

Mingming Zhang

Assistant Researcher

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Research Interests

Research areas: Network Security, Protocol Security, Web PKI, DNS

My research focuses on measuring and enhancing the security of Internet infrastructure (DNS, Web PKI, CDN, etc.), uncovering significant vulnerabilities in core protocols (DNS, HTTP, TLS, DKIM, SPF, etc.), and understanding emerging cyberspace security threats.

Positions

Assistant Researcher at Zhongguancun Laboratory, Beijing, China

Jul 2023-Now

Education

Ph.D. Network Security

Tsinghua University

Advisor: Prof. Haixin Duan. GPA: 3.84/4

2018-2023

B.E. Information Security and LL.B. (double major)

Nankai University

GPA: 86.386/100 Rank: 1/38

2014-2018

Honors and Awards

Education & Scholarship

2023 Outstanding Doctoral Thesis in Tsinghua University

2023 Qihang Award of Tsinghua University for Graduate Students

2023 LongFor Academic Scholarship

2020 2nd Scholarship of Tsinghua University for Graduate Students

2018 Cyberspace Scholarship of China Internet Development Foundation

2018 Outstanding Graduate in Nankai University

2018 Outstanding Bachelor's Thesis in Nankai University

2017 China National Scholarship

Academia & Community

2022 EthiCS'22 Best Student Paper

2022 DSN'22 Best Paper Runner-up

2020 IRTF Applied Networking Research Prize (Award by IRTF and ISOC, three prizes per year)

2019 ACM IMC Nominee of Distinguished Paper Award & Community Contribution Award

Competition

2019 The 1st Prize in GeekPWN

Top-Tier Conference Publications

- [1] **TuDoor Attack: Systematically Exploring and Exploiting Logic Vulnerabilities in DNS Response Pre-processing with Malformed Packets.**
Xiang Li, Wei Xu, Baojun Liu, Mingming Zhang, Zhou Li, Jia Zhang, Deliang Chang, Xiaofeng Zheng, Chuhan Wang, Jianjun Chen, Haixin Duan, Qi Li.
IEEE Symposium on Security & Privacy ("Oakland"), May 2024.
*** Referenced by RFC 9520: Negative Caching of DNS Resolution Failures**
- [2] **BreakSPF: How Shared Infrastructures Magnify SPF Vulnerabilities Across the Internet**
Chuhan Wang, YASUHIRO KURANAGA, Yihang Wang, Mingming Zhang, Linkai Zheng, lixiang, Jianjun Chen, Haixin Duan, Yanzhong Lin, Qingfeng Pan
Network and Distributed System Security Symposium (NDSS), 2024. Acceptance rate: 104/694=15.0%.
- [3] **Ghost Domain Reloaded: Vulnerable Links in Domain Name Delegation and Revocation**
Xiang Li, Baojun Liu, Xuesong Bai, Mingming Zhang, Qifan Zhang, Zhou Li, Haixin Duan, and Qi Li
Network and Distributed System Security Symposium (NDSS), 2023. Acceptance rate: 94/581=16.2%.
*** Presented in OARC 39, ICANN DNS Symposium 2022, Black Hat Asia 2023.**
*** Referenced by RFC Draft: Delegation Revalidation by DNS Resolvers.**
- [4] **Detecting and Measuring Security Risks of Hosting-Based Dangling Domains**
Mingming Zhang, Xiang Li, Baojun Liu, Jianyu Lu, Yiming Zhang, Jianjun Chen, Haixin Duan, Shuang Hao, Xiaofeng Zheng
ACM SIGMETRICS, 2023. Acceptance rate: 55/342=16.1%
*** Presented in OARC 40 and APAC DNS Forum 2023.**
- [5] **A Large-scale and Longitudinal Measurement Study of DKIM Deployment.**
Chuhan Wang, Kaiwen Shen, Minglei Guo, Yuxuan Zhao, Mingming Zhang, Jianjun Chen, Baojun Liu, Xiaofeng Zheng, Haixin Duan, Yanzhong Lin, Qingfeng Pan
USENIX Security Symposium (USENIX Security), August 2022. Acceptance rate=17.2%.

- [6] **Talking with Familiar Strangers: An Empirical Study on HTTPS Context Confusion Attacks**
Mingming Zhang, Xiaofeng Zheng, Kaiwen Shen, Ziqiao Kong, Chaoyi Lu, Yu Wang, Haixin Duan, Shuang Hao, Baojun Liu, Min Yang
ACM Computer and Communications Security (CCS), November 2020. Acceptance rate=16.9%.
- [7] **An End-to-End, Large-Scale Measurement of DNS-over-Encryption: How Far Have We Come?**
Chaoyi Lu, Baojun Liu, Zhou Li, Shuang Hao, Haixin Duan, Mingming Zhang, Chunying Leng, Ying Liu, Zaifeng Zhang, Jianping Wu
ACM Internet Measurement Conference (IMC), October 2019. Acceptance rate=25%.
*** IRTF Applied Networking Research Prize (ANRP)**

Other Refereed Publications

- [8] **Ethics in Security Research: Visions, Reality, and Paths Forward**
Yiming Zhang, Mingxuan Liu, Mingming Zhang, Chaoyi Lu, Haixin Duan
Ethics in Computer Security (EthCS), June 2022.
*** Best Student Paper Award**
- [9] **HDiff: A Semi-automatic Framework for Discovering Semantic Gap Attack in HTTP Implementations**
Kaiwen Shen, Jianyu Lu, Yaru Yang, Jianjun Chen, Mingming Zhang, Haixin Duan, Jia Zhang, Xiaofeng Zheng
IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), June 2022. Acceptance rate: 18.7%
- [10] **Measuring Privacy Threats in China-Wide Mobile Networks**
Mingming Zhang, Baojun Liu, Chaoyi Lu, Jia Zhang, Shuang Hao, Haixin Duan
8th USENIX Workshop on Free and Open Communications on the Internet (FOCI), August 2018

Experience

Teaching Assistant: Network Protocol Security (74120033) Winter 2020
• Institute for Network Sciences and Cyberspace, Tsinghua University

Security Researcher Intern Aug 2019-Jun 2023
• Qi An Xin Technology Group
• Duties: Exploring domain hijacking and protocol vulnerabilities.

Academic Service

Conference TPC member
• EAI SecureComm, 2023.

External Reviewer
• Network and Distributed System Security Symposium (NDSS), 2022 & 2021
• Annual Computer Security Applications Conference (ACSAC), 2021
• European Symposium on Research in Computer Security (ESORICS), 2020
• ACM Computer and Communications Security (CCS). 2019