Zhuo Chen

NANJING UNIVERSITY · KUANG YAMING HONORS SCHOOL

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"Be the change that you want to see in the world."

Education

Nanjing University, Kuang Yaming Honors School   *Nanjing, China*

B.S. IN COMPUTER SCIENCE   *Sep. 2021 - Now*

- GPA 4.48/5.0 (89.6/100)
- Relevant Course: Linear Algebra (94), Game Theory (96), Introduction to Artificial Intelligence (97), Principles and Techniques of Compilers (96), Introduction to Computing Systems (94), Operating Systems (97), Computer Networks (92)

Honors & Awards

2021	**Outstanding Award**, Merit Based Scholarship for Outstanding Student	*Nanjing University*
2022	**Excellence Award**, Scholarship in Basic Subject	*Nanjing University*
2022	**2nd Prize**, People's Scholarship	*China*
2023	**Bronze Award**, 19th Programming Competition	*Nanjing University*

Research Experience

PRODROID: *Resource-based Android Application Repackaging Detection*   *Nanjing, China*

NATIONAL LEVEL INNOVATIVE ENTREPRENEURIAL TRAINING PROGRAM   *Sep. 2022 - Nov. 2023*

- Developed PRODROID, a novel approach for detecting Android application repackaging by dynamically capturing runtime resources. The system combines randomized testing through Monkey and resource hooking via the Xposed module to generate application fingerprints. Using algorithms like LSH and dHash, it creates unique software birthmarks from the hooked resources, achieving a 97% recall rate and 90.3% precision, with runtime scaling proportionally to the number of APKs analyzed.
- ***Our paper*** is currently under submission to ICPC for patent application and publication.

HARDRACE: *Dynamic Data Race Detection for Production Use*   *Nanjing, China*

RESEARCH INTERN, SOFTWARE ENGINEERING GROUP, NANJING UNIVERSITY   *Sep. 2023 - Sep. 2024*

- Developed HARDRACE, a dynamic data race detector that minimizes runtime overhead while maintaining high detection accuracy in multithreaded programming. HARDRACE utilizes soundy static analysis and Intel's Processor Tracing (PT) technology to selectively record memory accesses and thread synchronization events, significantly reducing overhead. Evaluated using the PARSEC and SPLASH-2x benchmark suites, HardRace achieves a geometric mean overhead of 1.0%, outperforming prior detectors like Kard with 9.7% overhead. In effectiveness tests, HardRace successfully detects all targeted concurrency bugs, surpassing ProRace's 35% detection rate and Kard's inability to detect non-ILU data race bugs.
- ***Our paper*** is currently submitted to OOPSLA 2025 for publication.

HOPTER: *A Rust-based embedded operating system*   *New Haven, US*

RESEARCH INTERN, EFFICIENT COMPUTING LAB, YALE UNIVERSITY   *Jul. 2024 - Jan. 2025*

- HOPTER is a Rust-based embedded operating system built to enable memory-safe, efficient, reliable, and responsive applications. It is codesigned with a customized compiler that guarantees additional invariants beyond what Rust can express. Also, HOPTER does not rely on any hardware protection mechanisms, providing safety purely through software.
- ***Our project*** is currently available on GitHub.

Skills

Programming   C, C++, Python, Java, Verilog

Languages   English, Mandarin Chinese