# Jie Xu

*Email*: jiexu49-c@my.cityu.edu.hk
*Website*: `https://xujie.ink`

## Research Interests

- **Data Privacy and Security**
- **Blockchain and Distributed Systems**

## Education

**City University of Hong Kong (CityU)** *Sep. 2020 - now*
PhD in Computer Science
Advisor: professor Xiaohua Jia (IEEE fellow)

**University of Science and Technology of China (USTC)** *Sep. 2017 - Jul. 2020*
MSc in Electronics and Communication Engineering
Advisor: professor Peiling Hong and professor Kaiping Xue (IET fellow)

**University of Science and Technology of China (USTC)** *Sep. 2013 - Jul. 2017*
**Major**: Bachelor of Engineering in Information Security
**Minor**: Bachelor of Literature in Communication

## Publications and Patents

- Jie Xu, Yingying Cheng, Cong Wang and Xiaohua Jia "Occam: A Secure and Adaptive Scaling Protocol for Permissionless Blockchain," in Proceedings of the 41st IEEE International Conference on Distributed Computing Systems (ICDCS 2021), July 7-10, 2021. (acceptance ratio = 19.8%) (Full paper)
- Jie Xu, Kaiping Xue, Hangyu Tian, Jianan Hong, David S.L. Wei, and Peilin Hong "An Identity Management and Authentication Scheme Based on Redactable Blockchain for Mobile Networks," IEEE Transactions on Vehicular Technology, vol. 69, no. 6, pp. 6688-6698, 2020. (Full paper)
- Jie Xu, Kaiping Xue, Shaohua Li, Jianan Hong, Peilin Hong, and Nenghai Yu "Healthchain: A Blockchain-based Privacy Preserving Scheme for Large-scale Health Data," IEEE Internet of Things Journal, vol. 6,no. 5, pp. 8770-8781, 2019. (Full paper)
- Jie Xu, Kaiping Xue, Qingyou Yang, and Peilin Hong, "PSAP: Pseudonym-based Secure Authentication Protocol for NFC Applications," IEEE Transactions on Consumer Electronics, vol. 64,no. 1, pp. 83-91, 2018. (Full paper)
- Xingyi Luo, Kaiping Xue,Jie Xu, Qibin Sun, and Yongdong Zhang, "Blockchain-based Secure Data Aggregation and Distributed Power Dispatching for Microgrids," IEEE Transactions on Smart Grid, vol. 12, no. 6, pp. 5268 - 5279, 2021. (Full paper)
- Hangyu Tian, Kaiping Xue, Xinyi Luo, Shaohua Li, Jie Xu, Jianqing Liu, Jun Zhao, David S.L. Wei, "Enabling Cross-chain Transactions: A Decentralized Cryptocurrency Exchange Protocol," IEEE Transactions on Information Forensics and Security, vol. 16, pp. 3928 - 3941, 2021. (Full paper)
- Qingyou Yang, Kaiping Xue, Jie Xu, Jiajie Wang, Fenghua Li, and Nenghai Yu, "AnFRA: Anonymous and Fast Roaming Authentication for Space Information Network," IEEE Transactions on Information Forensics and Security, vol. 14, no. 2, pp. 486-497, 2019. (Full paper)
- Peixuan He, Kaiping Xue, Jie Xu, Qiudong Xia, Jianqing Liu, Hao Yue, "Attribute-based Accountable Access Control for Multimedia Content with In-network Caching," in Proceedings of the 2019 IEEE International Conference on Multimedia and Expo (ICME 2019). (Full paper)

· Wei Meng, Kaiping Xue, Jie Xu, Jianan Hong, and Nenghai Yu, "Low-Latency Authentication Against Satellite Compromising for Space Information Network," in Proceeding of the 15th IEEE International Conference on Mobile Ad Hoc and Sensor Systems (MASS 2018). IEEE, 2018, pp. 237-244. (Best paper Runner-up Award)
· Kaiping Xue, Yongjin Ma, Jianan Hong, Jie Xu, Qingyou Yang, "Secure and Efficient Token Based Roaming Authentication Scheme for Space-earth Integration Network," Journal on Communications, vol. 39, no. 5, pp. 48-58, 2018. (Full paper)
· Patent: "Anonymous and Fast Roaming Authentication for Space Information Network" (Details)

## Professional Experience

**Project: Future Network Architecture and Protocol Evolution** *Mar. 2018 - Sep. 2020*

· Proposed Healthchain, a large-scale health data privacy preserving scheme, where data are encrypted to conduct fine-grained access control.
· Designed a self-sovereign identity management scheme in distributed trust environment, which allows users to control their identity and personally identifying information.
· Proposed a distributed cryptocurrency trading scheme to solve the problem of centralized exchanges, and deployed it on Ethereum test network.

**Project: Information security technology for space-air-ground integration network** *Dec. 2016 - Feb. 2018*

· Provide a new authentication system model of the space information network, and proposed a secure and efficient access authentication scheme.
· Strengthened the authentication function of LEO satellites, and proposed a two-way token based roaming authentication scheme and a fast roaming authentication scheme.

**Project: Lightweight remote communication on data link layer** *Apr. 2016 - May. 2017*

· Constructed a remote low-power wireless information collection platform based on long-distance communication chips SX1278.
· Designed a data link layer protocol for self-organizing modules to reduce energy consumption.
· Implemented an APP to allow the user to control the sensor node to collect data.

**Project: Secure and reliable control mechanism of smart home** *Sep. 2015 - Oct. 2016*

· Proposed a scheme in which the home data is encrypted and transmitted to the cloud storage, and the mobile terminal can control the smart home device at the same time.
· Designed a secure authentication and key agreement protocol for preserving privacy in NFC and provide the formal security verification using AVISPA and formal security analysis using ROR model.

## Other Experience

· Visiting Student at Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, 2016
· Visiting Student at Changchun Institute of Chinese Academy of Sciences, July 2015

## Honors and Awards

· CityU Presidential PhD Scholarship
· National Scholarship for Graduate Student (Top 1%, National, 2019)
· Best Paper Runner Up Award of IEEE MASS 2018 (Top 1%, International)
· Outstanding Graduate Student Scholarship of USTC 2017, 2018, 2019
· Excellent Graduation Thesis of USTC 2017
· Honor of "Wang Daheng Talent Program in Optical and Mech-electronical Science and Technology"