

Shuai Hao

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RESEARCH

Networking and Security

Applying **measurement**, **empirical study**, and **data-driven approach** to (1) study the practical security phenomena on the Internet and Networked Systems and (2) facilitate the protocol and system design that makes the Internet more robust and secure

- Internet-Wide Vulnerability and Security
- Internet Infrastructure and Measurement
- Data-Driven Security Analytics
- Web Security and Cybercrime

EDUCATION

Ph.D. in Computer Science · 2011 - 2017

College of William and Mary 📍 Williamsburg, VA
Department of Computer Science · Advisor: Dr. Haining Wang

M.S. in Computer Science · 2007 - 2010

Beijing University of Posts and Telecommunications 📍 Beijing, China

B.S. in Computer Science and Engineering · 2003 - 2007

North China Electric Power University 📍 Baoding, Hebei, China

EXPERIENCE & EMPLOYMENT

Assistant Professor,

Old Dominion University 📍 Norfolk, VA
Department of Computer Science July 2019 - present

Postdoctoral Researcher,

Center for Applied Internet Data Analysis (CAIDA),

University of California San Diego 📍 La Jolla, CA
Advisors: Dr. Alberto Dainotti & Dr. Amogh Dhamdhere Feb. 2018 - June 2019

Ph.D. Candidate, Research Assistant, Teaching Assistant,

College of William and Mary 📍 Williamsburg, VA
Department of Computer Science · Advisor: Dr. Haining Wang 2011 - 2017

- *Visiting Ph.D. Student, University of Delaware* 📍 Newark, DE
Department of Electrical & Computer Engineering 2014 - 2017

VISITING & INTERNSHIPS

Research Intern, NEC Laboratories America 📍 Princeton, NJ
Computer Security Department · Mentor: Dr. Junghwan Rhee Sep. 2017 - Jan. 2018

Research Intern, HP Labs China 📍 Beijing, China
Networking and Communications Lab May - Aug. 2012

Visiting Research Scholar, Tsinghua University 📍 Beijing, China
Department of Computer Science · Mentor: Dr. Ke Xu 2010 - 2011

Conference and Journal Papers

- [NDSS '26] Hongyu Lin, Yicheng Hu, Haitao Xu, Yanchen Lu, Mengxia Ren, Shuai Hao, Chuan Yue, Zhao Li, Fan Zhang, and Yixin Jiang. **ChameleoScan: Demystifying and Detecting Collusion-Based iOS Chameleon Apps via LLM-Empowered UI Exploration**, in *the Network and Distributed System Security Symposium (NDSS)*, San Diego, CA, February 2026. (Acceptance Rate: / = %)
- [ACSAC '25] Xiaoqin Liang, Guannan Liu, Lin Jin, Shuai Hao, and Haining Wang. **Pathfinder: Exploring Path Diversity for Assessing Internet Censorship Inconsistency**, in *the 41st Annual Computer Security Applications Conference (ACSAC)*, Honolulu, HI, December 2025. (Acceptance Rate: 84/446 = 18.8%)
- [IMWUT '25] Yuxuan Shang, Guanxiao Wang, Mengxia Ren, Haomin Zhang, Xingming Chen, Haitao Xu, Chuan Yue, Shuai Hao, Bo Zhou, Wenrui Ma, Fan Zhang, and Zhao Li. **AdsDP: A Video Dataset for Recognizing and Examining Dark Patterns in iOS In-App Advertisements**, in *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (UbiComp/IMWUT), Dataset Paper*, Espoo, Finland, October 2025.
- [USENIX Sec '25] Shuai Cheng, Shu Meng, Haitao Xu, Haoran Zhang, Shuai Hao, Chuan Yue, Wenrui Ma, Meng Han, Fan Zhang, Zhao Li. **Effective PII Extraction from LLMs through Augmented Few-Shot Learning**, in *the 34th USENIX Security Symposium (USENIX Security)*, Seattle, WA, August 2025. (Acceptance Rate: 407/2,385 = 17.1%)
- [IJCAI '25] Shuai Cheng, Zhao Li, Shu Meng, Mengxia Ren, Haitao Xu, Shuai Hao, Chuan Yue, and Fan Zhang. **Understanding PII Leakage in Large Language Models: A Systematic Survey**, in *the 34th International Joint Conference on Artificial Intelligence (IJCAI) Survey Track*, August 2025. (Survey Track Acceptance Rate: 52/265 = 19.6%)
- [INFOCOM '25] Haitao Xu, Yiwen Sun, Kaleem Ullah Qasim, Shuai Hao, Wenrui Ma, Zhenyuan Li, Fan Zhang, Meng Han, and Zhao Li. **Understanding the Business of Online Affiliate Marketing: An Empirical Study**, in *IEEE International Conference on Computer Communications (INFOCOM)*, London, United Kingdom, May 2025. (Acceptance Rate: 272/1,458 = 18.7%)
- [ICSE '25] Yanchen Lu, Hongyu Lin, Zehua He, Haitao Xu, Zhao Li, Shuai Hao, Liu Wang, Haoyu Wang, and Kui Ren. **TacDroid: Detection of Illicit Apps through Hybrid Analysis of UI-based Transition Graphs**, in *the 47th IEEE/ACM International Conference on Software Engineering (ICSE)*, Ottawa, Ontario, Canada, April 2025. (Acceptance Rate: 22%)
- [INFOCOM '24] Rui Bian, Lin Jin, Shuai Hao, Haining Wang, and Chase Cotton. **Silent Observers Make a Difference: A Large-scale Analysis of Transparent Proxies on the Internet**, in *IEEE International Conference on Computer Communications (INFOCOM)*, Vancouver, Canada, May 2024. (Acceptance Rate: 256/1,307 = 19.6%)
- [IMC '23] Guannan Liu, Lin Jin, Shuai Hao, Yubao Zhang, Daiping Liu, Angelos Stavrou, and Haining Wang. **Dial “N” for NXDomain: The Scale, Origin, and Security Implications of DNS Queries to Non-Existent Domains**, in *ACM Internet Measurement Conference (ACM IMC)*, Montréal, Canada, October 2023. (Acceptance Rate: 52/201 = 25.9%)
- [SIGCOMM '23] Minyuan Zhou*, Xiao Zhang*, Shuai Hao, Xiaowei Yang, Jiaqi Zheng, Guihai Chen, and Wanchun Dou. **Regional IP Anycast: Deployments, Performance, and Potentials**, in *ACM Conference of the ACM Special Interest Group on Data Communication (ACM SIGCOMM)*, New York City, NY, September 2023. (Acceptance Rate: 71/323 = 22.0%; * co-first authors)

- [CCS '22] Guannan Liu, Daiping Liu, Shuai Hao, Xing Gao, Kun Sun, and Haining Wang. **Ready Raider One: Exploring the Misuse of Cloud Gaming Services**, in *the 29th ACM Conference on Computer and Communications Security (ACM CCS)*, Los Angeles, CA, November 2022. (Acceptance Rate: $218/971 = 22.5\%$)
- [DSN '22] Rebekah Houser, Shuai Hao, Chase Cotton, and Haining Wang. **A Comprehensive, Longitudinal Study of Government DNS Deployment at Global Scale**, in *the 52nd IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, Baltimore, MD, June 2022. (Acceptance Rate: $49/262 = 18.7\%$)
- [SIGMETRICS '22] Lin Jin, Shuai Hao, Haining Wang, and Chase Cotton. **Understanding the Practices of Global Censorship through Accurate, End-to-End Measurements**, in *Proceedings of the ACM on Measurement and Analysis of Computing Systems (ACM SIGMETRICS)*, Mumbai, India, June 2022. (Acceptance Rate: $59/303 = 19.5\%$)
- [COMNET] Rui Bian, Shuai Hao, Haining Wang, and Chase Cotton. **Shining a Light on Dark Places: A Comprehensive Analysis of Open Proxy Ecosystem**, in *Computer Networks (COMNET)*, Volume 208, Elsevier, May 2022.
- [PAM '22] Alexander Gamero-Garrido, Esteban Carissimo, Shuai Hao, Bradley Huffaker, Alex C. Snoeren, and Alberto Dainotti. **Quantifying Nations' Exposure to Traffic Observation and Selective Tampering**, in *the Passive and Active Measurement Conference (PAM)*, March 2022. (Acceptance Rate: $30/62 = 48.4\%$; 🏆 Best Dataset Award)
- [ICNP '21] Lin Jin, Shuai Hao, Yan Huang, Haining Wang, and Chase Cotton. **DNSonChain: Delegating Privacy-Preserved DNS Resolution to Blockchain**, in *the 29th IEEE International Conference on Network Protocols (ICNP)*, Dallas, TX, November 2021. (Acceptance Rate: $38/154 = 24.7\%$)
- [ESORICS '21] Hao Yang, Kun Du, Yubao Zhang, Shuai Hao, Haining Wang, Jia Zhang, and Haixin Duan. **Mingling of Clear and Muddy Water: Understanding and Detecting Semantic Confusion in Blackhat SEO**, in *the 26th European Symposium on Research in Computer Security (ESORICS)*, Darmstadt, Germany, October 2021. (Acceptance Rate: $71/351 = 20.2\%$)
- [SRDS '21] Rebekah Houser, Shuai Hao, Zhou Li, Daiping Liu, Chase Cotton, and Haining Wang. **A Comprehensive Measurement-based Investigation of DNS Hijacking**, In *the 40th International Symposium on Reliable Distributed Systems (SRDS)*, Chicago, IL, September 2021. (Acceptance Rate: $27/106 = 25.5\%$)
- [WWW '21] Lin Jin, Shuai Hao, Haining Wang, and Chase Cotton. **Understanding the Impact of Encrypted DNS on Internet Censorship**, in *the 30th The Web Conference (WWW)*, Ljubljana, Slovenia, April 2021. (Acceptance Rate: $357/1,736 = 20.6\%$)
- [HCC] Yubao Zhang, Shuai Hao, and Haining Wang. **Detecting Incentivized Review Groups with Co-Review Graph**, in *High-Confidence Computing*, Volume 1 Issue 1, Elsevier, June 2021.
- [SecureComm '20] Yubao Zhang, Shuai Hao, and Haining Wang. **Review Trade: Everything is Free in Incentivized Review Groups**, in *the 16th EAI International Conference on Security and Privacy in Communication Networks (SecureComm)*, Washington D.C., October 2020.
- [IEEE-TIFS] Yubao Zhang, Jidong Xiao, Shuai Hao, Haining Wang, Sencun Zhu, and Sushil Jajodia. **Understanding the Manipulation on Recommender Systems through Web Injection**, in *IEEE Transactions on Information Forensics and Security (TIFS)*, Volume 15, 2020.
- [ICNP '19] Lin Jin, Shuai Hao, Haining Wang, and Chase Cotton. **Unveil the Hidden Presence: Character-**

- izing the Backend Interface of Content Delivery Networks, in *the 27th IEEE International Conference on Network Protocols (ICNP)*, Chicago, IL, October 2019. (Acceptance Rate: $38/210 = 18.1\%$)
- [SIGCOMM CCR] Rui Bian, Shuai Hao, Haining Wang, Amogh Dhamdhere, Alberto Dainotti, and Chase Cotton. **Towards Passive Analysis of Anycast in Global Routing: Unintended Impact of Remote Peering**, in *ACM SIGCOMM Computer Communication Review (CCR)*, Volume 49 Issue 3, July 2019.
- [USENIX Sec '18] Shuai Hao, Yubao Zhang, Haining Wang, and Angelos Stavrou. **End-Users Get Maneuvered: Empirical Analysis of Redirection Hijacking in Content Delivery Networks**, in *the 27th USENIX Security Symposium (USENIX Security)*, Baltimore, MD, August 2018. (Acceptance Rate: $100/524 = 19.1\%$)
- [DSN '18] Lin Jin, Shuai Hao, Haining Wang, and Chase Cotton. **Your Remnant Tells Secret: Residual Resolution in DDoS Protection Services**, in *the 48th IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, Luxembourg City, Luxembourg, June 2018. (Acceptance Rate: $62/232 = 26.7\%$)
- [INFOCOM '18] Shuai Hao*, Haitao Xu*, Alparslan Sari, and Haining Wang (*co-first authors). **On the Privacy Implications of Email Tracking**, in *IEEE International Conference on Computer Communications (INFOCOM)*, Honolulu, HI, April 2018. (Acceptance Rate: $309/1,606 = 19.2\%$)
- [IEEE Access] Kun Xie, Xiaohong Huang, Shuai Hao, and Maode Ma. **Distributed Power Saving for Large-Scale Software-Defined Data Center Networks**, in *IEEE Access*, January 2018.
- [SIGCOMM CCR] Shuai Hao and Haining Wang. **Exploring Domain Name Based Features on the Effectiveness of DNS Caching**, in *ACM SIGCOMM Computer Communication Review (CCR)*, Volume 47 Issue 1, January 2017.
- [CCS '16] Daiping Liu, Shuai Hao, and Haining Wang. **All Your DNS Records Point to Us: Understanding the Security Threats of Dangling DNS Records**, in *the 23rd ACM Conference on Computer and Communications Security (ACM CCS)*, Vienna, Austria, October 2016. (Acceptance Rate: $137/831 = 16.5\%$)
- [IEEE Access] Kun Xie, Xiaohong Huang, Shuai Hao, Maode Ma, Pei Zhang, and Dingyuan Hu. **E³MC: Improving Energy Efficiency via Elastic Multi-Controller SDN in Data Center Networks**, in *IEEE Access*, October 2016.
- [ICNP '15] Shuai Hao, Haining Wang, Angelos Stavrou, and Evgenia Smirni. **On the DNS Deployment of Modern Web Services**, in *the 23rd IEEE International Conference on Network Protocols (ICNP)*, San Francisco, CA, November 2015. (Acceptance Rate: $38/190 = 20.0\%$; *Best Paper Nominee*)

Workshops, Posters, and Patents

Junghwan Rhee, Hongyu Li, Shuai Hao, Chung Hwan Kim, Zhenyu Wu, Zhichun Li, Kangkook Jee, and Lauri Korts-Parn. **Host Behavior and Network Analytics Based Automotive Secure Gateway**, *US Patent 10931635B2*, 2021.

Shuai Hao, Xiaohong Huang, and Yan Ma. **A Simple Packet Authentication Mechanism Based on Stateless Core Approach**, in *Workshop on Management of Emerging Networks and Services, IEEE Globecom*, Miami, FL, 2010.

Shuai Hao, Xiaohong Huang, and Yan Ma. **Application QoS for Video: Benchmarking, Control Strategies, and Systems**, in *the 5th IEEE International Conference on Wireless Communications*,

Networking and Mobile Computing, Beijing, China, 2009.

**PROFESSIONAL
ACTIVITIES**

Program Committee

ACM CCS '25 '26 - ACM Conference on Computer and Communications Security
ACM IMC '24 '25 '26 - ACM Internet Measurement Conference
NDSS '26 - Network and Distributed System Security Symposium
USENIX '25 - USENIX Security Symposium
IEEE EuroS&P '25 - IEEE European Symposium on Security and Privacy
ACSAC '24 '25 - Annual Computer Security Applications Conference
IEEE/IFIP DSN '20 '21 '22 '24 '25 - IEEE/IFIP Dependable Systems and Networks
PAM '22 '23 '24 '25 '26 - Passive and Active Measurement Conference
IEEE CNS '22 '23 '24 '25 - IEEE Conference on Communications and Network Security
RAID '23 - International Symposium on Research in Attacks, Intrusions, and Defenses
MADWeb '24 '25 - The Workshop on Measurements, Attacks, and Defenses for the Web

Professional Services

IEEE Conference on Communications and Network Security (CNS) '22 - Poster Chair, Panelist

Conference/Journal Reviewer

ESORICS '21 '22 '23
IEEE/ACM IWQoS '23
WWW '23
ACM CODASPY '22
IEEE INFOCOM '14 '15 '16 '17 '18 '19 '20 '21 '22
IEEE/IFIP DSN '14 '15 '16 '17 '19
ACM IMC '18 (*Shadow PC*)
ACM CCS '17 '18
IEEE CNS '15 '18
IEEE HASE '17
ACM IWSPA '17
SECURITY '16
SecureComm '15 '16
IEEE Security & Privacy (Oakland) '15
ICICS '13 '19

IEEE/ACM Transactions on Networking (ToN)
IEEE Transactions on Information Forensics and Security (TIFS)
IEEE Transactions on Dependable and Secure Computing (TDSC)
IEEE Transactions on Mobile Computing (TMC)
IEEE Transactions on Computers
IEEE Communications Letters
ACM Transactions on Privacy and Security (Formerly TISSEC)
ACM Transactions on Modeling and Performance Evaluation of Computing Systems
Journal of Computer Security
Journal of Computer Communications (ComCom)
Journal of Communications and Networks
Journal of Security and Communication Networks
Journal of Supercomputing
International Journal of Distributed Sensor Networks
IEEE Security & Privacy Magazine
EAI Transactions on Security and Safety
Communications of the Association for Information Systems

TEACHING

Department of Computer Science · Old Dominion University

CS 772/872 - Advanced Computer and Network Security: F25, S24, F22, S21

CS 761/861 - Malware Analysis and Reverse Engineering: F24, F23, F22, F21

CS 464/564 - Networked Systems Security: S25, F24, S24, S23, S22

CS 465/565 - Information Assurance: S22, S20

CS 469/569 - Data Analytics for Cybersecurity: F21

CS 795/895 - Topics: Internet Infrastructure and Security: F19

TALKS & PRESENTATIONS

Conference Talk, USENIX Security'25, Seattle, WA Aug. 2025

Invited Guest Lecture, CIS Department, University of Delaware Oct. 2024

Conference Talk, IEEE/IFIP DSN'22, Baltimore, MD June 2022

Conference Talk, ACM SIGMETRICS'22, Virtual June 2022

Invited Talk, OARC36 Workshops Nov. 2021
DNS Operations, Analysis, and Research Center (DNS-OARC)

Conference Talk, SecureComm'20, Virtual Oct. 2020

Cybersecurity Seminar Talk, Arizona State University Jan. 2019

Invited Talk, CAIDA, UC San Diego Sep. 2018
CAIDA Internet Measurement and Political Science Workshop

Conference Talk, USENIX Security'18, Baltimore, MD Aug. 2018

Security Group Luncheon, CSE Department, UC San Diego Apr. 2018

Seminar Series Talk, ECE Department, University of Delaware Sep. 2016

Conference Talk, IEEE ICNP'15, San Francisco, CA Nov. 2015