Feng **Xiao**

PhD. student In Computer Science

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Summary

Current PhD. student at Georgia Tech. 6+ years experience specializing in the security tool development and OS hacking. Interested in developing proactive and adversarial approaches to protect computer systems.

Project Experience

Test-driven Protocol Feature Identification and Debloating

Atlanta, USA

Georgia Tech — *Jul. 2019 - Now*

- Proposed an new method to identify and remove unwanted program logics from deployed protocol implementations.
- Built Deproto, a fully automatic protocol debloating framework by combining dynamic program tracing (Intel Pin) and static control flow analysis.
- Evaluated Deproto on several protocol implementations. The results indicated that Deproto is able to succuessfuly remove features from complex protocols such as OpenSSL (588+ KloC).

Windows Kernel Hacking

Wuhan, China

Anonymous Red Team — *Jul. 2017 - Feb. 2018*

- Proposed a new kernel object hijacking method which bypassed the latest Windows Kernel Protection (valid until Feb 2018).
- Developed an ALL-patform Windows rootkit (40+ KLoC).

Security Assessment on Android App Cryptography

Shanghai, China

Shanghai Jiaotong University — *Jun. 2016 - Aug. 2016*

- 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.
- Built a dynamic Android cryptography hook framework StupidHam to help developers semi-automatically verified discovered risks (StupidHam is open sourced at `https://github.com/xiaofen9/StupidHam`).
- The most serious vulnerability, found from the largest food delivery company in China, was honored as the most valuable vulnerability by Wooyun, the biggest bug hunting community in China.

Work Experience

Penn State University

State College, USA

Research Assistant — *Jun. 2018 - May. 2019*

- Proposed SVHunter, a security assessment and vulnerability finding tool for Software-defined networking (SDN) controllers. We open sourced SVHunter at `https://github.com/xiaofen9/SVHunter`.
- Discovered 18 previously unknown security risks from 4 most widely used SDN controllers using SVHunter, and 9 CVEs were assigned for discovering these vulnerabilities.
- The proposed work has been accepted to IEEE S&P'20, the top 1 security venue.

Tencent. Co., Ltd.

Shenzhen, China

Security Engineer Intern — *Aug. 2017 - Sep. 2017*

- Proposed an automatic XSS vulnerability finding method leveraging Content Security Policy (CSP). This method is gradually deploying into the production environments of the whole company.
- Captured and mitigate one 0day attack (CVE 2017-9805) against servers of our company; found 8 high risk vulnerabilities from the products of Tencent.

Honors & Awards

Contest Awards

2017	Rank 1st in XMCTF.	*Xiamen, China*
2017	First Prize of National Information Security Contest.	*Shanghai, China*
2015	Rank 6th in 0CTF.	*Shanghai, China*
2014	Rank 2nd in BCTF.	*Beijing, China*

Honors

2019	Chair Fellowship.	*Atlanta, USA*
2018	Rednor IST Fellowship.	*State College, USA*
2018	ACM CCS Student Travel Grant Award.	*Toronto, Canada*
2017	LeiJun Scholarship (Top 1 out of 310).	*Wuhan, China*
2016	National Scholarship (Awarded to top 0.2% students nationwide)	*Wuhan, China*
2015	Yuanyi Scholarship.	*Wuhan, China*

Publication

Unexpected Data Dependency Creation and Chaining: A New Attack to SDN. *S&P'20*

Feng Xiao, Jinquan Zhang, Jianwei Huang, Guofei Gu, Dinghao Wu, Peng Liu

- Proposed SVHunter, a fully automatic vulnerability detection tool for SDN controller.
- Discovered 18 previously unknown SDN vulnerabilities.

PatternListener: Cracking Android Pattern Lock Using Acoustic Signals. *CCS'18*

Man Zhou, Qian Wang, Jingxiao Yang, Qi Li, **Feng Xiao**, Zhibo Wang, Xiaofeng Chen.

- Discovered a new side-channel which is able to leak user inputs on Android platform.

Hacking the Brain: Customize Evil Protocol to Pwn an SDN Controller. *DEFCON'18*

Feng Xiao, Jianwei Huang, Peng Liu.

- Discovered a previously unknown OpenFlow protocol design insecurity.

Enabling Secure Location Authentication in Drone (poster). *MobiCom'17*

Feng Xiao, Man Zhou, Youcheng Liye, Jingxiao Yang, Qian Wang.

- Proposed WiDrone, a multi-channel location cross-check system to mitigate GPS spoofing attacks targeted at CPS.

Education

Georgia Institute of Technology *Atlanta, USA*

Ph.D. in Computer Science *July. 2019 - Now*

- Working on system security with Prof. Wenke Lee.

Wuhan University *Wuhan, China*

B.S. in Computer Science *Sept. 2014 - Jun. 2018*

- GPA: 3.87/4

Programming languages

Natively fluent: Python, C, Java, PHP

Conversationally fluent: C++, JavaScript, Matlab