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Education

8/2023 – Now	Ph.D. in Computer and Information Science University of Pennsylvania, USA. Advisor: Dr. Gushu Li
8/2023 – 8/2025	M.S. in Computer and Information Science University of Pennsylvania, USA.
9/2019 – 5/2023	B.E. in Computer Science and Technology Tsinghua University, China. Advisor: Prof. Wei Xue

Research Interests

- Quantum Computing; Quantum Information; Quantum Error Correction
- Programming Language; Formal Methods; Formal Verification
- High-Performance Computing; Compiler Optimization; Compiler Construction

Publications (* = equal contribution)

[HPCA '25]	Yuhao Liu , Kevin Yao, Jonathan Hong, Julien Froustey, Ermal Rrapaj, Costin Iancu, Gushu Li, Yunong Shi, “ <i>HATT: Hamiltonian Adaptive Ternary Tree for Optimizing Fermion-to-Qubit Mapping</i> ”, the IEEE International Symposium on High-Performance Computer Architecture (HPCA), 2025.
[ASPLOS'24]	Yuhao Liu , Shize Che, Junyu Zhou, Yunong Shi, Gushu Li, “ <i>Fermihedral: On the Optimal Compilation for Fermion-to-Qubit Encoding</i> ”, the International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2024.
[ASPLOS'26]	Junyu Zhou, Yuhao Liu , Shize Che, Anupam Mitra, Efekan Kökcü, Ermal Rrapaj, Costin Iancu, Gushu Li, “ <i>QTurbo: A Robust and Efficient Compiler for Analog Quantum Simulation</i> ”, International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2026.
[ASPLOS'25]	Spyros Pavlatos*, Xuting Liu*, Yuhao Liu , Vincent Liu, “ <i>λ-trim: Reducing Monetary and Performance Cost of Serverless Cold Starts with Cost-driven Application Debloating</i> ”, International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2025.
[PLDI'25]	Xiuqi Cao*, Junyu Zhou*, Yuhao Liu , Yunong Shi, Gushu Li, “ <i>MarQSim: Reconciling Determinism and Randomness in Compiler Optimization for Quantum Simulation</i> ”, ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI), 2025.

[CAV'25]	Kean Chen, Yuhao Liu , Wang Fang, Jennifer Paykin, Xin-Chuan Wu, Albert Schmitz, Steve Zdancewic, Gushu Li, “ <i>Verifying Fault Tolerance of Quantum Error Correction Codes</i> ”, International Conference on Computer Aided Verification (CAV), 2025.
[ISCA'24]	Junyu Zhou, Yuhao Liu , Yunong Shi, Ali Javadi-Abhari, Gushu Li, “ <i>Bosehedral: Compiler Optimization for Bosonic Quantum Computing</i> ”, the IEEE/ACM International Symposium on Computer Architecture (ISCA), 2024.
[DAC'24]	Shize Che, Seongwoo Oh, Haoyun Qin, Yuhao Liu , Anthony Sigillito, Gushu Li, “ <i>Fast Virtual Gate Extraction For Silicon Quantum Dot Devices</i> ”, the Design Automation Conference (DAC), 2024.

In Submission (* = equal contribution)

[To ASPLOS'26]	Yuhao Liu , Shuohao Ping, Junyu Zhou, Ethan Decker, Justin Kalloor, Mathias Weiden, Kean Chen, Yunong Shi, Ali Javadi-Abhari, Costin Iancu, Gushu Li, “ <i>AlphaSyndrome: Tackling the Syndrome Measurement Circuit Scheduling Problem for QEC Codes</i> ”.
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Conference Presentations

2025	“ <i>HATT: Hamiltonian Adaptive Ternary Tree for Optimizing Fermion-to-Qubit Mapping</i> ”, APS Global Physics Summit 2025, Los Angeles, USA.
2025	“ <i>HATT: Hamiltonian Adaptive Ternary Tree for Optimizing Fermion-to-Qubit Mapping</i> ”, 2025 IEEE Symposium on High-Performance Computer Architecture (HPCA), Las Vegas, USA.
2024	“ <i>Fermihedral: On the Optimal Compilation for Fermion-to-Qubit Encoding</i> ”, the 29th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), San Diego, USA.
2022	“ <i>High-Performance Stencil Computation DSL Inside Python</i> ”, SOLVER 22, Chongqing, China.

Teaching and Service

Spring 2025	Teaching Assistant , Computer Organization and Design, CIS 4710, UPenn, PA
Fall 2024	Teaching Assistant , Introduction to Quantum Computing, CIS 3990, UPenn, PA