

Song Fang

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Research Interests

Wireless and Mobile System Security; Cyber Physical Systems and Internet of Things (IoT) Security; Application of Artificial Intelligence and Machine Learning (AI/ML) in Cybersecurity; Mobile Computing; Smart Healthcare.

Education

<i>Ph.D., Computer Science and Engineering</i> University of South Florida, Tampa, FL	Aug. 2013 - Aug. 2018
<i>M.Eng., Communication and Information System</i> Beijing University of Posts and Telecommunications, Beijing, China	Aug. 2011 - Aug. 2013
<i>B.Eng. in Information Engineering, Minor in Computer Science</i> South China University of Technology, Guangzhou, China	Sep. 2007 - Jul. 2011

Work Experience

<i>Associate Professor</i> Knight Foundation School of Computing and Information Sciences Florida International University, Miami, FL	Aug. 2026 - Present
<i>William H. Barkow Presidential Professor</i> University of Oklahoma, Norman, OK	Apr. 2026 - Aug. 2026
<i>Associate Professor</i> School of Computer Science University of Oklahoma, Norman, OK	Jul. 2024 - Aug. 2026
<i>Assistant Professor</i> School of Computer Science University of Oklahoma, Norman, OK	Aug. 2018 - Jun. 2024

Publications

The asterisk (*) marks student advised by me.

Journals:

- [J1] Shengping Bi, Lang Zhou, Tao Wang, Tao Hou, Minghui Wei, Zhuo Lu, Yao Liu, and **Song Fang**
The Danger of Convenience: Understanding the Security Risks Posed by Third-Party JavaScript Inclusion and Caching
In ACM Transactions on Privacy and Security (TOPS), 2026 (Accepted).
- [J2] Qiuye He*, Edwin Yang*, **Song Fang**, and Shangqing Zhao
Revisiting Wireless Breath and Crowd Inference Attacks with Defensive Deception
In IEEE/ACM Transactions on Networking (ToN), vol. 32, no. 6, pp. 4976-4988, 2024.

- [J3] Qiuye He*, Edwin Yang*, and **Song Fang**
A Survey on Human Profile Information Inference via Wireless Signals
 In IEEE Communications Surveys & Tutorials (COMST), vol. 26, no. 4, pp. 2577-2610, 2024.
- [J4] Yan He*, Qiuye He*, **Song Fang**, and Yao Liu
Precise Wireless Camera Localization Leveraging Traffic-aided Spatial Analysis
 In IEEE Transactions on Mobile Computing (TMC), vol. 23, no. 6, pp. 7256-7269, 2024.
- [J5] Qiuye He*, **Song Fang**, Tao Wang, Yao Liu, Shangqing Zhao, and Zhuo Lu
Proactive Anti-Eavesdropping With Trap Deployment in Wireless Networks
 In IEEE Transactions on Dependable and Secure Computing (TDSC), vol. 20, no. 1, pp. 637-649, January/February 2023.
- [J6] Edwin Yang*, **Song Fang**, Ian Markwood, Yao Liu, Shangqing Zhao, Zhuo Lu, and Haojin Zhu
Wireless Training-free Keystroke Inference Attack and Defense
 In IEEE/ACM Transactions on Networking (ToN), vol. 30, no. 4, pp. 1733-1748, 2022.
- [J7] **Song Fang**, Ian Markwood, and Yao Liu
Wireless-Assisted Key Establishment Leveraging Channel Manipulation
 In IEEE Transactions on Mobile Computing (TMC), vol. 20, no. 1, pp. 263-275, 2021.
- [J8] Tao Wang, Yao Liu, Tao Hou, Qingqi Pei, and **Song Fang**
Signal Entanglement based Pinpoint Waveforming for Location-restricted Service Access Control
 In IEEE Transactions on Dependable and Secure Computing (TDSC), vol. 15, no. 5, pp. 853-867, September/October 2018.
- [J9] **Song Fang**, Yao Liu, Wenbo Shen, Haojin Zhu, and Tao Wang
Virtual Multipath Attack and Defense for Location Distinction in Wireless Networks
 In IEEE Transactions on Mobile Computing (TMC), vol. 16, no. 2, pp. 566-580, 2017.
- [J10] **Song Fang**, Yao Liu, and Peng Ning
Mimicry Attacks against Wireless Link Signatures and the New Defense using Time-Synched Link Signatures
 In IEEE Transactions on Information Forensics and Security (TIFS), vol. 11, no. 7, pp. 1515-1527, July 2016.
- [J11] **Song Fang**, Yao Liu, and Peng Ning
Wireless Communications under Broadband Reactive Jamming Attacks
 In IEEE Transactions on Dependable and Secure Computing (TDSC), vol. 13, no. 3, pp. 394-408, May/June 2016.

Conferences:

- [C1] Yan He*, Guanchong Huang*, Yao Liu, and **Song Fang**
CameraBlinder: Blinding Wireless Security Cameras Using a Low-Power Laser
 In the 33rd ACM Conference on Computer and Communications Security (ACM CCS 2026). The Hague, The Netherlands. (The first two authors are co-first authors)
 (First Review Cycle; Acceptance Rate: 191/1,206=15.8%)

- [C2] Yan He*, Guanchong Huang*, and **Song Fang**
PhantomMotion: Laser-Based Motion Injection Attacks on Wireless Security Surveillance Systems
 In the Network and Distributed System Security Symposium (NDSS 2026), pp. 1-18, February 2026, San Diego, CA.
 (Acceptance Rate: $113/646=17.5\%$)
- [C3] Guanchong Huang* and **Song Fang**
SilhouetteTell: Practical Video Identification Leveraging Blurred Recordings of Video Subtitles
 In the 26th Privacy Enhancing Technologies Symposium (PETS/PoPETS 2026), pp. 1-16, 2026.
 (Acceptance Rate: $53/225=23.6\%$)
- [C4] Guanchong Huang*, Yan He*, Shangqing Zhao, Yi Wu, and **Song Fang**
MotionDecipher: General Video-assisted Passcode Inference In Virtual Reality
 In the 28th International Symposium on Research in Attacks, Intrusions and Defenses (RAID 2025), Gold Coast, Australia, pp. 298-313, 2025.
 (Acceptance Rate: $62/281=22.1\%$)
- [C5] Edwin Yang*, Guanchong Huang*, and **Song Fang**
CommanderGPS: Practical Hidden Command Dissemination Through Pedal Operations
 In IEEE Conference on Communications and Network Security (IEEE CNS'24), pp. 1-9, 2024.
 (Acceptance Rate: $35/119=29.4\%$)
- [C6] Yan He*, Qiuye He*, **Song Fang**, and Yao Liu
When Free Tier becomes Free to Enter: A Non-Intrusive Technique to Identify Security Cameras with no Cloud Backup Subscription
 In the 30th ACM Conference on Computer and Communications Security (ACM CCS'23), pp. 651-665, Nov 2023, Copenhagen, Denmark. (The first two authors are co-first authors)
 (Acceptance Rate: $234/1222=19.1\%$)
- [C7] Qiuye He* and **Song Fang**
Phantom-CSI Attacks against Wireless Liveness Detection
 In the 26th International Symposium on Research in Attacks, Intrusions, and Defenses (RAID 2023), pp. 440-454, October 2023.
 (Acceptance Rate: $50/213=23.5\%$)
- [C8] Jinmiao Chen, Zhaohe (John) Zhang*, Shangqing Zhao, **Song Fang**, Thomas M. Peters, Evan L. Floyd, and Changjie Cai
A Data-Driven Respirator Fit Test Model via Human Speech Signal
 In IEEE/ACM international conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2023.
 (Acceptance Rate: $36/103=35.0\%$)
- [C9] Qiuye He*, Edwin Yang*, **Song Fang**, and Shangqing Zhao
HoneyBreath: An Ambush Tactic Against Wireless Breath Monitoring
 In EAI International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (EAI MobiQuitous'22), pp. 203-226, Nov 2022, Pittsburgh, PA.
[Best Paper Award]

- [C10] Edwin Yang*, **Song Fang**, and Dakun Shen
DASK: Driving-Assisted Secret Key Establishment
 In IEEE Conference on Communications and Network Security (IEEE CNS'22), pp. 73-81, 2022, Austin, TX.
 (Acceptance Rate: $43/122=35.2\%$)
- [C11] Edwin Yang*, Qiuye He*, and **Song Fang**
WINK: Inferring Numeric Keystrokes from Spatiotemporal Features of Wireless Signals
 In the 29th ACM Conference on Computer and Communications Security (ACM CCS'22), pp. 3033-3047, Nov 2022, Los Angeles, CA.
 (First Review Cycle; Acceptance Rate: $17.9\%=58/324$)
- [C12] Edwin Yang* and **Song Fang**
GPSKey: GPS based Secret Key Establishment for Intra-Vehicle Environment
 In Fourth International Workshop on Automotive and Autonomous Vehicle Security (AutoSec), 8 pages, co-located at NDSS 22, 2022.
 (Acceptance Rate: $39.1\%=9/23$)
- [C13] Zhaohe (John) Zhang*, Edwin Yang*, and **Song Fang**
CommanderGabble: A Universal Attack Against ASR Systems Leveraging Fast Speech
 In the Annual Computer Security Applications Conference (ACSAC'21), pp. 720–731, 2021.
 (Acceptance Rate: $24.5\%=80/326$)
- [C14] Yan He*, Qiuye He*, **Song Fang**, and Yao Liu
MotionCompass: Pinpointing Wireless Camera Via Motion-activated Traffic
 In the 19th ACM International Conference on Mobile Systems, Applications, and Services (ACM MobiSys'21), pp. 215–227, 2021.
 (Acceptance Rate: $36/166=21.7\%$)
- [C15] Yan He*, Hanyan Zhang*, Edwin Yang*, and **Song Fang**
Virtual Step PIN Pad: Towards Foot-input Authentication Using Geophones
 In IEEE International Conference on Mobile Ad-Hoc and Smart Systems (IEEE MASS'2020), pp. 649-657, 2020.
 (Acceptance Rate: $29.7\%=65/219$)
- [C16] **Song Fang**, Tao Wang, Yao Liu, Shangqing Zhao, and Zhuo Lu
Entrapment for Wireless Eavesdroppers
 In IEEE International Conference on Computer Communications (IEEE INFOCOM'19), pp. 2530-2538, 2019, Paris, France.
 (Acceptance Rate: $19.7\%=288/1464$)
- [C17] **Song Fang**, Ian Markwood, Yao Liu, Shangqing Zhao, and Zhuo Lu, and Haojin Zhu
No Training Hurdles: Fast Training-Agnostic Attacks to Infer Your Typing
 In the 25th ACM Conference on Computer and Communications Security (ACM CCS'18), pp. 1747-1760, 2018, Toronto, Canada.
 (Acceptance Rate: $16.56\%=134/809$)

- [C18] **Song Fang**, Ian Markwood, and Yao Liu
Manipulatable Wireless Key Establishment
 In IEEE Conference on Communications and Network Security (IEEE CNS'17), pp. 393-401, October 2017, Las Vegas, NV.
 (Acceptance Rate: $29.9\%=41/137$)
- [C19] **Song Fang**, Yao Liu, Wenbo Shen, and Haojin Zhu
Where Are You From? Confusing Location Distinction Using Virtual Multipath Camouflage
 In the 20th Annual International Conference on Mobile Computing and Networking (ACM MobiCom'14), pp. 225-236, September 2014, Maui, Hawaii.
 (Acceptance Rate: $16.36\%=36/220$)
- [C20] **Song Fang**, Yao Liu, Wenbo Shen, and Haojin Zhu
Virtual Multipath Attacks against Location Distinction in Wireless Networks
 In ACM Wireless of the Students, by the Students, for the Students (S3) Workshop, September 2014, Maui, Hawaii. (Invited paper)
- [C21] **Song Fang** and Tao Luo
A Novel Two-timer-based Broadcast Routing Algorithm for Vehicular Ad-hoc Networks
 In IEEE International Conference on Green Computing and Communications (GreenCom), and IEEE Internet of Things (iThings), and IEEE Cyber, Physical and Social Computing (CPSCom), pp.1518-1522, 2013.
- [C22] Ruina Liu, Tao Luo, Lei Zhang, Jianfeng Li, and **Song Fang**
A Forwarding Acknowledgement Based Multi-hop Broadcast Algorithm in Vehicular Ad Hoc Networks
 In IEEE International Conference on Computer Science and Network Technology (ICCSNT), pp. 1258-1262, 2012.

Posters:

- [P1] Yan He*, Guanchong Huang*, and **Song Fang**
Poster: PhantomMotion: Laser-Based Motion Injection Attacks on Wireless Security Surveillance Systems
 In the Network and Distributed System Security Symposium (NDSS), February 2026, San Diego, CA.
[Best Technical Poster Award]
- [P2] Jinmiao Chen, Zhaohe (John) Zhang*, Shangqing Zhao, **Song Fang**, Thomas M. Peters, Evan L. Floyd, and Changjie Cai
Poster: Noninvasive Respirator Fit Factor Inference by Semi-Supervised Learning
 In IEEE/ACM international conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2023.
- [P3] Edwin Yang*, **Song Fang**, Christan Grant, and Le Gruenwald
Poster: PhotoLock: Autonomous Privacy-preserving Photo Sharing in Online Social Networks
 In the Network and Distributed System Security Symposium (NDSS), February 2020, San Diego, CA.

Other Publications:

- [O1] **Song Fang**
Channel Camouflage and Manipulation Techniques in Wireless Networks
 Ph.D. Dissertation, University of South Florida, 2018.

■ Patents

- [1] Song Fang, Yan He, and Qiuye He, “Method and Apparatus for Determining Locations of Wireless Cameras,” **Granted US Patent: US12423856B2** (URL: <https://patents.google.com/patent/US12423856B2/en>); Application granted: 09/25/2025.
- [2] Song Fang, Zhaohe Zhang, and Edwin Yang, “Method for Generating Adversarial Audio based on Fast Speech,” US Patent (provisional application), serial No.: 63/431,545, filed in 2022.
- [3] Song Fang, Yan He, and Qiuye He, “A Non-Intrusive Way to Identify Security Cameras with no Cloud Subscription,” US Patent (provisional application), Invention Disclosure No. 2024-042.

■ Awards

- Apr. 2026 **William H. Barkow Presidential Professorship**, University of Oklahoma
- Feb. 2026 **Best Technical Poster Award**, NDSS 2026
- Nov. 2022 **Best Paper Award**, EAI MobiQuitous 2022
- Aug. 2022 **Fall 2022 College of Engineering Strategic Research Incentive GRA**, University of Oklahoma
- Apr. 2022 **Faculty Investment Program Award**, Office of the Vice President for Research and Partnerships, University of Oklahoma
- Mar. 2021 **FY21 Junior Faculty Research Award**, Office of the Vice President for Research and Partnerships, University of Oklahoma
- Dec. 2020 **Spring 2021 College of Engineering Strategic Research Incentive GTA**, University of Oklahoma
- Mar. 2020 **CRII award**, NSF
- Mar. 2020 **FY20 Junior Faculty Research Award**, Office of the Vice President for Research and Partnerships, University of Oklahoma
- Feb. 2020 **Computer Security course was selected as an OU Presidential Dream Course for Fall 2020 (deferred to Fall 2021 due to COVID-19)**, Provost’s Office, University of Oklahoma
- Jun. 2019 **IEEE CNS Travel Grant for Junior Researcher**, Army Research Office
- Oct. 2018 **NSF Computing Systems Research (CSR) PI Meeting Travel Grant**, NSF
- Oct. 2017 **IEEE CNS Travel Grant**, NSF
- Jul. 2017 **NSF NeTS Early Career Workshop Travel Grant**, NSF
- Sep. 2014 **ACM MobiCom Travel Grant**, NSF
- Sep. 2014 **ACM S3 Travel Grant**, NSF

■ Talks

- [1] SilhouetteTell: Practical Video Identification Leveraging Blurred Recordings of Video Subtitles
[July 2026] PETS/PoPETS’26, Calgary, Canada.
- [2] MotionDecipher: General Video-assisted Passcode Inference In Virtual Reality
[October 2025] RAID’25, Gold Coast, Australia.
- [3] When Free Tier becomes Free to Enter: A Non-Intrusive Technique to Identify Security Cameras with no Cloud Backup Subscription
[November 2023] ACM CCS’23, Copenhagen, Denmark.
- [4] Phantom-CSI Attacks against Wireless Liveness Detection

- [October 2023] RAID'23, Hong Kong.
- [5] Three Minute Talk of Faculty Research
- [Feb 2023] General Faculty Meeting, College of Engineering, OU.
- [6] Finding Hidden Eyes and Ears Around Us in the IoT Era
- [April 2022] Industry and Government Day 2022, OU.
- [7] Cyber Security, and 5G Intersection
- [January 2020] AT&T 5G, Cyber and Radar Visit, OU.
- [8] Panelist on Computing Security and Privacy Discussion Panel
- [March 2019] School of Computer Science, OU.
- [9] No Training Hurdles: Fast Training-Agnostic Attacks to Infer Your Typing.
- [October 2018] ACM CCS'18, Toronto, Canada.
- [10] Manipulatable Wireless Key Establishment.
- [October 2017] IEEE CNS'17, Las Vegas, NV.
- [11] Virtual Multipath Attack and Defense for Location Distinction in Wireless Networks.
- [November 2015] Security seminar, Dept. of Computer Science & Engineering, USF.
- [12] Where Are You From? Confusing Location Distinction Using Virtual Multipath Camouflage.
- [September 2014] ACM MobiCom'14, Maui, Hawaii.
- [13] Virtual Multipath Attacks against Location Distinction in Wireless Networks.
- [September 2014] ACM S3 Workshop 2014, Maui, Hawaii.

Teaching

- [1] CS 4173/5173-995: Computer Security, online course, OU, Summer 2025 & Summer 2026.
- [2] CS 5970: Principles & Design of IoT Systems, OU, Spring 2026.
- [3] CS 5903: Perspectives on Computing, OU, Fall 2025 & Spring 2026.
- [4] CS 3113: Intro to Operating Systems, OU, Spring 2022-2024 & Fall 2023-2024.
- [5] CS 5173/4173: Computer Security, OU, Fall 2018-2020 & Fall 2022-2024.
- [6] OU Presidential Dream Course: CS 5173/4173: Computer Security, OU, Fall 2021.
- [7] CS 5173-999: Computer Security, online course, OU, Fall 2021-2023.
- [8] CS 5970: Embedded Systems Security, OU, Spring 2020 & Spring 2021.

Professional Activities

Departmental Services:

- KFSCIS PhD Admissions Committee, Aug. 2026 - Present.
- OU CS (2018-2026):
- Committee A, Aug. 2024 - Aug. 2026 (two-year term).
- Faculty Search Committee Chair, 2023-2024, and 2024-2025.
- Computing Committee, 2020-2021, 2021-2022, and 2023 - 2026.
- Research Committee, 2022-2023.
- Faculty Evaluation Committee (Special Committee), April 2021-August 2022.
- Undergraduate Recruitment and Engagement Committee, 2019-2020.
- Graduate Recruitment/Engagement Committee, 2018-2019.

Journal Editorship:

- Associate Editor, IEEE Transactions on Dependable and Secure Computing (TDSC), Feb. 2025 - present.

Organizing Committee:

- General Chair, the Central Area Networking and Security Workshop (CANSec) 2024.

- Student Travel Committee Chair, IEEE Symposium on Security and Privacy (S&P) 2022 and 2023.
- Publicity Chair, EAI International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MobiQuitous) 2022.

Proposal Review:

- NSF Panelist, 2024.
- NSF Ad Hoc Reviewer, 2021.

Session Chair:

- Network and Distributed System Security (NDSS) Symposium 2026.
- International Symposium on Research in Attack, Intrusions and Defenses (RAID) 2025.
- IEEE Conference on Communications and Network Security (CNS) 2022.
- IEEE International Conference on Computer Communications (INFOCOM) 2021 and 2022.

Technical Program Committee:

- ACM Conference on Computer and Communications Security (CCS) 2024 and 2026.
- Network and Distributed System Security (NDSS) Symposium 2026.
- IEEE International Conference on Computer Communications (INFOCOM) 2021-2023, and 2027.
- IEEE European Symposium on Security and Privacy (EuroS&P) 2025 and 2026.
- International Symposium on Research in Attack, Intrusions and Defenses (RAID) 2025 and 2026.
- Annual Computer Security Applications Conference (ACSAC) 2026.
- International Conference on Computer Communications and Networks (ICCCN) 2023, 2025, and 2026.
- IEEE Military Communications Conference (MILCOM) 2025 and 2026 (Track 3: Cyber Security and Trusted Computing).
- ACM ASIA Conference on Computer and Communications Security (ASIACCS) 2025.
- IEEE Conference on Communications and Network Security (CNS) 2020-2026.
- IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom) 2024.
- IEEE International Conference on Mobile Ad-Hoc and Smart Systems (MASS) 2022, 2023, and 2025.
- IEEE International Conference on Communications (ICC) 2023.
- IEEE/ACM International Symposium on Quality of Service (IWQoS) 2022.
- International Conference on Network and System Security (NSS) 2020, 2021, and 2022.
- Security and Privacy in Edge Computing Workshop (EdgeSP) 2018, 2019, and 2025.
- The 10th International Workshop on Security, Privacy, Trust, and Machine Learning for Internet of Things (IoTSP-TML) 2020.

Invited Participant:

- NSF Workshop on Next-G Security 2020.
- NSF Computing Systems Research (CSR) PI Meeting 2018.
- NSF NeTS Early Career Workshop 2017.

Reviewer for Conference:

- ACM CCS 2016, 2017; IEEE INFOCOM 2016, 2017, 2020; IEEE CNS 2016, 2017, 2018; IEEE IPCCC 2015; IEEE ICC 2015, 2017; IEEE WCNC 2018.
- NeurIPS 2024.

Reviewer for Journals (25 different types of journals):

- IEEE Transactions on Mobile Computing (TMC)
- IEEE Transactions on Dependable and Secure Computing (TDSC)
- IEEE Transactions on Information Forensics & Security (TIFS)
- ACM Transactions on Privacy and Security (TOPS)

- ACM Transactions on Cyber-Physical Systems (TCPS)
- ACM Transactions on Internet of Things (TIOT)
- IEEE/ACM Transactions on Networking (ToN)
- IEEE Transactions on Wireless Communications (TWC)
- IEEE Transactions on Vehicular Technology (TVT)
- IEEE Transactions on Network Science and Engineering (TNSE)
- IEEE Transactions on Consumer Electronics (TCE)
- IEEE Internet of Things Journal (IoT-J)
- IEEE Systems Journal
- Computer Networks
- IEEE Communications Magazine
- IEEE Wireless Communications Letters
- International Journal of Security and Networks (IJSN)
- International Journal of Electronics and Communications
- IET Information Security
- Wireless Networks
- Transactions on Emerging Telecommunications Technologies
- Internet Technology Letters
- EURASIP Journal on Advances in Signal Processing
- IEEE Open Journal of Vehicular Technology
- Journal of Signal Processing Systems

Student Engagement:

- Faculty Advisor of OU WiCyS Club: Oct 2019 - Aug 2022
- Faculty Advisor of OU Cybersecurity Club: Aug 2024 - Aug 2026