Haohuang Wen

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Education

South China University of Technology	**Guangzhou, China**
B.Eng. in Software Engineering, Excellent Engineer Class	*Sep 2014 - July 2018*
The Ohio State University	**Columbus, US**
Ph.D. in Computer Science and Engineering	*Aug 2018 - May 2024*

Research Interest

Mobile and **Cellular Network** (5G / Future G) Security; **Program analysis** and Reverse engineering; **Automotive** and **IoT** Security

Publications

Highlight: SIX first-authored papers in top-tier ("Big-Four") computer security venues (USENIX Security'20'23, CCS'20, NDSS'20'23'24)

o **[NDSS'24] Haohuang Wen**, Phillip Porras, Vinod Yegneswaran, Ashish Gehani, and Zhiqiang Lin."5G-Spector: An O-RAN Compliant Layer-3 Cellular Attack Detection Service". In the Network and Distributed System Security Symposium 2024 (*Acceptance rate: 140/694=20.2%*).
★ **Distinguished Artifact Award** (*2 out of 38 submitted artifacts among 140 papers*).

o **[NDSS'23] Haohuang Wen**, Phillip Porras, Vinod Yegneswaran, and Zhiqiang Lin. "Thwarting Smartphone SMS Attacks at the Radio Interface Layer". In the Network and Distributed System Security Symposium 2023 (*Acceptance rate: 94/581=16.2%*).

o **[USENIX Security'23] Haohuang Wen** and Zhiqiang Lin. "Egg Hunt in Tesla Infotainment: A First Look at Reverse Engineering of Qt Binaries". In proceedings of the 32nd USENIX Security Symposium (*Acceptance rate: 422/1444=29.2%*).

o **[EmergingWireless'22] Haohuang Wen**, Phillip Porras, Vinod Yegneswaran, and Zhiqiang Lin. "A Fine-Grained Telemetry Stream for Security Services in 5G Open Radio Access Networks". In the 1st Workshop on Emerging Topics in Wireless.

o **[RAID'22]** Jun Yeon Won, **Haohuang Wen**, and Zhiqiang Lin. "What You See is Not What You Get: Revealing Hidden Memory Mapping for Peripheral Modeling". In Proceedings of the 25th International Symposium on Research in Attacks, Intrusions and Defenses (*Acceptance rate: 35/139=25.2%*).

o **[PETS'22]** Christopher Ellis, **Haohuang Wen**, Zhiqiang Lin, and Anish Arora. "Replay (Far) Away: Exploiting and Fixing Google/Apple Exposure Notification Contact Tracing". In Proceedings of the 29th Privacy Enhancing Technologies Symposium (*Acceptance rate: 128/534=24.0%*).

o **[CCS'20] Haohuang Wen**, Zhiqiang Lin, and Yinqian Zhang. "FirmXRay: Detecting Bluetooth Link Layer Vulnerabilities from Bare-Metal Firmware". In Proceedings of the 27th ACM Conference on Computer and Communications Security (*Acceptance rate: 121/715=16.9%*).

o **[SecureComm'20] Haohuang Wen**, Qingchuan Zhao, Zhiqiang Lin, Dong Xuan, and Ness Shroff.

"A Study of the Privacy of COVID-19 Contact Tracing Apps". In Proceedings of the International Conference on Security and Privacy in Communication Networks.

o **[SecureComm'20]** Qingchuan Zhao, **Haohuang Wen**, Zhiqiang Lin, Dong Xuan, and Ness Shroff. "On the Accuracy of Measured Proximity of Bluetooth-based Contact Tracing Apps". In Proceedings of the International Conference on Security and Privacy in Communication Networks.

o **[NDSS'20] Haohuang Wen**, Qingchuan Zhao, Qi Alfred Chen and Zhiqiang Lin. "Automated Cross-Platform Reverse Engineering of CAN Bus Commands from Mobile Apps". In Proceedings of the Network and Distributed System Security Symposium (*Acceptance rate: 88/506=17.4%*).

o **[USENIX Security'20] Haohuang Wen**, Qi Alfred Chen, and Zhiqiang Lin. "Plug-N-Pwned: Comprehensive Vulnerability Analysis of OBD-II Dongles as A New Over-the-Air Attack Surface in Automotive IoT". In Proceedings of the 29th USENIX Security Symposium (*Acceptance rate: 157/977=16.1%*).

o **[CCS'19]** Chaoshun Zuo, **Haohuang Wen**, Zhiqiang Lin and Yinqian Zhang. "Automatic Fingerprinting of Vulnerable BLE IoT Devices with Static UUIDs from Mobile Apps". In Proceedings of the 26th ACM Conference on Computer and Communications Security (*Acceptance rate: 149/934=16.0%*).

o **[APSEC'18] Haohuang Wen**, Juanru Li, Yuanyuan Zhang, and Dawu Gu. "An Empirical Study of SDK Credential Misuse in iOS Apps". In Proceedings of 25th Asia-Pacific Software Engineering Conference.

o **[IEEE Access] Haohuang Wen**, Lei Yang, and Zhenyu Wang. "ParGen: A Parallel Method for Partitioning Data Stream Applications in Mobile Edge Computing". In IEEE Access 2017.

Work Experience

SRI International	**Remote**
Security Research Intern	*May 2023 - Aug 2023*
The Ohio State University	**Columbus, US**
Graduate Teaching Assistant (CSE 5474 - Software Security)	*Jan 2023 - May 2023*
SRI International	**Remote**
Security Research Intern	*May 2022 - Aug 2022*
SRI International	**Remote**
Security Research Intern	*May 2021 - July 2021*
The Ohio State University	**Columbus, US**
Graduate Research Assistant	*Aug 2018 - Present*
Shanghai Jiao Tong University	**Shanghai, China**
Security Research Intern	*Mar 2018 - May 2018*
Tencent Technology Co., Ltd	**Guangzhou, China**
Android Developer Intern	*July 2017 - Sep 2017*

Professional Service

Conference Program Committee / Reviewer:
o The ACM Web Conference: 2024
o EAI International Conference on Security and Privacy in Communication Networks (SecureComm): 2023
o Annual Computer Security Applications Conference (ACSAC) Artifact Evaluation Committee: 2019

Journal Reviewer:
- o IEEE Transactions on Intelligent Transportation Systems: 2024
- o IEEE Transactions on Mobile Computing (TMC): 2024
- o IEEE Internet of Things Journal (IoT-J): 2023
- o IEEE Communications Magazine: 2023
- o IEEE Security & Privacy Journal: 2022

External Reviewer: CCS (22, 20), IEEE S&P (24, 22, 21), USENIX Security (22, 21), NDSS (20, 19), ACSAC (22, 20, 19), DSN (22, 21, 20), ESORICS (22), SecureComm (19), DFRWS (20, 19), AutoSec (21)

Selected Media Coverage

- o NSF invests $25M to advance technologies and communications to operate securely through 5G networks. 09/21/2023.
- o 5G Security-Enhanced Open Radio Access Networks - Nephio. 05/03/2023.
- o NSF, DOD partner to advance 5G technologies and communications for U.S. military, government and critical infrastructure operators. 09/07/2022
- o Google/Apple's contact-tracing apps susceptible to digital attacks. 08/08/2022.
- o Hackers could target COVID-19 contact tracing apps on your phone: Ohio State researchers. 07/21/2022.
- o HES application is one year old. Do you think he was born happy? 04/18/2021.
- o The Risks Posed by Wireless Automotive Dongles. 08/12/2020.
- o Hacking Bluetooth. 02/27/2020.
- o Fundamental Design Flaw Leaves Bluetooth Devices Vulnerable to Hacking. 11/15/2019

Selected Awards and Honors

- o NDSS'24 Distinguished Artifact Award (2024)
- o OSU Presidential Fellowship (2023)
- o Departmental Graduate Research Award (2023)
- o NDSS student travel grant (2020)
- o CCS student travel grant (2019)
- o First Class Scholarship (Top 1%), South China University of Technology (2015)

Expertise and Skills

Programming Languages : Python, Java, C++, C

Skill Set: Mobile App Development and Reverse Engineering (iOS & Android), Binary analysis (x86 & ARM), Software-defined radio programming (USRP, BladeRF series)

Tools/Framework: Ghidra, Frida, IDA Pro, GDB, Jeb, Soot, Wireshark, Charles, QEMU, Docker, Kubernetes, AOSP, OpenAirInterface, srsRAN, SD-RAN