Haonan Li

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Education

UC Riverside Riverside, CA
PhD in Computer Science Sept. 2022 – Present
Advisor: Zhiyun Qian.

SUSTech Shenzhen, China
B.Eng in Computer Science Sept. 2017 – Jun. 2021
Advisor: Fengwei Zhang. *GPA: 3.66.*

Publications

Enhancing Static Analysis for Practical Bug Detection: An LLM-Integrated Approach (To appear)
Haonan Li, Yu Hao, Yizhuo Zhai, Zhiyun Qian.
Proceedings of the ACM on Programming Languages (PACMPL), Volume 8, Issue OOPSLA1. April 2024

Assisting Static Analysis with Large Language Models: A ChatGPT Experiment *(short paper)*
Haonan Li, Yu Hao, Yizhuo Zhai, Zhiyun Qian.
In Proceedings of the 31st ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE'23), December 2023

A Novel Memory Management for RISC-V Enclaves
Haonan Li, Weijie Huang, Mingde Ren, Hongyi Lu, Zhenyu Ning, Heming Cui, and Fengwei Zhang.
In Proceedings of the Hardware and Architectural Support for Security and Privacy (HASP'21), October 2021

Research experience

Leveraging LLMs in Static Analysis for Bug Discovery *[arxiv]*
Supervisor: Zhiyun Qian Feb. 2023 – Feb. 2024
Under Revision, First author

Static analysis is a widely used technique in software engineering for identifying and mitigating bugs. However, a significant hurdle lies in achieving a delicate balance between precision and scalability. Large Language Models (LLMs) offer a promising alternative, as recent advances demonstrate remarkable capabilities in comprehending, generating, and even debugging code. In this paper, we investigate how the potential of LLM can be combined to improve static analysis for better bug detection.

Using Hardware Features for Failure Diagnosis on Arm
Supervisors: Fengwei Zhang, Zhenyu Ning Dec. 2020 – Jun. 2021
Published in ISSTA'23, Third author
We implement a failure diagnosis framework for practical systems based on Arm. At runtime, it leverages the hardware tracing component ETM and a lightweight event capturer to collect information. Then it identifies the control and data flow related to the cause of a failure, which further helps developers in bug fixing.

In this project, I was involved in architecture design. I also took responsibility for the design and development of the online part, which mainly includes the capture of non-deterministic events and hooks for library functions.

Work experience

SUSTech, Compass Lab Shenzhen
Research Assistant Jul. 2021 – Sept. 2022
Responsible for scientific research in the field of computer system security and assist in undergraduate/graduate students scientific research training.

Tencent, CDG (Corporate Development Group) Shenzhen
Operations Development Engineer (internship) Summer 2020
Responsible for the development and maintenance of some existing operation platforms, developed a new system to assist in status checking and reporting on thousands of servers.

Honors

The 2019 ICPC Asia Nanchang Regional Contest Bronze Medal 2019
The 2019 ICPC Asia Hong Kong Regional Contest Bronze Medal 2019