Zhuohao Zhang

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Education

University of Electronic Science and Technology of China, Chengdu, China 2020 - 2024

B.S. in Information and Software Engineering
Academic Performance Grade: 3.58/4.00 Language: English(TOFEL 101)

Publication

Accurate and Efficient Code Matching Across Android Application Versions against Obfuscation
Runhan Feng, **Zhuohao Zhang**, Yetong Zhou, Ziyang Yan and Yuanyuan Zhang
In Proceedings of the 31st International Conference on Software Analysis, Evolution and Reengineering (SANER 2024)

Research

Graduation Thesis: Accurate Predication of Third-Party Library Versions Dec. 2023 - May. 2024

- Developed a high-precision, efficient tool **LibX** for identifying TPL versions in Android apps.
- Introduced a novel method of **version reduction** for TPLs to enhance matching accuracy and efficiency. Implemented a signature-based coarse-grained matching followed by **opcode similarity** assessment.
- Conducted an experimental dataset based on the open-source application library F-Droid. The experiments show that LibX is faster and more accurate in version detection than LibScan[1].

Research on Detection of Third Party Libraries Mar. 2023 - Present

Research Intern Internship in GoSec Laboratory of Shanghai Jiao Tong University, China

- Investigating challenges of identifying obfuscated Third-Party Library (TPL) packages in the Android apps and developing effective methods for detection.
- Apply static analysis techniques to streamline reverse engineering and enhance code similarity analysis. Trying to use **LLM** for binary code analysis.

Study of HTTPS Protocol and SSL Pinning on Android Sep. 2022 - Nov. 2022

- Investigated secure communication protocols in Android applications by examining the establishment of HTTPS channels and trying package capture with **Burp** and **Fiddler**.
- Designed and implemented custom scripts with **Frida** to bypass SSL certificate and host verification.

Project

Ministry of Education Humanities and Social Sciences Research Project June. 2023

The Welfare Effect of Economic Fluctuations on Multiple Heterogeneous Individuals: Micro Mechanism, Numerical Simulation, and Policy Research
First Participant Shanghai International Studies University, China

- Built a numerical computation method for policy and value function based on Imrohoroglu's research with a second-order iterative method. Utilizing Monte Carlo simulations for efficient long-term economic modeling. This reduces the amount of optimization calculations as policy function converges faster than value function.

D3Factor, a Challenge of Prime Power RSA Feb. 2022

Challenge Author D3CTF 2022

- The challenge is based on the second condition in paper[2] and **PolynomialRing** with language **SageMath**.

Honors and Awards

Winner, DEF CON 29 Final 2021
2nd Place, DEF CON 30 Final 2022
7th Place, WMCTF 2022
4th Place, TCTF (RisingStar CTF) 2021
Second Prize, Fifteenth contest of National college student information security 2021
Outstanding Student Scholarship 2022, 2023 and 2024

[1] Yafei Wu et al. "LibScan: Towards More Precise Third-Party Library Identification for Android Applications". In: *32nd USENIX Security Symposium (USENIX Security 23)*. Anaheim, CA: USENIX Association, Aug. 2023, pp. 3385–3402.

[2] Abderrahmane Nitaj and Tajjeeddine Rachidi. *New attacks on RSA with Moduli $N = p^r q$*. Cryptology ePrint Archive, Paper 2015/399. 2015.