Limin Yang

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Education

University of Illinois Urbana-Champaign, Ph.D. in Computer Science, Advisor: Gang Wang *Aug.2019 – May 2024*

Virginia Tech, Ph.D. in Computer Science, Advisor: Gang Wang *Aug.2018 – Aug.2019*

East China Normal University, Masters Study in Computer Science *Sep.2015 – Jun.2018*

East China Normal University, B.E. in Computer Science *Sep.2011 – Jun.2015*

Research Interests

Security, measurement, and explainable AI.

Publications

[USENIX Security'20] Shuofei Zhu, Jianjun Shi, **Limin Yang**, Boqin Qin, Ziyi Zhang, Linhai Song, Gang Wang. "Measuring and Modeling the Label Dynamics of Online Anti-Malware Engines". In Proceedings of *The 29th USENIX Security Symposium*, Boston MA, August 2020.

[arXiv'20] Hang Hu, **Limin Yang**, Shihan Lin, Gang Wang. "Security Vetting Process of Smart-home Assistant Applications: A First Look and Case Studies", January 2020.

[IMC'19] Peng Peng, **Limin Yang**, Linhai Song, Gang Wang. "Opening the Blackbox of VirusTotal: Analyzing Online Phishing Scan Engines." In Proceedings of *The ACM SIGCOMM Internet Measurement Conference*, Amsterdam, Netherlands, October 2019.

[USENIX Security'18] Dongliang Mu, Alejandro Cuevas, **Limin Yang**, Hang Hu, Xinyu Xing, Bing Mao, Gang Wang. "Understanding the Reproducibility of Crowd-reported Security Vulnerabilities." In Proceedings of *The 27th USENIX Security Symposium*, Baltimore MD, August 2018.

[Globecom'17] **Limin Yang**, Xiangxue Li, Yu Yu. "VulDigger: A Just-in-time and Cost-Aware Tool for Digging Vulnerability-Contributing Changes." In Proceedings of *IEEE Global Communications Conference (GLOBECOM)*, Singapore, December 2017.

[PPNA'17] Minhui Xue, **Limin Yang**, Keith W. Ross, and Haifeng Qian. "Characterizing user behaviors in location-based find-and-flirt services: Anonymity and demographics." In *Peer-to-Peer Networking and Applications (PPNA)*, 2017.

Research Experience

Explaining Unsupervised Deep Learning Models, Research Assistant, UIUC *Aug.2019 – Current*

- Make it clear on the two different definitions of machine learning model explanation.
- Build a unified explanation framework for explaining both clustering and anomaly detection models.
- Achieve the best or parallel performance compared to state-of-the-art methods on different fidelity tests.

VirusTotal Phishing URLs Scanning, Research Assistant, Virginia Tech *Jan.2019 – May 2019*

- Control phishing websites to understand the quality and reliability of security scanners and VirusTotal.
- Set up multiple PayPal and IRS phishing sites and submit them to VirusTotal and its 68 vendors periodically.
- Observe the incoming traffic of our phishing sites to verify the reliability of VirusTotal.

Smart Home Assistants Cloud Spoofing, Research Assistant, Virginia Tech *Aug.2018 – May 2019*

- Understand the authentication mechanism in smart home assistant systems (Amazon Alexa and Google Home).
- Develop an Amazon Alexa skill and a Google Home action for finding authentication issues.
- Verify that replay attack and SQL injection attack are feasible with proof-of-concept experiments.

Vulnerabilities Reproduction, Research Intern, The Pennsylvania State University *Nov.2017 – Jan.2018*

- An empirical study to unveil the reproducibility of vulnerabilities using crowdsourcing information.
- Collect bug reports from websites like exploit-db and summarize missing information to reproduce a bug.
- Measurement analysis on how crowdsourcing could ease the effort by manually reproducing the bugs.

Vulnerability Contributing Commits (VCCs) Prediction, Research Assistant, ECNU *Nov.2016 – Mar.2017*

- Predict whether a code commit would introduce potential security vulnerabilities.
- Build a vulnerability prediction model for the Firefox project on code commits level (Precision: 92%, Recall: 14%).
- Build another effort-aware model to capture 31% VCCs with 20% inspection effort (measured by lines of code).

Internships

The Pennsylvania State University, Research Intern, Pennsylvania, US *Sep.2017 – Feb.2018*

- Collect bug reports from websites like exploit-db and summarize missing information to reproduce a bug.
- Measurement analysis on how crowdsourcing could ease the effort by manually reproducing the bugs.

XuebaJun, Search & Rank Intern, Shanghai, China *Sep.2016 – Oct.2016*

- Locate reasons for response bottleneck by reading the source code related to searching of XuebaJun app.
- Finish a comprehensive code report (10,000+ SLOC).

Peking University, Exploit Intern, Beijing, China *Jul.2015 – Aug.2015*

- Focus on practical training like binary vulnerability discovery/exploit (Windows).
- Extract fingerprints for industrial control systems like Siemens S7-1200 with Nmap.

UnionPay Smart, Quantitative Analyst Assistant Intern, Shanghai, China *Mar.2015 – Jun.2015*

- Fetch and analyze luxury industry data from the transaction records of 2.7 billion credit cards provided by UnionPay.

Awards

- ECNU Graduate Student Overseas Research Scholarship *2017*
- ECNU Top-notch Innovative Personnel Training Plan **(4/91)** *2013 – 2015*

Teaching

- CS-4264 Principles of Computer Security, Virginia Tech, Teaching Assistant *Spring 2019*
- CS-3114 Data Structures and Algorithms, Virginia Tech, Teaching Assistant *Fall 2018*