

Haonan Li

Updated May 6, 2026

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Education

UC Riverside Riverside, CA
PhD in Computer Science Sept. 2022 – Jun. 2027
Advisor: Zhiyun Qian.

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

Selected Publications

Towards More Accurate Static Analysis for Taint-style Bug Detection in Linux Kernel

Haonan Li, Hang Zhang, Kexin Pei, Zhiyun Qian.
ASE'25. Nov 2025

Enhancing Static Analysis for Practical Bug Detection: An LLM-Integrated Approach

Haonan Li, Yu Hao, Yizhuo Zhai, Zhiyun Qian.
OOPSLA'24. April 2024

Assisting Static Analysis with Large Language Models: A Chat-GPT Experiment (short paper)

Haonan Li, Yu Hao, Yizhuo Zhai, Zhiyun Qian.
ESEC/FSE'23, December 2023

TritonForge: Profiling-Guided Framework for Automated Triton Kernel Optimization

Haonan Li, Keyu Man, Partha Kanuparth, Hanning Chen, Wei Sun, Sreen Tallam, Chenguang Zhu, Kevin Zhu, Zhiyun Qian
LLM4Code'26, April 2026

LLMBisect: Breaking Barriers in Bug Bisection with A Comparative Analysis Pipeline

Zheng Zhang, Haonan Li, Xingyu Li, Hang Zhang, Zhiyun Qian
NDSS'26, Feb 2026

Research Experience

Deeply Coupled LLM-assisted Program Analysis
Supervisor: Zhiyun Qian Dec. 2025 – Present

In this project, I am currently developing a deeply coupled framework that integrates LLMs directly into the core loop of static program analysis for C/C++. Crucially, the LLM is constrained to generate formal, machine-readable heuristics, such as precise function summaries and pointer aliasing constraints, rather than unstructured text. The static analyzer then natively ingests and verifies these heuristics against its underlying logical constraints. This closed-loop approach effectively grounds the LLM's semantic reasoning in formal logic, filtering out hallucinations and enabling highly reliable, scalable code verification suitable for complex systems.

Leveraging LLMs in Static Analysis for Better Bug Discovery

Supervisor: Zhiyun Qian

Feb. 2023 – Jun. 2025

Published in ASE'25 & OOPSLA'24, 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 (i.e., too many FPs) 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 Project, we investigate how the potential of LLM can be combined to improve static analysis for better bug detection.

Honors

Earle C. Anthony Graduate Student Travel Award

2025

Selected by the Graduate Council (UCR) in a highly competitive cycle to present research findings at ASE'25.

Dissertation Year Fellowship Award

2026

Awarded following program nomination to a campus-wide (UCR) fellowship competition.

Talks

LLM-Enhanced Static Analysis for Practical Bug Detection

Invited by HKUST, and Northeastern University

Services

LLM4Code 2026 Program Committee

AIWare 2026 Program Committee