

# Shuai Hao

## Assistant Professor

Department of Computer Science  
Old Dominion University  
4700 Elkhorn Ave, Norfolk, VA 23529

(757) 683-6001  
shao@odu.edu  
<https://shhaos.github.io>

## Research

### Networking and Security

Applying **measurement**, **empirical study**, and **data-driven approach** to (1) study 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 (DNS, CDN, Routing, etc.)
- Internet Measurement and Topology
- Network Attack and Defense
- Network Intrusion Detection System
- Web Security and Privacy

## 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.Eng. in Computer Science · 2003 - 2007

**North China Electric Power University** ..... Baoding, Hebei, China

## Experience & Appointments

Assistant Professor,  
**Old Dominion University** ..... Norfolk, VA  
Department of Computer Science & ..... July 2019 - present  
Center for Cybersecurity Education and Research

Postdoctoral Researcher,  
**Center for Applied Internet Data Analysis (CAIDA)**,  
**University of California, San Diego** ..... La Jolla, CA  
Supervisors: Dr. Amogh Dhamdhere and Dr. Alberto Dainotti ..... 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 · Supervisor: 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 · Supervisor: Dr. Ke Xu ..... 2010–2011

## Publications

- 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)*, 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)*, 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)*, Luxembourg City, Luxembourg, June 2018. (Acceptance Rate:  $62/232 = 26.7\%$ )
- Haitao Xu\*, **Shuai Hao**\*, 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:  $309/1606 = 19.2\%$ )
- Kun Xie, Xiaohong Huang, **Shuai Hao**, and Maode Ma. **Distributed Power Saving for Large-Scale Software-Defined Data Center Networks**, in *Journal of 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)*, Vienna, Austria, October 2016. (Acceptance Rate:  $137/831 = 16.5\%$ )
- Kun Xie, Xiaohong Huang, **Shuai Hao**, Maode Ma, Pei Zhang, and Dingyuan Hu. **E<sup>3</sup>MC: Improving Energy Efficiency via Elastic Multi-Controller SDN in Data Center Networks**, in *Journal of 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)*, San Francisco, CA, November 2015. (Acceptance Rate:  $38/190 = 20.0\%$ ; *Best Paper Nominee*)
- 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 Business Systems**, in *the 5th IEEE International Conference on Wireless Communications, Networking and Mobile Computing*, Beijing, China, 2009.

## Professional Activities

### Program Committee

IEEE/IFIP DSN '20

### Conference/Journal Reviewer

ACM IMC '18 (Shadow PC)

IEEE INFOCOM '14 '15 '16 '17 '18 '19

IEEE/IFIP DSN '14 '15 '16 '17 '19

ACM CCS '17 '18

IEEE CNS '15 '18

ACM IWSPA '17

IEEE HASE '17

SECURITY '16

SecureComm '15 '16

IEEE Security & Privacy (*Oakland*) '15

IEEE/ACM Transactions on Networking (ToN)

ACM Transactions on Privacy and Security (Formerly TISSEC)

IEEE Transactions on Information Forensics and Security (TIFS)

Journal of Computer Communications (ComCom)

Journal of Communications and Networks (JCN)

Journal of Security and Communication Networks

International Journal of Distributed Sensor Networks

IEEE Security & Privacy Magazine

IEEE Transactions on Mobile Computing (TMC)

## Talks & Presentations

Cybersecurity Seminar Talk, Arizona State University ..... Jan. 2019

Invited Talk, CAIDA, UC San Diego ..... Sep. 2018

CAIDA Internet Measurement And Political Science (IMAPS) Workshop

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

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

## Teaching

### Department of Computer Science · Old Dominion University

Fall 2019: CS795/895 - Topics in Internet Infrastructure and Security