

# Feng Xiao

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## Bio

My research interests are in **software and system security**. In particular, I am very interested in taking a proactive and adversarial approach to protect computer systems. Currently, I am intensively working on software debloating and customization.

## Education

- 2019-Now**    Ph.D. in Computer Science - Georgia Tech
- 2014-2018**    Bachelor in Computer Science - Wuhan University

## Publications

- S&P'20**            Unexpected Data Dependency Creation and Chaining: A New Attack to SDN.  
**Feng Xiao**, Jinquan Zhang, Jianwei Huang, Guofei Gu, Dinghao Wu, Peng Liu.  
*Accepted to appear*
- CCS'18**            PatternListener: Cracking Android Pattern Lock Using Acoustic Signals.  
Man Zhou, Qian Wang, Jingxiao Yang, Qi Li, **Feng Xiao**, Zhibo Wang, Xiaofeng Chen.  
*Accepted*
- DEFCON 26**        Hacking the Brain: Customize Evil Protocol to Pwn an SDN Controller.  
**Feng Xiao**, Jianwei Huang, Peng Liu.  
*Accepted*    Video
- MobiCom'17**        Enabling Secure Location Authentication in Drone. (poster)  
**Feng Xiao**, Man Zhou, Youcheng Liye, Jingxiao Yang, Qian Wang.  
*Accepted*
- SCN**                CHAOS: An SDN-Based Moving Target Defense System.  
Yuan Shi, Huanguo Zhang, Juan Wang, **Feng Xiao**, Jianwei Huang, Daochen Zha.  
*Accepted*

## Work Experiences

- Aug 2018 -**    Cyber Security Lab, Penn State  
**Jul 2019**        *Research Assistant*

- I developed an automatic SDN vulnerability finding tool and found 18 previously unknown vulnerabilities from 4 widely used SDN controllers. Nine CVEs were assigned for our discovery. This work has been accepted to IEEE S&P 2020

**Aug 2017 -** Security Platform Department, Tencent  
**Sep 2017** *Security Engineer Intern*

- I proposed a new XSS mitigation method leveraging the feature of Content Security Policy, and the method is gradually deploying in all servers of Tencent.
- I captured and mitigate one 0day attack (CVE 2017-9805) towards our companies' servers, and I found 8 high risk vulnerabilities from the products of Tencent.

## Project Experiences

### ■ Windows Kernel Rootkit

Description: Designed a driverless method that bypasses Windows Kernel Protection (i.e., PG, DSE) on ALL Windows platform (Till April 2018).  
(Finished in April 2018)

Outputs: Developed a comprehensive Windows all platform Rootkit (40,000+ LoC) with DNS C&C tunnel, keylogger, etc.

Reference: No public disclosure due to ethic concerns.

### ■ Android App Cryptography Insecurities

Description: Discovered a new universal security risk shared by the majority of mobile apps, which can be exploited to forge apps' cryptographically consistent messages to abuse mobile services.  
(Finished in August 2016)

Outputs: (1) Develop a dynamic hook framework StupidHam to semi-automatically verified such risks. to bring serious attack effects  
(2) The most serious vulnerability, found from Chinese largest food delivery company Eleme, was honored as the most valuable vulnerability by Wooyun, the biggest bug hunting community.

Reference: Bug Disclosure on Wooyun App Injection Framework

## Honors & Awards

**Oct 2018** ACM CCS Student Travel Grant Award.

**Nov 2017** First Prize of XMCTF (Rank 1<sup>st</sup> domestically).

**Oct 2017** LeiJun Scholarship (Top 1 out of 310).

**Dec 2016** **National Scholarship** (The highest student honor in China, awarded to top 0.2% students nationwide).

**Aug 2016** First Prize of National Undergraduate Information Security Contest.

**Oct 2015** Yuanyi Scholarship (Top 1 out of 310).

**Apr 2015** Third Prize of OCTF (Rank 6<sup>th</sup> internationally).

**Dec 2014** First Prize of BCTF (Rank 2<sup>nd</sup> domestically).

## Vulnerability I discovered

<b>CVE-2019-13623</b>	Ghidra Arbitrary Code Execution
<b>CVE-2019-13624</b>	ONOS Remote Command Execution
<b>CVE-2018-1132</b>	Opendaylight's SDNInterfaceapp SQL injection.
<b>CVE-2018-15595</b>	Opendaylight's TSDR Denial of Service.
<b>CVE-2018-1999020</b>	ONOS Controller Directory Traversal.
<b>CVE-2018-1000614</b>	ONOS Controller Notification XXE.
<b>CVE-2018-1000615</b>	ONOS Controller OVSDB Remote Denial of Service.
<b>CVE-2018-1000616</b>	ONOS Controller XMLCONFIGPARSER XXE.
<b>CVE-2018-1000617</b>	Atlassian Floodlight Controller Remote Denial of Service.
<b>CVE-2018-1000163</b>	Atlassian Floodlight Controller Web Console Cross-Site Scripting.