

# Chen Yan (闫琛)

Ph.D. candidate

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## RESEARCH AREAS

The security of sensing, with a focus on signals from the physical world to analog and digital systems such as sensors, mobile devices, automobiles, IoT, medical devices, and voice assistants.

## EDUCATION

### Zhejiang University

Hangzhou, China

Ph.D. candidate, Control Theory and Engineering, *Sept. 2015 – present*

Advisor: Prof. Wenyuan Xu

Expected Graduation Date: *Jun. 2020*

### Zhejiang University

Hangzhou, China

B.E., Electrical and Electronics Engineering, *Jul. 2015*

Advisor: Prof. Wenyuan Xu

Thesis: Security Analysis of In-car Sensor Systems: An Aftermarket TPMS Case Study

Minor: English Language

## ACADEMIC EXPERIENCE

### University of Michigan

Ann Arbor, USA

Research Assistant, *Jul. – Aug. 2016*

Security and Privacy Research Group (SPQR)

Advisor: Prof. Kevin Fu

### University of California, Berkeley

Berkeley, USA

Summer school, *Jul. – Aug. 2013*

## PUBLICATIONS

1. **Chen Yan**, Yan Long, Xiaoyu Ji, Wenyuan Xu. “The Catcher in the Field: A Fieldprint based Spoofing Detection for Text-Independent Speaker Verification”, to appear at *ACM Conference on Computer and Communications Security (CCS)* 2019.
2. **Chen Yan**, Hocheol Shin, Connor Bolton, Wenyuan Xu, Yongdae Kim, Kevin Fu. “SoK: A Minimalist Approach to Formalizing Analog Sensor Security”, to appear at *IEEE Symposium on Security and Privacy (S&P)* 2020.
3. **Chen Yan**, Guoming Zhang, Xiaoyu Ji, Tianchen Zhang, Taimin Zhang, Wenyuan Xu. “The Feasibility of Injecting Inaudible Voice Commands to Voice Assistants”, to appear on *IEEE Transactions on Dependable and Secure Computing (TDSC)*.

4. Xinyan Zhou, Xiaoyu Ji, **Chen Yan**, Jiangyi Deng, Wenyuan Xu. "NAuth: Secure Face-to-Face Device Authentication via Nonlinearity", In *Proceedings of the IEEE Conference on Computer Communications (INFOCOM)*. 2019.
5. **Chen Yan**, Kevin Fu, Wenyuan Xu. "On Cuba, Diplomats, Ultrasound, and Intermodulation Distortion." *Computers in Biology and Medicine* 104 (2019): 250-266.
6. Wenyuan Xu, **Chen Yan**, Weibin Jia, Xiaoyu Ji, Jiaohao Liu. "Analyzing and Enhancing the Security of Ultrasonic Sensors for Autonomous Vehicles." *IEEE Internet of Things Journal*, 5.6 (2018): 5015-5029.
7. **Chen Yan**, Kevin Fu, and Wenyuan Xu. "On Cuba, Diplomats, Ultrasound, and Intermodulation Distortion." *Technical report*. 2018.
8. Guoming Zhang, **Chen Yan (co-first author)**, Xiaoyu Ji, Tianchen Zhang, Taimin Zhang, and Wenyuan Xu. "DolphinAttack: Inaudible Voice Commands." In *Proceedings of the ACM Conference on Computer and Communications Security (CCS)*. 2017. (Acceptance ratio: 18%, **Best Paper Award**).
9. Kevin Fu, Harold Thimbleby, Wenyuan Xu, and **Chen Yan**. "Ransomware: How we can climb out of this mess." *China Medical Devices*, 32, 7 (2017), 167-168.
10. Benjamin Ransford, Daniel B. Kramer, Denis Foo Kune, Julio Auto de Medeiros, **Chen Yan**, Wenyuan Xu, Thomas Crawford, and Kevin Fu. "Cybersecurity and medical devices: A Practical guide for cardiac electrophysiologists." *Pacing and Clinical Electrophysiology* 40.8 (2017): 913-917.
11. **Chen Yan**, Wenyuan Xu, and Jianhao Liu. "Can you trust autonomous vehicles: Contactless attacks against sensors of self-driving vehicles." *DEF CON 24*. 2016.
12. **Chen Yan**, and Wenyuan Xu. "Security and Privacy Challenges of Modern Automobiles." *Communications of the CCF*, 12, 1 (2016), 20-27.

## INVITED TALKS

- **University of Oxford**, Oxford, United Kingdom, *Feb. 2019*  
Analog Security of Cyber-Physical Systems: A Trust Crisis in Sensors
- **China Internet Security Conference (ISC) - HackPwn 2017**, Beijing, China, *Sept. 2017*  
Deceiving Eyes: Analog and Sensing Security
- **XCon 2017**, Beijing China, *Aug. 2017*  
A Trust Crisis with Sensors in Automobiles
- **China Automotive Cyber Security Summit 2017**, Shanghai, China, *Feb. 2017*  
Sensing Security of Autonomous Vehicles
- **POC 2016**, Seoul, Korea, *Nov. 2016*  
Can You Trust Autonomous Vehicles: Contactless Attacks against Sensors of Self-Driving Vehicles
- **PacSec 2016**, Tokyo, Japan, *Oct. 2016* (presented by Prof. Wenyuan Xu)  
Can You Trust Autonomous Vehicles: Contactless Attacks against Sensors of Self-Driving Vehicles
- **DEF CON 24**, Las Vegas, United States, *Aug. 2016*  
Can You Trust Autonomous Vehicles: Contactless Attacks against Sensors of Self-Driving Vehicles
- **IEEE TrustCol 2015**, Hangzhou, China, *Oct. 2015*  
Security and Privacy Challenges of Smart Vehicles
- **GeekPwn 2015 Open Course**, Shanghai, China, *Jun. 2015*  
Reverse Engineering an Aftermarket TPMS
- **Shanxi Government Security Workshop**, Taiyuan, China, *Jun. 2015*

## HONORS

- Top 10 Academic Advances of Zhejiang University in 2017, **Zhejiang University**, 2018
- Best Paper Award, **ACM CCS**, 2017
- Tesla Motors Information Security Recognition (No. 094/6831), **Tesla Motors**, 2016
- 1<sup>st</sup> Prize winner of Winter HackPwn Car Hacking Contest, **Syscan360**, 2016
- Student Stipends, **CHES**, 2016
- Student Travel Award, **AsiaCCS**, 2016
- 1<sup>st</sup> Prize winner of HackPwn, **Qihoo 360**, 2015
- 1<sup>st</sup> Prize Scholarship on Academic Performance, **Zhejiang University**, 2014
- Outstanding Student Awards, **Zhejiang University**, 2014
- Texas Instrument Scholarship, **Texas Instrument**, 2014
- Outstanding Student Leader Awards, **Zhejiang University**, 2012
- Excellent Social Work Scholarship, **Zhejiang University**, 2012

## PROFESSIONAL ACTIVITIES

### Reviewer for

- IEEE Sensors 2019
- IEEE Vehicular Technology Magazine
- IEEE Transactions on Information Forensics and Security (TIFS)
- IEEE Transactions on Cognitive and Developmental Systems
- IEEE Intelligent Transportation Systems Magazine

### Conference Service

- Volunteer: DEF CON 24 Car Hacking Village, Las Vegas, United States, *Aug. 2016*
- Chair Assistant: 2015 China Internet Security Conference (ISC) IoT Forum, Beijing, China, *Sept. 2015*

## SELECTED NEWS COVERAGE

- IEEE Spectrum: <https://spectrum.ieee.org/semiconductors/devices/finally-a-likely-explanation-for-the-sonic-weapon-used-at-the-us-embassy-in-cuba>
- The Conversation: <https://theconversation.com/can-sound-be-used-as-a-weapon-4-questions-answered-83627>
- Wired: <https://www.wired.com/story/security-roundup-germany-election-software-is-hackable>
- BBC: <http://www.bbc.com/news/technology-41188557>
- MIT Technology Review: <https://www.technologyreview.com/s/608825/secret-ultrasonic-commands-can-control-your-smartphone-say-researchers/>
- Xinhua News, [http://www.xinhuanet.com/fortune/2017-10/31/c\\_1121881819.htm](http://www.xinhuanet.com/fortune/2017-10/31/c_1121881819.htm)
- Zhejiang University, <http://www.zju.edu.cn/2017/0911/c578a637706/page.htm>
- dailySECU: <http://www.dailysecu.com/news/articleView.html?idxno=16945>
- Wired: <https://www.wired.com/2016/08/hackers-fool-tesla-ss-autopilot-hide-spoof-obstacles/>
- Forbes: <http://www.forbes.com/sites/thomasbrewster/2016/08/04/tesla-autopilot-hack-crash/#235519f6dc93>