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Zhaoxuan Jin

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EDUCATION

Undergraduate student of Computer Science, *Southern University of Science and Technology* 2019.9 — 2023.6 (Expected)
GPA: 3.70/4 **Rank:** 45/156 **TOEFL:** 108 **GRE:** 327 + 3.5
Visiting International Student, *University of Wisconsin - Madison* 2022.9 — 2022.12

SKILLS

Tools and Languages Java, C/C++, Rust, Python, GDB
Research Fields Computer Security, Cyber Security
Communication Chinese, English

RESEARCH EXPERIENCES

Hardware-assisted Concurrent Execution Vulnerability Detection on ARM Platform 2022.3 — 2022.6

- There are some existing concurrency bug analysis tools but none of them can be both real-time and non-intrusive, so we want to build a real-time concurrency bug detection tool which is efficient, non-intrusive on ARM.
- ETM is a hardware on ARM Coresight architecture that can trace the program execution stream with only 0.1% overhead.
- Our work can be divided into two phases: rule summarizing and bug detecting. In rule summarizing phase, use static analysis like RDA and some dynamic analysis to generate some rules that can keep a program safe in concurrency. In detection phase, use ETM to get the execution stream in real time and compare it with the rules to determine whether the execution is in a safe state.

Weave Editor 2022.6 — Present

This work focuses on the internal security of Kubernetes clusters. It automatically generates network policies based on east-west traffic between microservices so that users can monitor and manage network communication within the cluster, block malicious traffic, and improve Kubernetes security.

- Rewrote the source code of the cluster asset management tool “Weave Scope” and added the traffic extraction function to it.
- Developed a module that extracts traffic and correlates information between traffic and cluster assets.
- Developed a module that aggregates traffic and automatically generates network policies.
- Integrated the above modules into an automatic strategy generation system.

COURSE PROJECTS

Hash Checker of Web Applications 2021 Fall

Computer Security

- As a relatively new technique, WebApps can lead to many potential threats, like cryptocurrency mining.
- We developed a lightweight plugin to detect pages containing Wasm and trace them.
- Detect Wasm by some characteristics like URL postfix, MIME type and signature of resources.
- Take snapshots for Wasm resources, and once these resources has changed, notify the user and use snapshot by default.
- Protect clients' browsers in a rather simple and general way.

SPL Compiler 2021 Fall

Compilers

- SPL is short for SUSTech Programming Language, which is a high level language designed for this course.
- The compiler can do lexical analysis, syntax analysis and semantic analysis.
- We use Flex and Bison to do the lexical analysis and syntax analysis.
- Implemented an independent preprocessor that can parse basic preprocess instructions like macro, file inclusion.
- SPL will first be converted to a syntax tree, then to three address codes, and finally to MIPS32 assembly codes.

INTERNSHIP

Shanghai Kachuu Information Technology Co., Ltd. July, 2021 — August, 2021

Software Engineer Intern

- Investigated the current website development technologies based on the separation of frontend and backend.
- Employed Spring Boot to refactor and expand the company background management system.
- Reorganized the backend code of the company website.
- Implemented a store questionnaire applet for GAP.

ADDITIONAL

SUSTech CTF School Team, Member 2021 — Present
USTC Hackergame 2021, Rank: 44/2677 2021.10
Guangdong College Students' CTF competition, Rank: 37/504 2022.5