

Jianxing Qin

jianxing.qin@duke.edu

EDUCATION

Duke University

Ph.D. in Computer Science

- Advisor: Danyang Zhuo

Aug 2023 – Present

Shanghai Jiao Tong University

B.Eng in Computer Science and Technology

- Advisor: Qinxiang Cao
- Dissertation: VST-IDE: An Interactive Tool for Program Verification (Symbolic Execution)

Aug 2019 – Jun 2023

PUBLICATIONS

1. Jianxing Qin, Jingrong Chen, Xinhao Kong, Yongji Wu, Tianjun Yuan, Liang Luo, Zhaodong Wang, Ying Zhang, Tingjun Chen, Alvin R. Lebeck, Danyang Zhuo. *Phantora: Maximizing Code Reuse in Simulation-based Machine Learning System Performance Estimation*. arXiv preprint, 2025.
2. Jianxing Qin, Alexander Du, Danfeng Zhang, Matthew Lenz, Danyang Zhuo. *Can Large Language Models Verify System Software? A Case Study Using FSCQ as a Benchmark*. The ACM SIGOPS 20th Workshop on Hot Topics in Operating Systems (HotOS), 2025.
3. Litao Zhou, Jianxing Qin, Qishi Wang, Andrew W. Appel, Qinxiang Cao. *VST-A: A Foundationally Sound Annotation Verifier*. The 51st ACM SIGPLAN Symposium on Principles of Programming Languages (POPL), 2024.

SKILLS

Formal Verification (Proof Assistant / SMT solver) | System Programming (Linux Toolchain / Low-level Programming / Developing large-scale systems) | Programming Languages (Type Systems / Compiler / Functional Programming)

Programming Skills: C/C++, Python, Rust, OCaml, Coq, Haskell.

RESEARCH EXPERIENCES

Research Assistant, Duke University

Advisor: Prof. Danyang Zhuo, Department of Computer Science

Aug 2023 – Present

Topic: GPU cluster simulator for performance analysis on machine learning workloads

- Implement simulator for GPU cluster on deep learning workloads
- Run training workloads as-is without the real GPU cluster
- Avoid reimplementations of the ML framework in the simulator, seamless support most features

Research Assistant, Shanghai Jiao Tong University

Advisor: Prof. Qinxiang Cao, John Hopcroft Center for Computer Science

Feb 2021 – Jun 2023

Dissertation: Interactive verification of annotated programs

- Developed separation logic based assertion annotations of program states compatible with C
- Checked annotated C source codes and verified the corresponding user-defined specifications
- Developed a proof assistant like programming environment

Topic: Verification of annotated programs

- Implemented foundationally sound annotation verifier based on VST
- Published on POPL 2024

Topic: Solver-aided development of network functions

- Leverage the power of SMT solvers in middlebox development
- Push-button verification for modular network function frameworks like Click
- Explored synthesis techniques (syntax-guided, counterexample-guided) for network functions