

# Xiaokuan Zhang

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George Mason University  
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## Education

**Ph.D. in Computer Science and Engineering**

**The Ohio State University**

*Advisor: Prof. Yinqian Zhang*

Aug. 2015 - Dec. 2021

**B.S. in Computer Science and Technology**

**Shanghai Jiao Tong University**

*Advisor: Prof. Haojin Zhu*

Sep. 2011 - Jun. 2015

## Work Experience

**Assistant Professor**

**George Mason University**

*Fairfax, VA*

Aug. 2022 - present

**Postdoctoral Researcher**

**Georgia Institute of Technology**

*Atlanta, GA*

Nov. 2021 - Aug. 2022

**Research Intern**

**Microsoft Research**

*Redmond, WA*

May 2019 - Aug. 2019

**Software Engineering Intern**

**Google Inc.**

*Mountain View, CA*

May 2018 - Aug. 2018

## Honors & Awards

- Springer Cybersecurity *Best Practical Research Paper* Award 2024, 2025
- XR Security Workshop Best Paper Honorable Mention Award 2025
- ACM CCS Distinguished Paper Award 2024
- ACM SIGSOFT Distinguished Paper Award 2024
- Ethereum Foundation Academic Round Grant 2023(x2), 2024
- Norton (Symantec) Graduate Fellowship (*three awardees worldwide*) 2020
- Graduate Research Award, CSE Department, Ohio State University 2020
- Nomination for Google Research Fellowship, CSE Department, Ohio State University 2019
- Top 10 Finalists of CSAW Applied Security Research Competition 2016, 2018, 2022

- Outstanding Graduate, Shanghai Jiao Tong University 2015
- Academic Excellence Scholarship, Shanghai Jiao Tong University 2012, 2014
- Outstanding Student Cadre, Shanghai Jiao Tong University 2013

## Publications

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### Summary:

Top-tier security conference papers (20): Oakland x2, CCS x10, USENIX Security x5, NDSS x3

Other top-tier conference papers (7): ASPLOS x1, ATC x1, ICSE x3, Mobicom x1, UIST x1

Top-tier security journals (2): TDSC x2

### Peer-reviewed Conferences/Journals/Workshops

1. **[XR-Security'25]** Bertram Liu, Vamsi Shankar Simhadri, **Xiaokuan Zhang**. “*Hunting Insecure UI Properties in Extended Reality*”. In the 1st Workshop on Enhancing Security, Privacy, and Trust in Extended Reality (XR) Systems (co-located with MobiHoc'25), Houston, TX, USA, Oct. 2025. (workshop paper) **Best Paper Honorable Mention Award**
2. **[CCS'25]** Vamsi Shankar Simhadri, Yichang Xiong, Habiba Farrukh, **Xiaokuan Zhang**. “*Virtual Reality, Real Problems: A Longitudinal Security Analysis of VR Firmware*”. In Proceedings of the 32nd ACM Conference on Computer and Communications Security, Taipei, Oct. 2025.
3. **[AsiaCCS'25]** Kailun Yan, Bo Lu, Pranav Agrawal, Jiasun Li, Wenrui Diao, **Xiaokuan Zhang**. “*An Empirical Study on Cross-chain Transactions: Costs, Inconsistencies, and Activities*”. In Proceedings of the 20th ACM Asia Conference on Computer and Communications Security, Hanoi, Vietnam, Aug. 2025. (Acceptance rate: 20.4%)
4. **[Security'25]** Hung-Mao Chen, Xu He, Shu Wang, **Xiaokuan Zhang**, Kun Sun. “*TYPEPULSE: Detecting Type Confusion Bugs in Rust Programs*”. In Proceedings of the 34th USENIX Security Symposium, Seattle, WA, USA, Aug. 2025.
5. **[Oakland'25]** Fan Sang, Jaehyuk Lee, **Xiaokuan Zhang**, Taesoo Kim. “*Portal: Fast and Secure Device Access with Arm CCA for Modern Arm Mobile System-on-Chips (SoCs)*”. In Proceedings of the 46th IEEE Symposium on Security and Privacy, San Francisco, CA, USA, May 2025. (Acceptance rate: 14.8%)
6. **[ICSE'25]** Mengya Zhang, Preksha Shukla, Wuqi Zhang, Zhuo Zhang, Pranav Agrawal, Zhiqiang Lin, Xiangyu Zhang, **Xiaokuan Zhang**. “*An Empirical Study of Proxy Smart Contracts at the Ethereum Ecosystem Scale*”. In Proceedings of the 47th IEEE/ACM International Conference on Software Engineering, Ottawa, Ontario, Canada, Apr. 2025. (Acceptance rate: 21.3%)
7. **[ICSE'25]** Xiang Cheng, Fan Sang, Yizhuo Zhai, **Xiaokuan Zhang**, Taesoo Kim. “*RUG: Turbo LLM for Rust Unit Test Generation*”. In Proceedings of the 47th IEEE/ACM International Conference on Software Engineering, Ottawa, Ontario, Canada, Apr. 2025. (Acceptance rate: 21.3%)
8. **[FnT-SEC'25]** Kang Li, Ronghui Gu, Jun Xu, Zhaofeng Chen, Siwei Wu, Yajin Zhou, Mu Zhang, Xiapu Luo, Yuzhe Tang, Yi Li, **Xiaokuan Zhang**, Yibo Wang. “*Security Analysis and Formal Verification on Blockchain and its Applications*”. Foundations and Trends® in Privacy and Security. (journal paper)
9. **[ACSAC'24]** Mengya Zhang, Xingyu Lyu, Jianyu Niu, **Xiaokuan Zhang**, Yinqian Zhang, Zhiqiang Lin. “*Breaking the Privacy Barrier: On the Feasibility of Reorganization Attacks on Ethereum Pri-*

- vate Transactions”. In Proceedings of the 40th Annual Computer Security Applications Conference, Waikiki, Hawaii, USA, Dec. 2024. (Acceptance rate: 19.7%)
10. **[CCS’24]** Yuxia Zhan, Yan Meng, Lu Zhou, Yichang Xiong, **Xiaokuan Zhang**, Lichuan Ma, Guoxing Chen, Qingqi Pei, Haojin Zhu. “VPVet: Vetting Privacy Policies of Virtual Reality Apps”. In Proceedings of the 31st ACM Conference on Computer and Communication Security, Salt Lake City, UT, USA, Oct. 2024. (Acceptance rate: 16.9%)
  11. **[CCS’24]** Kailun Yan, **Xiaokuan Zhang**, Wenrui Diao. “Stealing Trust: Unraveling Blind Message Attacks in Web3 Authentication”. In Proceedings of the 31st ACM Conference on Computer and Communication Security, Salt Lake City, UT, USA, Oct. 2024. (Acceptance rate: 16.9%) **ACM CCS Distinguished Paper Award; Springer Cybersecurity Best Practical Research Paper Award**
  12. **[CCS’24]** Tong Zhu, Chaofan Shou, Zhen Huang, Guoxing Chen, **Xiaokuan Zhang**, Yan Meng, Shuang Hao, Haojin Zhu. “Unveiling Collusion-Based Ad Attribution Laundering Fraud: Detection, Analysis, and Security Implications”. In Proceedings of the 31st ACM Conference on Computer and Communication Security, Salt Lake City, UT, USA, Oct. 2024. (Acceptance rate: 16.9%)
  13. **[RAID’24]** Mengya Zhang, **Xiaokuan Zhang**, Yinqian Zhang, Zhiqiang Lin. “Security of Cross-chain Bridges: Attack Surfaces, Defenses, and Open Problems”. In Proceedings of the 27th International Symposium on Research in Attacks, Intrusions, and Defenses, Padua, Italy, Sep. 2024. (Acceptance rate: 24.4%)
  14. **[Security’24]** Anh Nguyen, **Xiaokuan Zhang**, Zhisheng Yan. “Penetration Vision through Virtual Reality Headsets: Identifying 360-degree Videos from Head Movements”. In Proceedings of the 33rd USENIX Security Symposium, Philadelphia, PA, USA, Aug. 2024. (Acceptance rate: 18.3%)
  15. **[ICSE’24]** Yongliang Chen, Ruoqin Tang, Chaoshun Zuo, **Xiaokuan Zhang**, Lei Xue, Xiapu Luo, Qingchuan Zhao. “Attention! Your Copied Data is Under Monitoring: A Systematic Study of Clipboard Usage in Android Apps”. In Proceedings of the 46th IEEE/ACM International Conference on Software Engineering, Lisbon, Portugal, Apr. 2024. (Acceptance rate: 22.3%) **ACM SIGSOFT Distinguished Paper Award**
  16. **[NDSS’24]** Fan Sang, Jaehyuk Lee, **Xiaokuan Zhang**, Meng Xu, Scott Constable, Yuan Xiao, Michael Steiner, Mona Vij, Taesoo Kim. “SENSE: Enhancing Microarchitectural Awareness for TEEs via Subscription Based Notification”. In Proceedings of the 31st Network and Distributed System Security Symposium, San Diego, CA, USA, Feb. 2024. (Acceptance rate: 15.0%)
  17. **[TDSC’24]** Wei Peng, Xiang Li, Jianyu Niu, **Xiaokuan Zhang**, Yinqian Zhang. “Ensuring State Continuity for Confidential Computing: A Blockchain-based Approach”. IEEE Transactions on Dependable and Secure Computing. (journal paper)
  18. **[CCS’23]** Tao Ni, **Xiaokuan Zhang**, Qingchuan Zhao. “Recovering Fingerprints from In-Display Fingerprint Sensors via Electromagnetic Side Channel”. In Proceedings of the 30th ACM Conference on Computer and Communication Security, Copenhagen, Denmark, Nov. 2023. (Acceptance rate: 19.2%) **Springer Cybersecurity Best Practical Research Paper Award**
  19. **[Mobicom’23]** Tao Ni, Jianfeng Li, **Xiaokuan Zhang**, Chaoshun Zuo, Wubing Wang, Weitao Xu, Xiapu Luo, Qingchuan Zhao. “Exploiting Contactless Side Channels in Wireless Charging Power Banks for User Privacy Inference via Few-shot Learning”. In Proceedings of the 29th Annual International Conference On Mobile Computing And Networking, Madrid, Spain, Oct. 2023. (Acceptance rate: 24.4%)

20. **[Security'23]** Lu Zhou, Chengyongxiao Wei, Tong Zhu, Guoxing Chen, **Xiaokuan Zhang**, Suguo Du, Hui Cao, Haojin Zhu. *"POLICYCOMP: Counterpart Comparison of Privacy Policies Uncovers Overbroad Personal Data Collection Practices"*. In Proceedings of the 32nd USENIX Security Symposium, Anaheim, CA, USA, Aug. 2023. (Acceptance rate: 29.2%)
21. **[Oakland'23]** Tao Ni, **Xiaokuan Zhang**, Chaoshun Zuo, Jianfeng Li, Zhenyu Yan, Wubing Wang, Weitao Xu, Xiapu Luo, Qingchuan Zhao. *"Uncovering User Interactions on Smartphones via Contactless Wireless Charging Side Channels"*. In Proceedings of the 44th IEEE Symposium on Security and Privacy, San Francisco, CA, USA, May 2023. (Acceptance rate: 17.0%)
22. **[ASPLOS'23]** Adil Ahmad, Botong Ou, Congyu Liu, **Xiaokuan Zhang**, Pedro Fonseca. *"Veil: A Protected Services Framework for Confidential Virtual Machines"*. In Proceedings of the 2023 ACM International Conference on Architectural Support for Programming Languages and Operating Systems, Vancouver, Canada, Apr. 2023. (Acceptance rate: 25.1%)
23. **[TDSC'23]** **Xiaokuan Zhang**, Yang Zhang, Yinqian Zhang. *"VERITRAIN: Validating MLaaS Training Efforts via Anomaly Detection"*. IEEE Transactions on Dependable and Secure Computing. (journal paper)
24. **[CCS'22]** Jianyu Niu, Wei Peng, **Xiaokuan Zhang**, Yinqian Zhang. *"Narrator: Secure and Practical State Continuity for Trusted Execution on Cloud"*. In Proceedings of the 29th ACM Conference on Computer and Communication Security, Los Angeles, CA, USA, Nov. 2022. (Acceptance rate: 22.5%)
25. **[ATC'22]** Fan Sang, Ming-Wei Shih, Sangho Lee, **Xiaokuan Zhang**, Michael Steiner, Mona Vij, Taesoo Kim. *"PRIDWEN: Universally Hardening SGX Programs via Load-Time Synthesis"*. In Proceedings of the 2022 USENIX Annual Technical Conference, Carlsbad, CA, USA, Jul. 2022. (Acceptance rate: 16.3%)
26. **[IJIS'22]** **Xiaokuan Zhang**, Jihun Hamm, Michael K. Reiter, Yinqian Zhang. *"Defeating traffic analysis via differential privacy: a case study on streaming traffic"*. International Journal of Information Security. (journal paper)
27. **[CCS'21]** Suibin Sun, Le Yu, **Xiaokuan Zhang**, Minhui Xue, Ren Zhou, Haojin Zhu, Shuang Hao, Xiaodong Lin. *"Understanding and Detecting Mobile Ad Fraud Through the Lens of Invalid Traffic"*. In Proceedings of the 28th ACM Conference on Computer and Communication Security, Virtual Event, Nov. 2021. (Acceptance rate: 22.3%) (**Top 10 Finalists of CSAW'22 Applied Security Research Competition**)
28. **[CCS'21]** Tong Zhu, Yan Meng, Haotian Hu, **Xiaokuan Zhang**, Minhui Xue, Haojin Zhu. *"Dissecting Click Fraud Autonomy in the Wild"*. In Proceedings of the 28th ACM Conference on Computer and Communication Security, Virtual Event, Nov. 2021. (Acceptance rate: 22.3%)
29. **[UIST'20]** Frederik Brudy, David Ledo, Michel Pahud, Nathalie Henry Riche, Christian Holz, Anand Waghamare, Hemant Surale, Marcus Peinado, **Xiaokuan Zhang**, Shannon Joyner, Badrish Chandramouli, Umar Farooq Minhas, Jonathan Goldstein, Bill Buxton, Ken Hinckley. *"SurfaceFleet: Exploring Distributed Interactions Unbounded from Device, Application, User, and Time"*. In Proceedings of the 33rd Annual Symposium on User Interface Software and Technology, Virtual Event, Oct. 2020. (Acceptance rate: 21.5%)
30. **[Security'20]** Mengya Zhang\*, **Xiaokuan Zhang\***, Yinqian Zhang, Zhiqiang Lin. *"TXSPECTOR: Uncovering Attacks in Ethereum from Transactions"*. In Proceedings of the 29th USENIX Security Sym-

posium, Virtual Event, Aug. 2020. (Acceptance rate: 16.1%) (\*equal contribution)

31. **[NDSS'19] Xiaokuan Zhang**, Jihun Hamm, Michael K. Reiter, Yinqian Zhang. “*Statistical Privacy for Streaming Traffic*”. In Proceedings of the 26th Network and Distributed System Security Symposium, San Diego, CA, USA, Feb. 2019. (Acceptance rate: 17.1%)
32. **[ACSAC'18] Bo Lu\***, **Xiaokuan Zhang\***, Ziman Ling, Yinqian Zhang, Zhiqiang Lin. “*A Measurement Study of Authentication Rate-Limiting Mechanisms of Modern Websites*”. In Proceedings of the 34th Annual Computer Security Applications Conference, San Juan, Puerto Rico, USA, Dec. 2018. (Acceptance rate: 20.1%) (\*equal contribution)
33. **[CCS'18] Wei Zhang**, Yan Meng, Yugeng Liu, **Xiaokuan Zhang**, Yinqian Zhang, Haojin Zhu. “*HoMonit: Monitoring Smart Home Apps from Encrypted Traffic*”. In Proceedings of the 25th ACM Conference on Computer and Communication Security, Toronto, Canada, Oct. 2018. (Acceptance rate: 16.6%)
34. **[NDSS'18] Xiaokuan Zhang**, Xueqiang Wang, Xiaolong Bai, Yinqian Zhang, XiaoFeng Wang. “*OS-level Side Channels without Procs: Exploring Cross-App Information Leakage on iOS*”. In Proceedings of the 25th Network and Distributed System Security Symposium, San Diego, CA, USA, Feb. 2018. (Acceptance rate: 21.5%) (**Top 10 Finalists of CSAW'18 Applied Security Research Competition**)
35. **[AsiaCCS'17] Sanchuan Chen**, **Xiaokuan Zhang**, Michael K. Reiter, Yinqian Zhang. “*Detecting Privileged Side-Channel Attacks in Shielded Execution with DEJA VU*”. In Proceedings of the 12th ACM Asia Conference on Computer and Communications Security, Abu Dhabi, UAE, Apr. 2017. (Acceptance rate: 20.3%)
36. **[CCS'16] Xiaokuan Zhang**, Yuan Xiao, Yinqian Zhang. “*Return-Oriented Flush-Reload Side Channels on ARM and Their Implications for Android Devices*”. In Proceedings of the 23rd ACM Conference on Computer and Communication Security, Vienna, Austria, Oct. 2016. (Acceptance rate: 16.5%)
37. **[Security'16] Yuan Xiao**, **Xiaokuan Zhang**, Yinqian Zhang, Mircea-Radu Teodorescu. “*One Bit Flips, One Cloud Flops: Cross-VM Row Hammer Attacks and Privilege Escalation*”. In Proceedings of the 25th USENIX Security Symposium, Austin, TX, USA, Aug. 2016. (Acceptance rate: 15.6%) (**Top 10 Finalists of CSAW'16 Applied Security Research Competition**)
38. **[ICCC'15] Bett Ben Chirchir**, **Xiaokuan Zhang**, Mengyuan Li, Qiyang Qian, Na Ruan, Haojin Zhu. “*SmartSec: Secret Sharing-based Location-aware Privacy Enhancement in Smart Devices*”. In Proceedings of the 4th IEEE/CIC International Conference on Communications in China, Shenzhen, China, Nov. 2015.
39. **[GLOBECOM'14] Xiaokuan Zhang**, Haizhong Zheng, Xiaolong Li, Suguo Du, and Haojin Zhu. “*You are Where You Have Been: Sybil Detection via Geo-location Analysis in OSNs*”. In Proceedings of the 33rd Global Communications Conference, Austin, TX, USA, Dec. 2014.

## Preprints

1. **[Arxiv'22] Xingyu Lyu**, Mengya Zhang, **Xiaokuan Zhang**, Jianyu Niu, Yinqian Zhang, Zhiqiang Lin. “*An Empirical Study on Ethereum Private Transactions and the Security Implications*”. arXiv preprint, arXiv:2208.02858.
2. **[Arxiv'21] Jungwon Lim**, Yonghwi Jin, Mansour Alharthi, **Xiaokuan Zhang**, Jinho Jung, Rajat Gupta, Kuilin Li, Daehee Jang, Taesoo Kim. “*SoK: On the Analysis of Web Browser Security*”. arXiv preprint, arXiv:2112.15561.

## Teaching Experience

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### Instructor

### George Mason University

- CS 795: Security Issues in Emerging Computer and AI Systems Fall 2025
- CS 499: Foundations and Advances of Cybersecurity Fall 2024
- CS 692: Linux Kernel Internals Spring 2024, Spring 2025
- CS 795: Security Issues in Emerging Computer Systems Fall 2023
- CS 471: Operating Systems Fall 2022, Spring 2023

### Graduate Teaching Assistant

### The Ohio State University

- CSE 3341: Principles of Programming Languages Spring 2016
- CSE 3461: Computer Networking and Internet Technologies Fall 2015

## External Service

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### Organizing Committee

- Local Chair, ACSIC Symposium on Frontiers in Computing (SOFC) 2025
- Session Chair, USENIX Security Symposium (Security) 2025
- Session Chair, ACM Conference on Computer and Communications Security (CCS) 2024
- Web Chair, Information Security Conference (ISC) 2024

### Program Committee

#### Conference:

- ISOC Network and Distributed System Security Symposium (NDSS) 2025, 2026
- ACM Conference on Computer and Communications Security (CCS) 2024, 2026
- USENIX Security Symposium (Security) 2024, 2025, 2026
- Annual Computer Security Applications Conference (ACSAC) 2024, 2025
- ACM Asia Conference on Computer and Communications Security (AsiaCCS) 2024, 2025
- IEEE Global Blockchain Conference (GBC) 2024
- International Conference on Mobile Ad-Hoc and Smart Systems (MASS) 2024
- International Conf. on Applied Cryptography and Network Security (ACNS) 2023
- EAI International Conf. on Sec. and Priv. in Comm. Net. (SecureComm) 2022, 2023, 2026
- IEEE International Conf. on Cloud Computing Technology and Science (CloudCom) 2020, 2023
- International Conf. on Knowledge Science, Engineering and Management (KSEM) 2022

#### Workshop:

- Trust-XR Workshop (co-located with ISMAR 2025) 2025
- XR-Security Workshop (co-located with MobiHoc 2025) 2025
- ACM Cloud Computing Security Workshop (CCSW) 2020, 2021, 2022
- NYU CSAW Cyber Security Applied Research Paper Competition 2020, 2021

### Reviewer

- IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR) 2026
- ACM Symposium on Virtual Reality Software and Technology (VRST) 2025
- IEEE Transactions on Mobile Computing (TMC) 2021, 2022
- IEEE Transactions on Dependable and Secure Computing (TDSC) 2019, 2022 - 2025

### External Reviewer

- IEEE Symposium on Security and Privacy (Oakland) 2016 - 2018, 2020, 2022
- ACM Conference on Computer and Communications Security (CCS) 2016 - 2020
- USENIX Security Symposium (Security) 2017, 2022
- ISOC Network and Distributed System Security Symposium (NDSS) 2018, 2020
- ACM Asia Conference on Computer and Communications Security (AsiaCCS) 2018, 2020

### Panelist

- National Science Foundation (NSF) 2025

## Presentations & Talks

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- Privacy Issues in Extended Reality Systems: Past, Present, and Future  
*the 1st XR-Security Workshop (co-located with MobiHoc)*, Houston, TX, USA (invited) Oct. 2025
- Uncovering User Interactions on Smartphones via Contactless Wireless Charging Side Channels  
*University of Idaho*, Virtual (invited) Nov. 2024
- Security and Privacy of Emerging Computer Systems  
*Gen Next Education master class (GMU-CS representative)*, Virtual Nov. 2024
- Beyond the Headset: Unmasking Privacy Challenges in Extended Reality  
*NIST Extended Reality (XR) Community of Interest (COI) monthly meeting*, Virtual Aug. 2024
- Security and Privacy Issues in the Era of Web3 and Metaverse  
*DMV Security Workshop*, University of Virginia, Charlottesville, VA, USA Mar. 2024
- POLICYCOMP: Counterpart Comparison of Privacy Policies Uncovers Overbroad Personal Data Collection Practices  
*USENIX Security'23*, Anaheim, CA, USA Aug. 2023
- Security and Privacy Concerns in Computer Systems – Exploring the Human Connection  
*CAHMP Center Mini Symposium*, GMU, Fairfax, VA, USA Apr. 2023

- Research Overview – System Security  
*Computer Science Research Mixer*, GMU, Fairfax, VA, USA Nov. 2022
- Understanding and Detecting Mobile Ad Fraud Through the Lens of Invalid Traffic  
*CSAW'22 Applied Security Research Competition*, NYU, New York City, NY, USA Nov. 2022
- Side-channel Threats on Modern Platforms  
*Stevens Institute of Technology*, Virtual Mar. 2021  
*Penn State University*, Virtual Feb. 2021  
*New Jersey Institute of Technology*, Virtual Feb. 2021  
*Rochester Institute of Technology*, Virtual Feb. 2021  
*George Mason University*, Virtual Feb. 2021
- Statistical Privacy for Streaming Traffic  
*NDSS'19*, San Diego, CA, USA Feb. 2019
- A Measurement Study of Authentication Rate-Limiting Mechanisms of Modern Websites  
*ACSAC'18*, San Juan, PR, USA Dec. 2018
- OS-level Side Channels without Proofs: Exploring Cross-App Information Leakage on iOS  
*CSAW'18 Applied Security Research Competition*, NYU, New York City, NY, USA Nov. 2018  
*NDSS'18*, San Diego, CA, USA Feb. 2018
- Return-Oriented Flush-Reload Side Channels on ARM and Their Implications for Android Devices  
*CCS'16*, Vienna, Austria Oct. 2016
- You are Where You Have Been: Sybil Detection via Geo-location Analysis in OSNs  
*GLOBECOM'14*, Austin, TX, USA Dec. 2014