain Using Blockchain: Challenges and a Case Study  
In *IEEE ICCCN 2019*, doi:10.1109/ICCCN.2019.8846964
18. Jia Wang, Jiannong Cao, Milos Stojmenovic, Miao Zhao, Jinlin Chen, **Shan Jiang**  
Pattern-RL: Multi-robot Cooperative Pattern Formation via Deep Reinforcement Learning  
In *IEEE ICMLA 2019*, doi:10.1109/ICMLA.2019.00040
19. Xiulong Liu, Jiannong Cao, Yanni Yang, **Shan Jiang**  
CPS-Based Smart Warehouse for Industry 4.0: A Survey of the Underlying Technologies  
*Computers*, 2018, doi:10.3390/computers7010013

20. Hanqing Wu, Jiannong Cao, **Shan Jiang**, Ruosong Yang, Yanni Yang, Jianfei He  
TSAR: a fully-distributed Trustless data ShARing platform  
In *IEEE SMARTCOMP 2018* (Workshop), doi:10.1109/SMARTCOMP.2018.00028
21. Jia Wang, Jiannong Cao, **Shan Jiang**  
Fault-Tolerant Pattern Formation by Multiple Robots: A Learning Approach  
In *IEEE SRDS 2017* (PhD Forum), doi:10.1109/SRDS.2017.42

## PROFESSIONAL ACTIVITIES

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### Program committee:

- The 3rd International Conference on Blockchain (Blockchain 2020)

### Referee for submissions to journals:

- ACM Computing Surveys
- IEEE Transactions on Intelligent Transportation Systems
- IEEE Transactions on Services Computing
- IEEE Network
- IEEE Transactions on Cloud Computing
- IEEE Transactions on Big Data
- IEEE Internet of Things Journal
- IEEE Journal of Biomedical and Health Informatics
- Journal of Parallel and Distributed Computing
- Information Processing & Management
- Computers & Security
- Computer Communications
- Journal of Systems Architecture
- Peer-to-Peer Networking and Applications
- Ad Hoc & Sensor Wireless Networks
- IEEE/CAA Journal of Automatica Sinica
- Blockchain: Research and Applications

### Reviewer for submissions to conferences:

- ICDCS'20, COMPSAC'20
- ICDCS'19, PerCom'19
- PerCom'18
- MobiQuitous'17, ICDCS'17, ICC'17, PerCom'17

## TEACHING EXPERIENCES

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- |  |             |
|--|-------------|
| • Teaching Assistant (Lecturer: Prof. Jiannong Cao)<br>Service and Cloud Computing (COMP4442), The Hong Kong Polytechnic University                            | Spring 2020 |
| • Teaching Assistant (Lecturer: Dr. Jing Li and Dr. Jesper Jansson)<br>Advanced Topics in Computer Algorithms (COMP6701), The Hong Kong Polytechnic University | Fall 2019   |
| • Assistant Coach<br>ACM-ICPC Team of The Hong Kong Polytechnic University   | Spring 2018 |
| • Teaching Assistant (Lecturer: Prof. Jiannong Cao)<br>Distributed Computing (COMP5325), The Hong Kong Polytechnic University                                  | Fall 2017   |
| • Teaching Assistant (Lecturer: Prof. Jiannong Cao)<br>Programming Fundamentals (COMP1011), The Hong Kong Polytechnic University                               | Spring 2017 |

- Teaching Assistant (Lecturer: Dr. Lei Yang) Fall 2016  
Computer Communications Networks (COMP312), The Hong Kong Polytechnic University
- Teaching Assistant Fall 2014  
Algorithm Design and Analysis, Sun Yat-sen University

## HONORS & AWARDS

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- Best Paper Award Aug 2021  
2021 International Conference on Blockchain and Trustworthy Systems (BlockSys'2021)
- Third Runner-up (4/32) Jun 2019  
ACM-HK Programming Contest 2019
- The Third Place (3/10) Jun 2019  
COMP Annual Research Day 2019, The Hong Kong Polytechnic University
- Second Runner-up (3/33) Jun 2017  
ACM-HK Programming Contest 2017
- Silver Medal (32/182) Nov 2014  
Beijing Regional Contest, The 39th ACM-Asia Programming Contest, Beijing, China
- Second-class Scholarship Nov 2014  
Outstanding Student, Sun Yat-sen University
- The Fourth Place (4/147) May 2014  
ACM-Guangdong Provincial Programming Contest 2014, Guangzhou, China
- Third-class Scholarship Nov 2012  
Outstanding Student, Sun Yat-sen University