YI PAN

ypan24@uga.edu | (706) 614-8093 | Athens, GA | ypanstupidog.github.io | **Google Scholar**

EDUCATION

University of Georgia – Ph.D., Computer Science; GPA: 4.00/4.00 Expected: May 2029
University of Glasgow – B.Eng., Electronics & Electrical Engineering 2024
UESTC (Glasgow College) – B.Eng., Electronic Information Engineering 2024
Undergraduate Honors: First Class Honours (Glasgow); GPA: 3.87/4.00; Top 10%.

TECHNICAL SKILLS

Programming & ML: Python (Object-Oriented Programming), PyTorch.
Quantum Computing: Hybrid Quantum–Classical Modeling, Quantum Machine Learning; Qiskit, TorchQuantum.
Generative AI: Agent Harness Design; AI-Assisted Development, Code Review, and Validation.

SELECTED RESEARCH EXPERIENCE

AQCF: Adaptive Quantum–Classical Language Modeling
Project Lead | *AAAI QIML Symposium 2025 (Oral)* Mar. – May 2025

- Conceived and developed a hybrid quantum–classical Transformer for language modeling and text classification, encapsulating adaptive circuits, quantum memory banks, and fusion logic as modular model components.
- Improved SST-2 and IMDB accuracy by **2.52 and 4.12 percentage points**, respectively, over the same Transformer backbone without quantum components in 20-qubit simulations.
- Directed the project from research conception through implementation and evaluation, assigning teammate responsibilities and comparing classical, quantum-only, and hybrid models across five random seeds with component ablations.

MolQAE: Quantum Molecular Representation Learning
Project Lead | *IEEE QAI 2025* Mar. – May 2025

- Originated and led the research from model design through implementation and evaluation, coordinating teammate contributions to a quantum autoencoder for SMILES-based molecular representations.
- Implemented quantum encoders and decoders as modular model classes with TorchQuantum/PyTorch, coupling quantum modules with classical optimization of reconstruction-fidelity and ancillary-state objectives on QM9.
- Achieved **96.8% quantum-state reconstruction fidelity** with **8-to-4-qubit compression** using a 30-layer circuit in QM9 molecular simulations.

SA-IBF: Identifiable Noise Models for Quantum Circuits
Project Lead | *Submitted to npj Quantum Information* Mar. 2026 – Present

- Conceived and led a two-parameter noise-modeling study for symmetry-preserving quantum circuits; derived closed-form predictions and local identifiability conditions to determine when noise parameters can be uniquely estimated.
- Accelerated CPU fitting by **231–447**$\times$ relative to 21-parameter sector-aware Ji-BO on 4–7-qubit MolQAE circuits under five-fold cross-validation; Hellinger-distance differences had 95% confidence intervals within ± 0.01 at three of four qubit counts.
- Validated predictions against experimental data from four IBM Heron processors, using Qiskit statevector simulations for ideal reference distributions.

ChatRadio-Valuer: Reusable Foundation-Model Fine-Tuning
Data & System Engineering Lead | *IEEE TBME* Feb. 2023 – Aug. 2025

- **Led technical design and implementation** of a complete, reusable PyTorch fine-tuning framework; **collaborated with an engineering team of approximately 20–30 members** to integrate data processing, distributed training, and evaluation for subsequent team fine-tuning work.

PROFESSIONAL EXPERIENCE

GyriQAI, Inc. **Athens, GA**
AI Engineering Intern May 2026 – Jul. 2026
Co-Founder | *EZCollegeApp – Full-Stack AI Product Development*

- Delivered end-to-end Generative AI capabilities for EZCollegeApp, a platform with **1,000+ registered users**, through FastAPI services and React/TypeScript interfaces for document-based profile autofill, conversational assistance, and interactive essay editing.
- Designed project-wide **agent harness principles and development workflows**, integrating Generative AI-assisted coding, code review, and validation into the team's engineering process.
- Led **three team members** through feature development, translating product requirements into assigned tasks, coordinating frontend and backend implementation, and reviewing pull requests to integrate completed features.

AWARDS & ACADEMIC SERVICE

Awards: NSF-supported Student Travel Award, AAAI FSS25 (QIML); Outstanding Graduate (Top 10%), UESTC.
Scholarships: First Prize for Academic Excellence (Top 8%), UESTC, 2020–2021 and 2021–2022.
Reviewer: ACM Transactions on Quantum Computing; IEEE TPAMI; IEEE TAI; ICLR; ICML; NeurIPS.

SELECTED PUBLICATIONS (Full publication list can be found @ **Google Scholar**)

1. Chen, J., Zhou, Y., Jiang, H., **Pan, Y.**, et al. **CLAQS: Compact Learnable All-Quantum Token Mixer with Shared-ansatz for Text Classification.**
   QNLPAI, 2026 (Oral).

2. Jiang, H., Chen, J., **Pan, Y.**, et al. **MedVIGIL: Evaluating Trustworthy Medical VLMs Under Broken Visual Evidence.**
   NeurIPS, Evaluations and Datasets Track, 2026.

3. Li, Y., **Pan, Y.**, et al. **MedQuA: A NISQ-Aware Quantum Adapter for Medical Vision–Language Models.**
   IEEE International Symposium on Biomedical Imaging (ISBI), 2026 (Oral).

4. Jiang, H., **Pan, Y.**, et al. **Quantum Artificial Intelligence: A Comprehensive Survey.**
   Meta-Radiology, 2026.

5. Zhong, T., Zhao, W., Zhang, Y., **Pan, Y.**, et al. **ChatRadio-Valuer: A Chat Large Language Model for Generalizable Radiology Impression Generation on Multi-Institution and Multi-System Data.**
   IEEE Transactions on Biomedical Engineering, 73(3):1050–1061, 2026 (online 2025).

6. **Pan, Y.**, et al. **MolQAE: Quantum Autoencoder for Molecular Representation Learning.**
   IEEE International Conference on Quantum Artificial Intelligence (QAI), 2025.

7. **Pan, Y.**, et al. **Bridging Classical and Quantum Computing for Next-Generation Language Models.**
   First AAAI Symposium on Quantum Information and Machine Learning (QIML), 2025 (Oral).

8. Jahin, A., **Pan, Y.**, et al. **Quantum-Classical Hybrid Molecular Autoencoder for Advancing Classical Decoding.**
   First AAAI Symposium on Quantum Information and Machine Learning (QIML), 2025.

9. Zhao, H., Li, J., **Pan, Y.**, et al. **HELENE: Hessian Layer-wise Clipping and Gradient Annealing for Accelerating Fine-Tuning LLM with Zeroth-Order Optimization.**
   EMNLP Main Conference, 2025.

10. Zhong, T., **Pan, Y.**, et al. **ChatABL: Abductive Learning via Natural Language Interaction with ChatGPT.**
    IEEE Transactions on Neural Networks and Learning Systems, 2025.

11. Li, Y., Kim, S., Wu, Z., Jiang, H., **Pan, Y.**, et al. **ECHOPulse: ECG Controlled Echocardiogram Video Generation.**
    International Conference on Learning Representations (ICLR), 2025.

SUBMITTED MANUSCRIPTS

1. **Pan, Y.**, et al. **Efficient and identifiable noise models for symmetry-preserving quantum circuits.**
   Submitted to *npj Quantum Information*, 2026.

2. **Pan, Y.**, et al. **Identifying the Sign of Coherent Over-Rotations with Logarithmically Many Pauli Settings.**
   Submitted to *IEEE Transactions on Quantum Engineering*, 2026.

3. **Pan, Y.**, et al. **Identifiable Coherent Interactions Can Remain Statistically Hard to Certify.**
   Submitted to *PRX Quantum*.

4. **Pan, Y.**, et al. Research on neural decoding for continuous quantum error correction.
   Submitted to *ICLR 2027*; title withheld for double-blind review.