Lei XUE (薛磊)

Research Assistant Professor, Ph.D. Supervisor

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Employment History

2020.04 – Now	🔖	**Research Assistant Professor**
		Department of Computing, The Hong Kong Polytechnic University.
2017.12 – 2020.03	🔖	**Postdoc Research Fellow**
		Department of Computing, The Hong Kong Polytechnic University.

Education

2013.07 – 2017.10	🔖	**Ph.D.** in Computer Science, The Hong Kong Polytechnic University. Thesis title: *Cross-layer Dynamic Analysis of Android Applications*
2010.06 – 2013.04	🔖	**M.S.** in Information Security, Nanjing University of Posts and Telecommunications. Thesis title: *Trojan Detection Based on Network Behaviors*
2006.09 – 2010.06	🔖	**B.S.** in Information Security, Nanjing University of Posts and Telecommunications. Thesis title: *Active Forensic System Based on Honeypot Technology*

Research Interests

- 🔖 Mobile Application/System and IoT Security
- 🔖 Automotive Security and Autonomous Driving Security
- 🔖 Static and Dynamic Program Analysis
- 🔖 System and Software Vulnerability/Bug Detection
- 🔖 Network Security and Measurement

Research Publications

1. **Lei Xue**, Hao Zhou, Xiapu Luo, Le Yu, Dinghao Wu, Yajin Zhou, and Xiaobo Ma, "PackerGrind: An Adaptive Unpacking System for Android Apps," IEEE Transactions on Software Engineering (TSE), 2020. *(CCF-A, JCR-Q1)*

2. Qiao Kang*, **Lei Xue***, Adam Morrison*, Yuxin Tang, Ang Chen, and Xiapu Luo, "Programmable In-Network Security for Context-aware BYOD Policies," in Proc. of the 29th USENIX Security Symposium

(USENIX Security), 2020. (*Equal contribution). *(CCF-A, Top-4 security conference)*

3   **Lei Xue**, Chenxiong Qian, Hao Zhou, Xiapu Luo, Yajin Zhou, Yuru Shao, and Alvin T.S. Chan, "NDroid: Towards Tracking Information Flows across Multiple Android Contexts," IEEE Transactions on Information Forensics and Security (TIFS), 2019. *(CCF-A, JCR-Q1)*

4   Adam Morrison*, **Lei Xue***, Ang Chen, and Xiapu Luo, "Enforcing Context-Aware BYOD Policies with In-Network Security," in Proc. of USENIX Workshop on Hot Topics in Cloud Computing (HotCloud), 2018. (*Equal contribution)

5   **Lei Xue**, Xiaobo Ma, Xiapu Luo, Edmond W.W. Chan, Tony T.N. Miu, and Guofei Gu, "LinkScope: Towards Detecting Target Link Flooding Attacks," IEEE Transactions on Information Forensics and Security (TIFS), 2018. *(CCF-A, JCR-Q1)*

6   **Lei Xue**, Yajin Zhou, Ting Chen, Xiapu Luo, and Guofei Gu, "Malton: Towards On-Device Non-Invasive Mobile Malware Analysis for ART," in Proc. of the 26th USENIX Security Symposium (USENIX Security), 2017. *(CCF-A, Top-4 security conference)*

7   **Lei Xue**, Xiapu Luo, Le Yu, Shuai Wang, and Dinghao Wu, "Adaptive Unpacking of Android Apps," in Proc. of 39th International Conference on Software Engineering (ICSE), 2017. *(CCF-A, Top-3 software engineering conference)*

8   **Lei Xue**, Xiaobo Ma, Xiapu Luo, Le Yu, Shuai Wang, and Ting Chen, "Is What You Measure What You Expect? Factors Affecting Smartphone-Based Mobile Network Measurement," in Proc. of IEEE International Conference on Computer Communications (INFOCOM), 2017. *(CCF-A)*

9   **Lei Xue**, Chenxiong Qian, and Xiapu Luo, "AndroidPerf: A Cross-layer Dynamic Profiling System for Android," in Proc. of IEEE/ACM International Symposium on Quality of Service (IWQoS), 2015. *(CCF-B)*

10 **Lei Xue**, and Guozi Sun, "Design and Implementation of A Malware Detection System Based on Network Behavior," Security and Communication Networks (SCN), 2015. *(CCF-C)*

11 **Lei Xue**, Xiapu Luo, Edmond W. W. Chan, and Xian Zhan, "Towards Detecting Target Link Flooding Attack," in Proc. of 28th USENIX Large Installation System Administration Conference (LISA), 2014. *(CCF-B)*

12 Xiapu Luo, **Lei Xue**, Cong Shi, Yuru Shao, Chenxiong Qian, and Edmond W. W. Chan, "On Measuring One-Way Path Metrics from a Web Serve," in Proc. of IEEE International Conference on Network Protocols (ICNP), 2014. *(CCF-B)*

13 **Lei Xue**, Xiapu Luo, and Yuru Shao, "kTRxer: A portable toolkit for reliable internet probing," in Proc. of IEEE/ACM International Symposium on Quality of Service (IWQoS), 2014. *(CCF-B)*

14 **Lei Xue**, Ricky K. P. Mok, and Rocky K. C. Chang, "OMware: an open measurement ware for stable residential broadband measurement (poster)," in Proc. of Proceedings of ACM Special Interest Group on Data Communication (SIGCOMM), 2013.

15 Pengfei Jing, Qiyi Tang, Yuefeng Du, **Lei Xue**, Xiapu Luo, Ting Wang, Sen Nie, and Shi Wu, "Adversarial Attacks on Lane Detection in Autonomous Driving," in Proc. of the 30th USENIX Security Symposium (USENIX Security), 2021. *(CCF-A, Top-4 security conference)*

16 Hao Zhou, Haoyu Wang, Yajin Zhou, Xiapu Luo, Yutian Tang, **Lei Xue**, and Ting Wang, "Demystifying Diehard Android Apps," in Proc. of the 35th IEEE/ACM International Conference on Automated Software

Engineering (ASE), 2020. *(CCF-A, Top-3 software engineering conference)*

17 Jiali Wei, Ming Fan, Xi Xu, Ang Jia, Zhou Xu, and **Lei Xue**, "Interpretation Area-Guided Detection of Adversarial Samples," in Proc. of IEEE 20th International Conference on Software Quality, Reliability and Security Companion (QRS-C), 2020.

18 Xiaobo Ma, Jiahao Peng, **Lei Xue**, and Xiaohong Guan, "Integrated security of cyber-physical vehicle networked systems in the age of 5G ," SCIENTIA SINICA Informationis (SSI), 2019. *(CCF-A Chinese Journal)*

19 Xiaobo Ma, Bo An, Mengchen Zhao, Xiapu Luo, **Lei Xue**, Zhenhua Li, TungNgai Miu, and Xiaohong Guan, "Randomized Security Patrolling for Link Flooding Attack Detection ," IEEE Transactions on Dependable and Secure Computing (TDSC), 2019. *(CCF-A, JCR-Q1)*

20 Jiahao Peng, Xiaobo Ma, Jianfeng Li, **Lei Xue**, and Wenjun Hu, "Shoot at A Pigeon And Kill A Crow: On Strike Precision of Link Flooding Attacks," in Proc. of 12th International Conference on Network and System Security (NSS), 2018.

21 Ting Chen, Wanyu Huang, Muhui Jiang, Xiapu Luo, **Lei Xue**, Ying Wang, and Xiaosong Zhang, "PERDICE: Towards Discovering Software Inefficiencies Leading to Cache Misses and Branch Mispredictions," in Proc. of 42nd Annual Computer Software and Applications Conference (COMPSAC), 2018. *(CCF-C)*

22 Le Yu, Tao Zhang, Xiapu Luo, **Lei Xue**, and Henry Chang, "Towards Automatically Generating Privacy Policy for Android Apps," IEEE Transactions on Information Forensics and Security (TIFS), 2017. *(CCF-A, JCR-Q1)*

23 Xiapu Luo, Haochen Zhou, Le Yu, **Lei Xue**, and Yi Xie, "Characterizing mobile *-box applications," Computer Networks (Computer Networks), 2016. *(CCF-B)*

24 Le Yu, Tao Zhang, Xiapu Luo, and **Lei Xue**, "AutoPPG: Towards Automatic Generation of Privacy Policy for Android Applications ," in Proc. of 6th Annual ACM CCS Workshop on Security and Privacy in Smartphones and Mobile Devices (SPSM), 2015.

Patents

1 Network Attack Detection Method, **Lei Xue**, Zhiwei Liu, Xianneng Zou, Jingang Hou, Xiapu Luo, Edmond W. W Chan, Pei Tu, and Yuru Shao, Patent number: US9876807B2, USA

2 Information Processing Method and Device, Xiapu Luo, Jingang Hou, Zhiwei Liu, Xianneng Zou, Juhong Wang, **Lei Xue**, Yajuan Tang, and Weigang Wu, Patent number: US10178204B2, USA

3 A Method for Detecting DDoS Attack, **Lei Xue**, Zhiwei Liu, Xianneng Zou, Jingang Hou, Xiapu Luo, Edmond W. W Chan, Pei Tu, and Yuru Shao, Publication number: CN104506482A, CN

4 An E-mail Forensic Analysis Method Based on Community Classification, Guozi Sun, **Lei Xue**, Yitao Yang, Xiaolong Zhu, and Rui Wang, Patent Grant number: CN102842078B, CN

Funds

1 **PI**, "Cross-component Security Assessing of Firmware Update in Appified IoT Systems," NSFC/Young Scholar Fund, RMB 240K, 2021 - 2023.

2 **PI**, "Technical Cooperative Research of Fuzzing for Embedded CT," Huawei, HKD 1.53M, 2021 - 2023.

3 **PI**, "Deep Program Synthesis Based Hardened Code Analysis," Tencent Gift Fund, HKD 173.8K, 2021 - 2021.

4 **PI**, "Context-aware Defense against Message Injection Attacks on In-vehicle Network," PolyU Startup Project, HKD 300K, 2020 - 2022.

5 **Co-PI**, "Checking Privacy Compliance of Mobile Apps via Synthesizing NLP and Program Analysis," Huawei, HKD 1.42M, 2020 - 2021.

Awards

- Best Proposal Award (Group), Third Place of COMP, 2017
- Tencent Security Response Award, 2016
- Student Grant for ACM CCS, 2015
- Student Grant for USENIX LISA, 2014.
- The National Scholarship Award, 2012.
- The Excellent Graduate Student Award, 2012.
- The Research and Innovation Award (4 in NJUPT), 2009.

Professional Services

TPC Member

- 2018: NSS
- 2019: SocialSec | SANER Blockchain Workshop | CoNEXT Student Workshop
- 2020: SocialSec | NSS
- 2021: SANER IBF Workshop |

Journal Reviewer (Selected)

- IEEE Transactions on Dependable and Secure Computing (TDSC)
- IEEE Transactions on Information Forensics and Security (TIFS)
- IEEE Transactions on Mobile Computing (TMC)
- ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)
- IEEE Communication Magazine
- Security and Communication Networks

Teaching

- Capstone Project (COMP4913), Spring 2021, Co-examiner
- Big Data Computing (COMP5434), Summer 2020, Lecturer
- Computer Communications Networks (COMP312), Spring 2016, TA
- Distributed Computing (COMP5325), Spring 2015, TA
- Internet Security: Principles and Practice (COMP5353), Spring 2014, Spring 2015, TA
- Web Services and Project Development (COMP5332), Fall 2013, Fall 2014, TA

Students under Supervision

2021 Feb. – Now	▉	Luyi Yan, RA (Ph.D. from 2021 Fall), The Hong Kong Polytechnic University.
	▉	Tianqi Li, RA (Ph.D. from 2021 Fall), The Hong Kong Polytechnic University.
	▉	Zhihao Wang, RA, The Hong Kong Polytechnic University.
2021 Jan. – Now	▉	Yangyang Liu, RA (Ph.D. from 2021 Fall), The Hong Kong Polytechnic University.
	▉	Xinyu Ji, Research Intern (Undergraduate), Hunan University.
2020 Jan. – Now	▉	Yuxiao Yan, RA (Graduate), Xi'an Jiaotong University.