

Zhilong Wang

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EDUCATION

Pennsylvania State University

Sept. 2019 - Present

Ph.D. student in College of Information Sciences and Technology

Major: Cyber Security

Advisor: [Peng Liu](#)

Nanjing University

Sept. 2016 - Jun. 2019

M.S. in Department of Computer Science and Technology

Major: System and Software Security

Advisor: [Bing Mao](#)

Pennsylvania State University

Feb. 2018 - Sept. 2018

Visiting Research Assistant in College of Information Sciences and Technology

Research: ARM Security, Linux Kernel Security

Zhengzhou University

Sept. 2012 - Jul. 2016

Earned Bachelor's Degree of Computer Science and Technology

– GPA: 3.6/4.0 Ranking: 1/240

RESEARCH INTERESTS

To facilitate security-oriented program analysis through deep learning;

To detect, analyze and solve system and software problems with dynamic and static program analysis;

To deploy security strategies by modifying the operation systems and compilers;

To secure the system and software via hardware's new features (e.g., ARM ETM and AES-NI);

RESEARCH PROJECTS

Recent Research Projects

The applications of transfer learning in solving security problem.

Deep learning assisted malware analysis and vulnerability analysis [ii].

The trade-offs in control-flow integrity [1].

Previous Research Projects

Hardware-assisted Modular Kernel Protections [2].

A effective detection model to prevent advanced buffer overflow attacks [4¹,5]

Program obfuscation technique based on Return-oriented Programming [6].

SKILLS

C/Python/Java, Compiler, Linux Kernel, Program Analysis (Data Flow Analysis, Symbolic Execution, and et al.), Software and System Security, Deep Learning.

¹Source Code: <https://github.com/zhilongwang/PolymorphicCanaries>

AWARDS & HONORS

- Outstanding Graduates of Nanjing University, 2019.
- Scholarship of Shenzhen Stock Exchange, 2018.
- Second-Class Academic Scholarship of Nanjing University, 2017 &² 2018.
- First-Class Academic Scholarship of Nanjing University, 2016.
- The First Prize of Program Testing Competition of Henan Province, 2015.
- First-Class Scholarship of Zhengzhou University, 2013 & 2015 & 2016.
- Certification of Software Capability by China Computer Federation (CCF) : 330 Points (Top 5.11%)
- The First Prize of Microsoft Wheeled Micro-Robot Simulation Competition in China Robot Competition, Beijing, 2014.
- The First Prize of ACM Computer Programming Contest of Zhengzhou University, 2014.
- National Scholarship, 2014.

PUBLICATIONS

1. **Zhilong Wang** and Peng Liu. “GPT Conjecture: Understanding the Trade-offs between Granularity, Performance and Timeliness in Control-Flow Integrity.” *Cybersecurity*, 2021.
2. Yunlan Du, Zhenyu Ning, Jun Xu, **Zhilong Wang**, Yueh-Hsun Lin, Fengwei Zhang, Xinyu Xing, and Bing Mao. “HART: Hardware-assisted Kernel Module Tracing on Arm.” In Proceedings of The 25th European Symposium on Research in Computer Security (*ESORICS*), 2020.
3. Yoon-Ho Choi, Peng Liu, Zitong Shang, Haizhou Wang, **Zhilong Wang**, Lan Zhang, Junwei Zhou and Qingtian Zou. “Using Deep Learning to Solve Computer Security Challenges: A Survey.” *Cybersecurity*, 2020. (The authors of this paper are listed in alphabetic order)
4. **Zhilong Wang**, Xuhua Ding, Chengbin Pang, Jian Guo, Jun Zhu and Bing Mao. “To Detect Stack Buffer Overflow With Polymorphic Canaries.” In *IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, 2018.
5. Jun Zhu, Weiping Zhou, **Zhilong Wang**, Dongliang Mu, and Bing Mao. “DiffGuard: Obscuring Sensitive Information in Canary Based Protections.” *International Conference on Security and Privacy in Communication Systems (SecureComm)*. Springer, Cham, 2017.
6. Dongliang Mu, Jia Guo, Wenbiao Ding, **Zhilong Wang**, Bing Mao, and Lei Shi. “ROPOB: Obfuscating Binary Code via Return Oriented Programming.” *International Conference on Security and Privacy in Communication Systems (SecureComm)*. Springer, Cham, 2017.

ARXIV PREPRINTS

- i. **Zhilong Wang***, Haizhou Wang*, Hong Hu, and Peng Liu. “Identifying Non-Control Security-Critical Data in Program Binaries with a Deep Neural Model.” arXiv, 2021. (* equal contribution)
- ii. **Zhilong Wang**, Li Yu, Suhang Wang, and Peng Liu. “Spotting Silent Buffer Overflows in Execution Trace through Graph Neural Network Assisted Data Flow Analysis.” arXiv, 2021.

² Obtained annually.