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)

Johns Hopkins University, Baltimore, U.S. 2025 - Future

M.S. in Informatic Security

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)

- Presenting MatchScope, an algorithm for code matching across app versions, improving efficiency by extracting code features and leveraging index information from obfuscated class names.
- My contributions include algorithm design, implementation of Apkdiff for comparison, result analysis.

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.
- Experiments based on lib F-Droid indicate LibX outperforms LibScanin speed and accuracy for version detection.

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.

BankEye: Research on Security Issues in Code-protected Android Banking Apps Oct. 2023 - Mar. 2024

- Analyzed the banking app from three aspects: runtime integrity, authentication and local storage.
- Designed a tool that uses **Frida** to hook into the system's fingerprint interface for testing authentication.

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.

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