Ziqing Guo

+1(806)-470-2820 | ziqinguse@gmail.com | https://linkedin.com/in/ziqing-g-993936254/ | Profile Website

Education

Texas Tech University, **PhD, High Performance Computing Center Fellow** — Aug 2026 (expected)

Newcastle University, **MSc, Advanced Computer Science, Merit** — Aug 2023

University of Tennessee, **Chengdu University of Information Technology**, **BE, Distinguished Graduate** — Jul 2021

Peer-reviewed Publications

- Ziqing Guo, Fan Bo, Ziwen Pan. (2025). Physics-Informed Quantum Model for Predicting US Inland Waterway Container Traffic. Submitted to the Proceedings of the National Academy of Sciences (PNAS).
- Ziqing Guo, Jan Balewski, Ziwen Pan. (2025). ShardQ: Circuit Cutting and 3D Tensor Recomposition for Quantum Simulation on Superconducting Qubits. Submitted to the ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS).
- Ziqing Guo, Jan Balewski, Ziwen Pan. (2025). Vectorized similarity attention with learnable encoding for quantum transformer. Submitted to the 40th Annual AAAI Conference on Artificial Intelligence (AAAI).
- Ziqing Guo, Alex Khan, Victor S. Sheng, Shabnam Jabeen, Ziwen Pan. (2025). Quantum parallel information exchange (QPIE) hybrid network with transfer learning. In IOP Quantum Science and Technology. HTML
- Ziqing Guo, Steven Rayan, Wenshuo Hu, Ziwen Pan. (2025). Direct entanglement ansatz learning (DEAL) with ZNE on error-prone superconducting qubits. In IEEE International Conference on Quantum Computing and Engineering (QCE). PDF
- Ziqing Guo, Jan Balewski, Ziwen Pan. (2024). Q-GEAR: Improving quantum simulation framework. In 54th International Conference on Parallel Processing (ICPP). PDF

Employment Experience

Research Affiliate Intern, Lawrence Berkeley National Lab, NERSC — Jun 2024 – Present

Research Fellow, Texas Tech University — Sep 2023 – Present

Research Assistant, Newcastle University — Jun 2022 – Jun 2023

Cloud Engineering Intern, CISCO — Dec 2021 – Jun 2022

Grant & Awards

- **IonQ Research Grant**, $350k — Jul 2025
- **IBM LBNL QCAN Award**, $30k, NERSC, DoE(No. DE-AC02-05CH11231) — Mar 2025
- **GenQ Quantum Hackathon**, $2.5k, Cat Qubit, First Prize — Oct 2024
- **Qiskit Quantum Summer School / Quantum Challenge**, Full Achievement — Jun 2024
- **AWS Braket Quantum Application Development**, Certificate — Mar 2024
- **AWS Braket Research Grant**, $2k, SV1, TN1 — Feb 2024
- **Pennylane Open Hackathon QHack / Code Camp**, Top Completionist — Jan 2024
- **Q-CTRL, Quantum Information Theory,** Certificate — Jun 2023

Invited Talks

Special topic on Q-Gear generalization NVIDIA, 2025
International Conference on Parallel Processing, Quantum Computing, Sep 2025
International Conference on Quantum Computing, QAI Workshop, Aug 2025
Monterey Data Conference, Aug 2025
Quantum parallel information exchange hybrid network for transfer learning, IJCNN, Jun 2025

IBM Quantum / AI, TTU, Apr 2025
Improving quantum computation model, WCOE, Apr 2025
HackTX, University of Austin, Jan 2025 (Mentor)
Wave Technology, City of Calgary, Nov 2024
Platform Calgary, University of Saskatchewan, QAI Venture, Oct 2024
Berkeley National Lab, National Energy Research Computing, Quantum Group, Jul 2024
QuEra - NERSC quantum group neutral atom pattern formulation, Jun 2024
NVIDIA CUDA Quantum, QCAN, Jun 2024

Professional Services

IOP Quantum Science and Technology
Springer Nature Quantum Machine Intelligence
IEEE International Conference on Quantum Computing and Engineering
ACM Proceedings of the International Conference on Parallel Processing
Quantum and Beyond NEWSLETTER
Nature Machine Intelligence
ACM Transactions on Quantum Computing
Advanced Quantum Technology
Wolfram Research Student Ambassador
IEEE, ACM, APS member

Projects

Improve quantum circuit simulation tool github.com/gzquse/Q-Gear

- Support SLURM submission; PODMAN container; CUDA-kernel acceleration; PennyLane; image encoding.

Direct entanglement ansatz learning for quadratic unconstraint binary optimization (QUBO) github.com/gzquse/QUBO

- Distributed learning; efficient ansatz encoding; multiple QUBO problem solvers.

Automated text mining of biomedical literature Huggingface/BioGPT

- Transformer-based; auto-regressive mining; 95% accuracy for biomedical domain literature.

Skills

Quantum (Proficiency): **Qiskit** (Heron-2 type superconducting), **CUDA-Q** (cuTensorNet, cuStatevector, NVIDIA-GPU), **IonQ** (Trapped Ion Aria-2, Forte), **Pennylane** (software stack), **Amazon Braket** (QaaS), **QCI-Dirac3** (Photonic QPU), **Fire Opal (Q-Ctrl)**, **Tensorcircuit** (Tecent), **CirQ** (Azure, Microsoft)

Engineering: Python, Mathematica, Fortran, CUDA/MPI, Bash, Julia, Matlab, Cray HPC, Slurm, Container, DevOps, Scrapy/Data Mining

Interests: Guitar fingerpicker, Table tennis (competitive, shakehand grip), Calisthenics, Rollerblading, Culinary enthusiast

Languages: English (proficient), Mandarin (native), Japanese (Elementary)