

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
Advisor: Dr. Haining Wang

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

Lin Jin, Shuai Hao, Haining Wang, and Chase Cotton. **Understanding the Impact of Encrypted DNS on Internet Censorship**, in *the 30th The Web Conference (WWW2021)*, Ljubljana, Slovenia, April 2021. (Acceptance Rate: 357/1,736=20.6%)

Yubao Zhang, Shuai Hao, and Haining Wang. **Review Trade: Everything is Free in Incentivized Review Groups**, in *the 16th International Conference on Security and Privacy in Communication Networks (SecureComm 2020)*, Washington D.C., October 2020.

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.

Lin Jin, Shuai Hao, Haining Wang, and Chase Cotton. **Unveil the Hidden Presence: Characterizing the Backend Interface of Content Delivery Networks**, in *the 27th IEEE International Conference on Network Protocols (ICNP 2019)*, Chicago, IL, October 2019. (Acceptance Rate: 38/210=18.1%)

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.

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 2018)*, Baltimore, MD, August 2018. (Acceptance Rate: 100/524=19.1%)

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 2018)*, Luxembourg City, Luxembourg, June 2018. (Acceptance Rate: 62/232=26.7%)

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 2018)*, Honolulu, HI, April 2018. (Acceptance Rate: 309/1,606=19.2%)

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.

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.

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 (CCS 2016)*, Vienna, Austria, October 2016. (Acceptance Rate: 137/831=16.5%)

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.

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 2015)*, 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 App.* 16/146,166, April 2019.

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

IEEE/IFIP International Conference on Dependable Systems and Networks (DSN) '20 '21
International Conference on Information and Communications Security (ICICS) '21

Conference/Journal Reviewer

ACM IMC '18 (*Shadow PC*)
IEEE INFOCOM '14 '15 '16 '17 '18 '19 '20 '21
IEEE/IFIP DSN '14 '15 '16 '17 '19
ACM CCS '17 '18
IEEE CNS '15 '18
IEEE HASE '17
ACM IWSPA '17
SECRYPT '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)
ACM Transactions on Privacy and Security (Formerly TISSEC)
Journal of Computer Communications (ComCom)
Journal of Communications and Networks
Journal of Security and Communication Networks
International Journal of Distributed Sensor Networks
IEEE Security & Privacy Magazine
EAI Transactions on Security and Safety
Journal of Computer Security
Communications of the Association for Information Systems
IEEE Communications Letters

Talks & Presentations

Cybersecurity Seminar Talk, Arizona State University Jan. 2019
Invited Talk, CAIDA, UC San Diego Sep. 2018
CAIDA Internet Measurement and Political Science Workshop

Security Group Luncheon, CSE Department, UC San DiegoApr. 2018
Seminar Series Talk, ECE Department, University of Delaware Sep. 2016

Teaching

Department of Computer Science · Old Dominion University

Spring 2021: CS 795/895 - Topics: Advanced Computer and Network Security

Spring 2020: CS 465/565 - Information Assurance

Fall 2019: CS 795/895 - Topics: Internet Infrastructure and Security