

# Feng Xiao

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<b>School</b>	Wuhan University	<b>Major</b>	Computer Science
<b>Github</b>	<a href="https://github.com/xiaofen9">https://github.com/xiaofen9</a> (172 stars)	<b>Email</b>	f3ixiao@gmail.com

## Bio

My research interests are in **software security**. I work with immense zeal to build secure systems and mitigate bugs or vulnerabilities in the context of real-world systems.

## Education

**2014-2018** Bachelor in Computer Science - Wuhan University

<i>Rank of Grade</i>	Top 1 out of 40
<i>GPA</i>	3.87 (Major 3.92) out of 4

## Publications

<b>IEEE S&amp;P</b>	Unexpected Data Dependency Creation and Chaining: A New Attack to SDN. <b>Feng Xiao</b> , Jinqun Zhang, Jianwei Huang, Guofei Gu, Dinghao Wu, Peng Liu. <i>Under Review</i>
<b>DEFCON 26</b>	Hacking the Brain: Customize Evil Protocol to Pwn an SDN Controller. <b>Feng Xiao</b> , Jianwei Huang, Peng Liu. <i>Accepted</i> Video
<b>CCS'18</b>	PatternListener: Cracking Android Pattern Lock Using Acoustic Signals. Man Zhou, Qian Wang, Jingxiao Yang, Qi Li, <b>Feng Xiao</b> , Zhibo Wang, Xiaofeng Chen. <i>Accepted</i>
<b>MobiCom'17</b>	Enabling Secure Location Authentication in Drone. (poster) <b>Feng Xiao</b> , Man Zhou, Youcheng Liye, Jingxiao Yang, Qian Wang. <i>Accepted</i>
<b>ToN</b>	LinkBait: Active Link Obfuscation to Thwart Link-flooding attack. Qian Wang, <b>Feng Xiao</b> , Man Zhou, Zhibo Wang, Qi Li. <i>Under review</i>
<b>SCN</b>	CHAOS: An SDN-Based Moving Target Defense System. Yuan Shi, Huanguo Zhang, Juan Wang, <b>Feng Xiao</b> , Jianwei Huang, Daochen Zha. <i>Accepted</i>

## Project Experiences

### ■ SDN Custom Attack

Description: Proposed the first SDN attack that can remotely compromise SDN software stack to simultaneously cause multiple kinds of attack effects in SDN controllers.  
(Finished in Oct 2018)

Outputs:

- (1) Discover 19 related 0days from 5 most popular SDN controllers, and constructs 23 exploit chains that can bring serious attack effects
- (2) Designed a backward taint analysis and logic reasoning framework to automatic detect such vulnerabilities (3,100+ LoC).
- (3) This work was accepted by the top industrial conference **DEFCON 26** as an official talk.

Reference: DEFCON Talk Attack Video Demo

#### ■ 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).

**Aug 2015** Second Prize and Most Potential Student Prize of National SDN Programming Contest.

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

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

## Work Experiences

**Aug 2017 -** Security Platform Department, Tencent

**Sep 2017** *Internship*

Security Engineer

- 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.

## Vulnerability I discovered

**CVE-2018-1132** Opendaylight's SDNInterfaceapp SQL injection.

**CVE-2018-15595** Opendaylight's TSDR Denial of Service.

**CVE-2018-1999020** ONOS Controller Directory Traversal.

**CVE-2018-1000614** ONOS Controller Notification XXE.

**CVE-2018-1000615** ONOS Controller OVSDB Remote Denial of Service.

**CVE-2018-1000616** ONOS Controller XMLCONFIGPARSER XXE.

**CVE-2018-1000617** Atlassian Floodlight Controller Remote Denial of Service.

**CVE-2018-1000163** Atlassian Floodlight Controller Web Console Cross-Site Scripting.