HAN LIU

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RESEARCH INTERESTS

My research interests focus on improving software quality and security via deep learning and static analysis, especially smart contract security.

EDUCATION& WORK EXPERIENCE

Post-Doc Scholar 2024/09- Now
The Hong Kong University of Science and Technology
Working With: Prof. Shuai Wang & Prof. Daoyuan Wu

Ph.D. Degree 2019/09-2024/06
East China Normal University, Software Engineering
Thesis: Multi-View Analysis and Optimization Methods for Software Quality Assurance Tools
Supervisor: Prof. Yixiang Chen

Visiting PhD Students 2022/02-2024/02
Nanyang Technological University, Singapore
Supervisor: Prof. Yang Liu

Bachelor Degree 2015/09-2019/06
Jiangsu University of Science and Technology, Computer Science and Technology (GPA 4.01/5.0)

PUBLICATIONS

ASE'25 *(CCF-A)*
Han Liu, Daoyuan Wu, Yuqiang Sun, Shuai Wang, Yang Liu, and Yixiang Chen. "Demystifying OpenZeppelin's Own Vulnerabilities and Analyzing Their Propagation in Smart Contracts". To appear in IEEE/ACM Automated Software Engineering, ASE 2025.

ASE'25 *(CCF-A)*
Han Liu, Daoyuan Wu, Yuqiang Sun, Shuai Wang, and Yang Liu. "Have We Solved Access Control Vulnerability Detection in Smart Contracts? A Benchmark Study". To appear in IEEE/ACM Automated Software Engineering, ASE 2025.

Usenix-Security *(CCF-A)*
Han Liu, Daoyuan Wu, Yuqiang Sun, Haijun Wang, Kaixuan Li, Yang Liu, and Yixiang Chen. " Using My Functions Should Follow My Checks: Understanding and Detecting Insecure OpenZeppelin Code in Smart Contracts. " The 33rd USENIX Security Symposium, USENIX Security 2024.

ISSTA'23 *(CCF-A)*	**Han Liu**, Sen Chen, Ruitao Feng, Chengwei Liu, Kaixuan Li, Zhengzi Xu, Liming Nie, Yang Liu, and Yixiang Chen. "A Comprehensive Study on Quality Assurance Tools for Java". The 32nd ACM SIGSOFT International Symposium on Software Testing and Analysis, ISSTA 2023
RuanJianXueBao *(CCF-A in Chinese)*	**Han Liu**, Kaixuan Liu, and Yixiang Chen. "Survey on Trustworthiness Measurement for Artificial Intelligence Systems"(In Chinese) Journal of Software(Ruan Jian Xue Bao). 2023,34(8):3774-3792
FSE'24 *(CCF-A)*	Kaixuan Li, Yue Xue, Sen Chen, **Han Liu**, Kairan Sun, Ming Hu, Haijun Wang, Yang Liu, and Yixiang Chen. "Static Application Security Testing (SAST) Tools for Smart Contracts: How Far Are We?". The ACM International Conference on the Foundations of Software Engineering, *FSE 2024.* ***ACM SIGSOFT Distinguished Paper Award.***
ICSE'24 *(CCF-A)*	Yuqiang Sun, Daoyuan Wu, Yue Xue, **Han Liu**, Haijun Wang, Zhengzi Xu, Xiaofei Xie, and Yang Liu "GPTScan: Detecting Logic Vulnerabilities in Smart Contracts by Combining GPT with Program Analysis". The 46th International Conference on Software Engineering, ICSE 2024
ISSTA'24 *(CCF-A)*	Kaixuan Li, Jian Zhang, Sen Chen, **Han Liu**, Yang Liu, and Yixiang Chen. " PatchFinder: A Two-Phase Approach to Security Patch Tracing for Disclosed Vulnerabilities in Open-Source Software." The 33nd ACM SIGSOFT International Symposium on Software Testing and Analysis ISSTA 2024.
FSE'23 *(CCF-A)*	Kaixuan Li, Sen Chen, Lingling Fan, Ruitao Feng, **Han Liu**, Chengwei Liu, Yang Liu, and Yixiang Chen "Comparison and Evaluation on Static Application Security Testing (SAST) Tools for Java". The 31th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering, FSE 2023.

PROJECTS

2020/11-2021/11 Layered and Trustworthy Resilient System Architecture

- Based on the related work, propose a definition on resilience and a resilient system model.
- According to the importance of component, establish a component trustworthiness measurement model and a system trustworthiness measurement model for resilient architecture.
- propose an analytical design methodology for hierarchical trustworthy system models.

2020/10-2021/10 Measurement of Software Trustworthiness Base on Reference Software Architecture

- Based on UAES existing data, establish trustworthy evidence of reference software architecture.
- According to the reference software architecture, establish a

software trustworthiness measurement model based on the reference software architecture
- Develop a measurement model tool based on the reference software architecture, combine it with UAES's existing database and give suggestions for architecture modification.

2019/09-2022/09 Measurement of Software Trustworthiness
- Investigate on trustworthiness measurement methods in the industry, and write a report on trustworthy measurement methods.
- Based on existing trustworthy evidence related literature, establish a measurement model based on trustworthy evidence, write a report on trustworthy evidence.
- According to the industry's advanced software engineering practical experience, the trusted elements of the software industry standard, combined with the appropriate measurement calculation model, construct a source code-oriented software trustworthiness measurement model.

2019/09-2020/11 National Key R&D Project on Smart Cities
- Design a trustworthiness measurement and assessment method for Cyber-Physical Systems (CPS) under uncertain environments based on the concept of trust related to uncertainty.
- Develop a tool for measuring and assessing the trustworthiness of CPS in uncertain environment.

HONORS AND AWARDS

- ACM SIGSOFT Distinguished Paper Award FSE 2024
- The distinguished Ph.D. thesis at the College of Information Technology, East China Normal University 2024
- Shanghai Outstanding Graduate Student, Shanghai Municipal Education Commission 2024
- Publicly Funded Postgraduate Scholarships, China Scholarship Council 2022
- "HUAWEI CUP" 17th China Post-Graduate Mathematical Contest in Modeling 3rd Prize. 2020

SERVICES

Conference Program Committee Member:
MSR 2025 - Junior PC Member
MSR 2024 - Junior PC Member

Journal Reviewer:
ACM Transactions on Software Engineering and Methodology

Sub-Reviewer:
NDSS 2026, ASE 2025, CCS 2025, OOPSLA 2025, IEEE S&P 2025, CCS 2025, Usenix Security 2025, ISSTA 2025, ICSE 2025, NDSS 2025, ASE 2024, CCS 2024, ISSTA 2024, AISACCS 2024, WWW 2024, ASE 2023, FSE 2023, AILA 2023, FSE 2022, AILA 2022
Frontiers of Computer Science, Empirical Software Engineering