

Huihui Huang

Southern University of Science and Technology – Shenzhen – China

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Education

Southern University of Science and Technology

Sept. 2020 - Jun. 2024 (*exp.*)

Shenzhen, China

B.Eng. in Computer Science and Engineering

Member of ARiSE lab, supervised by [Prof. Yuqun Zhang](#)

GPA: 89.12/100

Major Courses: Software Engineering(96), Computer Security(93), Operating Systems(99), Computer Networks(94), Principles of Database Systems(98), Digital Logic(97)

National University of Singapore

Aug. 2023 - Present

Singapore

Visiting Student in School of Computing

Member of PLSE lab, supervised by [Prof. Umang Mathur](#)

Publications

[ICSE'2024] Ling Jiang, Junwen An, **Huihui Huang**, Qiyi Tang, Sen Nie, Shi Wu, and Yuqun Zhang. "BinaryAI: Binary Software Composition Analysis via Intelligent Binary Source Code Matching."

Proceedings of the 46th International Conference on Software Engineering. Status: Accept (65/808)

Academic Experience

Translating Concurrent C Programs to Safe Rust

Aug. 2023 - Present

Keywords: Rust, C, Automatic Translation, Concurrent Program, Memory-Safety

PLSE lab, NUS

- Evaluated the [C2Rust](#) tool and studied Equality Saturation methodology.
- Manually translated concurrent C programs into safe Rust programs and conducted an in-depth analysis of the underlying principles.
- Intending to develop an automatic tool that can translate concurrent C programs into equivalent safe Rust programs.

An Extensive Study on Software Composition Analysis (SCA)

Sept. 2022 - Aug. 2023

Keywords: Binary-to-Source SCA, Software Security, AI4SE, Semantic Extraction

ARiSE lab, SUSTech

- Collected a substantial dataset of binary-to-source function pairs and labeled reused third-party libraries within open-source software projects.
- Realized a Transformer-based model to retrieve similar source functions and utilized link-time locality to augment function-matching precision, in cooperation with [Tencent Keen Lab](#)
- Wrote up an academic paper that has been submitted to the ICSE'24 conference.

Binary Code Diffing via Network Alignment

Feb. 2023 - Jun. 2023

Keywords: Binary Similarity Detection, Network Alignment, AI4SE, Disassembly

ARiSE lab, SUSTech

- Studied state-of-the-art binary similarity detection techniques(DeepBinDiff and jTrans) and famous open-source binary diffing tools(Diaphora and BinPro).
- Collected baseline binary datasets containing 5 binaries(e.g. objdump) and a total of 18 different versions, and evaluated the above tools.
- Designed a seed-and-extend graph matching algorithm paired with Bert-based binary similarity detection technique, resulting in 12% performance increase than DeepBinDiff, the SOTA binary diffing technique.

Selected Projects

School forum website

Techniques: Spring Boot, PostgreSQL, JMeter, Huawei Cloud, Docker Hub

Feb. 2023 - Jun. 2023

- A full-stack forum website with several features, including anonymous mode and AI integration for post recommendation and toxic detection.
- Responsible for back-end, including the implementation, testing, and deployment of the web server.
- Project result: displayed at the software engineering lecture as full score representative, and is currently being further optimized and promoted.

Lisp Interpreter in Java

Realizations: Function, Closure, Lambda Operator, Lazy Evaluation

Jun. 2022 - Sept. 2022

- Implemented a Lisp interpreter using the Java programming language.
- Accomplished the previously mentioned functionalities.

Single-cycle CPU Supporting Simple MIPS Instructions

Tools: Vivado, Minisys, Assembler, Mars, Uart Tools

Feb. 2022 - Jun. 2022

- Developed a single-cycle central processing unit (CPU) using Verilog code, which is operational on the Minisys Development Board.
- Programmed and executed MIPS instructions on the CPU to realize simple scenarios.

Teaching Experience

- Teaching Assistant of Computer Organization Principle Feb. 2023 - Jun. 2023
- Teaching Assistant of Introduction to Java Programming Sept. 2022 - Jan. 2023

Selected Awards

- The Second Class Scholarship of the University (Top 15%) Oct. 2023 & Oct. 2022 & Oct. 2021
- Honorable Mention in Mathematical Contest in Modeling (Top 20%) Feb.2023
- Zhixin College Rising Star (Top 3%) Dec. 2022
- Bronze Award of Huawei Kunpeng Innovation Application Competition Nov.2022
- Outstanding Student Leaders of the University (Top 5%) Sept.2022
- The Second prize in China Undergraduate Mathematical Contest in Modeling (Top 20%) Sept.2022

Skills

- Programming Languages: Java, Rust, C/C++, Python, SQL, JavaScript, Verilog, MIPS, OCaml
- Frameworks: Spring Boot, MyBatis, JUnit, Node.js, Vue.js
- Developer Tools: GitHub, Visual Studio Code, PyCharm, IntelliJ IDEA, CLion
- Language Proficiency: Chinese - native, English - fluent (IELTS: 7)