

# Chaoyi Lu

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## Education & Employment

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**2022 - Present: Postdoctoral researcher**

**Tsinghua University**

Reporting to Prof. Haixin Duan

**2017 - 2022: PhD**

**Tsinghua University**

Advisor: Prof. Jianping Wu

Research Interests: Internet measurement, Network security

Dissertation: *On Measuring Security Technologies within the Domain Name System Hierarchy*

**2013 - 2017: BSc**

**Beijing University of Posts and Telecommunications**

## Research & Publications

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### ◆ 16 published papers

◇ 11 at top-tier venues: NDSS [6], IMC [11], USENIX Security [3, 7, 10, 13], CCS [1-2, 5, 8-9]

### ◆ Research topics:

◇ DNS protocol measurement and data analysis [4, 6, 11-14]; DNS threats [1-3, 10]

◇ Other Internet infrastructure [5, 7-9]

### ◆ Community awards & event contributions:

◇ IRTF Applied Networking Research Prize [11]

◇ ICANN APAC DNS Forum [4], IDS [10], IETF [11], OARC [1-2, 11, 13], IRTF ANRW [13]

### Conference papers

- [1] **[CCS '23a]** W. Xu, X. Li, **Chaoyi Lu**, B. Liu, J. Zhang, et al. ***TsuKing: Coordinating DNS Resolvers and Queries into Potent DoS Amplifiers***. To appear in Proceedings of the 30th ACM Conference on Computer and Communications Security, Copenhagen, Denmark, November 2023.  
◇ Community event contribution: OARC 41
- [2] **[CCS '23b]** F. Zhang, B. Liu, E. Alowaisheq, J. Chen, **Chaoyi Lu**, et al. ***Silence is not Golden: Disrupting the Load Balancing of Authoritative DNS Servers***. To appear in Proceedings of the 30th ACM Conference on Computer and Communications Security, Copenhagen, Denmark, November 2023.  
◇ Community event contribution: OARC 41
- [3] **[USENIX Sec '23]** X. Li, **Chaoyi Lu**, B. Liu, Q. Zhang, Z. Li, et al. ***The Maginot Line: Attacking the Boundary of DNS Caching Protection***. In Proceedings of the 32nd USENIX Security Symposium, Anaheim, CA, USA, August 2023.
- [4] **[PAM '22]** F. Zhang, **Chaoyi Lu**, B. Liu, H. Duan, Y. Liu. ***Measuring the Practical Effect of DNS Root Server Instances: A China-Wide Case Study***. In Proceedings of the 23rd Passive and Active Measurement Conference. March 2022.  
◇ Community event contribution: ICANN APAC DNS Forum 2022
- [5] **[CCS '21]** Y. Zhang, B. Liu, **Chaoyi Lu**, Z. Li, H. Duan, et al. ***Rusted Anchors: A National Client-Side View of Hidden Root CAs in the Web PKI Ecosystem***. In Proceedings of the 28th ACM Conference on Computer and Communications Security, November 2021.

- [6] **[NDSS '21] Chaoyi Lu**, B. Liu, Y. Zhang, Z. Li, F. Zhang, H. Duan, et al. ***From WHOIS to WHOWAS: A Large-Scale Measurement Study of Domain Registration Privacy under the GDPR***. In Proceedings of the 28th Network and Distributed System Security Symposium, February 2021.  
 ◇ Coverage: Cybercrime Digest of Cybercrime Program Office of the Council of Europe (C-PROC), CERT-SE's weekly letter
- [7] **[USENIX Sec '21]** K. Shen, C. Wang, X. Zheng, M. Guo, **Chaoyi Lu**, et al. ***Weak Links in Authentication Chains: A Large-scale Analysis of Email Sender Spoofing Attacks***. In Proceedings of the 30th USENIX Security Symposium, August 2021.
- [8] **[CCS '20a]** M. Zhang, X. Zheng, K. Shen, Z. Kong, **Chaoyi Lu**, et al. ***Talking with Familiar Strangers: An Empirical Study on HTTPS Context Confusion Attacks***. In Proceedings of the 27th ACM Conference on Computer and Communications Security, November 2020.
- [9] **[CCS '20b]** Y. Zhang, B. Liu, **Chaoyi Lu**, Z. Li, H. Duan, et al. ***Lies in the Air: Characterizing Fake-base-station Spam Ecosystem in China***. In Proceedings of the 27th ACM Conference on Computer and Communications Security, November 2020.
- [10] **[USENIX Sec '20]** X. Zheng, **Chaoyi Lu**, J. Peng, Q. Yang, D. Zhou, et al. ***Poison Over Troubled Forwarders: A Cache Poisoning Attack Targeting DNS Forwarding Devices***. In Proceedings of the 29th USENIX Security Symposium, August 2020.  
 ◇ Community event contribution: ICANN DNS Symposium 2021
- [11] **[IMC '19] Chaoyi Lu**, B. Liu, Z. Li, S. Hao, H. Duan, et al. ***An End-to-End, Large-Scale Measurement of DNS-over-Encryption: How Far Have We Come?***. In Proceedings of the 19th Internet Measurement Conference, October 2019.  
 ◇ Recipient of IRTF Applied Networking Research Prize (ANRP) 2020  
 ◇ Nominee of Distinguished Paper Award (3/39) & Community Contribution Award (2/39)  
 ◇ Community event contribution: IETF 108, OARC 31
- [12] **[EuroS&P '19]** B. Liu, Z. Li, P. Zong, **Chaoyi Lu**, H. Duan, et al. ***TraffickStop: Detecting and Measuring Illicit Traffic Monetization Through Large-scale DNS Analysis***. In Proceedings of the 4th IEEE European Symposium on Security and Privacy, June 2019.
- [13] **[USENIX Sec '18]** B. Liu, **Chaoyi Lu**, H. Duan, Y. Liu, Z. Li, et al. ***Who Is Answering My Queries: Understanding and Characterizing Interception of the DNS Resolution Path***. In Proceedings of the 27th USENIX Security Symposium, August 2018.  
 ◇ Community event contribution: IRTF ANRW '19, OARC 30
- [14] **[DSN '18]** B. Liu, **Chaoyi Lu**, Z. Li, Y. Liu, H. Duan, et al. ***A Reexamination of Internationalized Domain Names: the Good, the Bad and the Ugly***. In Proceedings of the 48th IEEE/IFIP International Conference on Dependable Systems and Networks, June 2018.

## Workshop papers

- [15] **[EthiCS '22]** Y. Zhang, M. Liu, M. Zhang, **Chaoyi Lu**, H. Duan. ***Ethics in Security Research: Visions, Reality, and Paths Forward***. 1st International Workshop on Ethics in Computer Security. June 2022.  
 ◇ Recipient of Best Student Paper Award
- [16] **[FOCI '18]** M. Zhang, B. Liu, **Chaoyi Lu**, J. Zhang, S. Hao, H. Duan. ***Measuring Privacy Threats in China-Wide Mobile Networks***. 8th USENIX Workshop on Free and Open Communications on the Internet, August 2018.

## Industrial standard

- [17] **Chaoyi Lu**, Y. Huang, J. Zhang, H. Duan, D. Ma, et al. ***Domain Name System Encryption Communication Technical Requirements***. Industrial standard of telecommunication technologies of the P.R.C. (Announced May 2021, to be issued)

## Teaching & Events

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### Community events

Plenary moderator & pre-event webinar organizer, ICANN APAC DNS Forum, 2023

### Technical training sessions

DNSSEC training for CERNET (under support of APNIC ISIF Project), 2023

Domain Name System Fundamentals, DataCon Student Summer Camp, 2023 & 2022

### Courses at Tsinghua University

Joint lecturer, Computer Network Security Experiments, 2023 Summer

Teaching assistant, Basics and Cutting-Edge Topics of Cyberspace, 2020 Fall

Teaching assistant, Computer Networks, 2019 Fall

Teaching assistant, Computer Network Security Technologies, 2019 Spring

## Services

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### Conference TPC member

Conference: EAI SecureComm '23

### External reviewers

Conferences: RAID '23, NDSS '22 & '20, ICDCS '21, DSN '20, CCS '19, ESORICS '19, ICICS '19

Journal: IEEE TNSM 2020

Workshops: WPES '21, IoT S&P '18, RESEC '18

## Awards

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### Academia & community

IRTF Applied Networking Research Prize (ANRP)	2020
ACM IMC Nominee of Distinguished Paper Award & Community Contribution Award	2019
IEEE/IFIP DSN Student Travel Grant	2018

### Education & scholarship

Graduate Award, Education Commission of Beijing Municipality	2022 & 2017
PhD Graduate Award of Tsinghua University	2022
PhD Dissertation Award of Tsinghua University	2022
1st-Class Scholarship of Tsinghua University for Graduate Students	2021 & 2020
Cyberspace Scholarship of China Internet Development Foundation	2016