QKAN-GQE-TN-MTS Solver

Team QQQ

Project Lead: Jiun-Cheng Jiang

GPU Acceleration PIC1: Kuo-Chung Peng

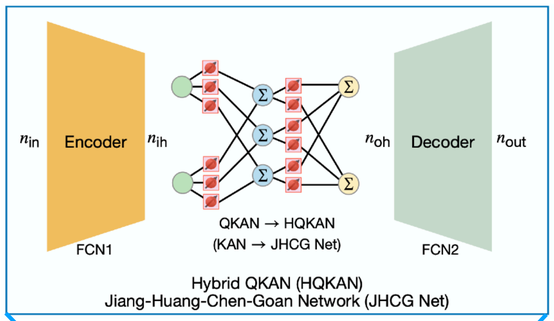
GPU Acceleration PIC2: Chun-Hua Lin

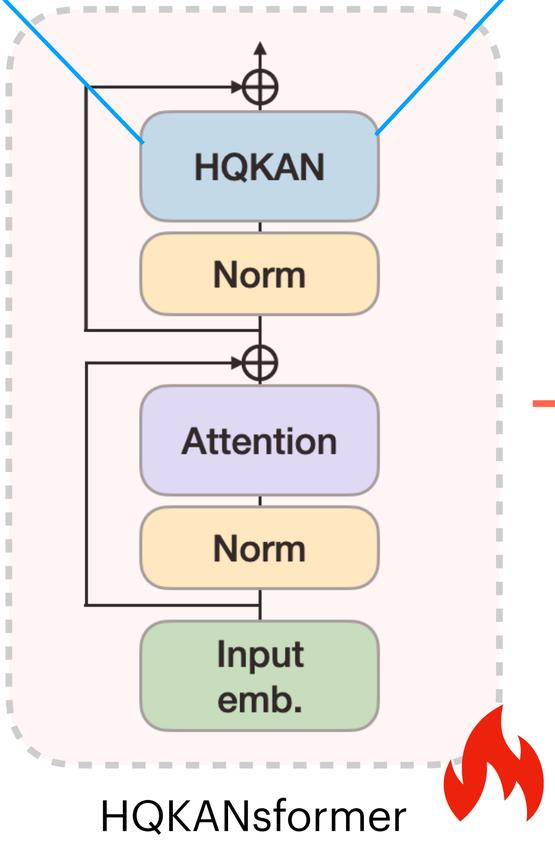
Quality Assurance PIC: YuChao Hsu

Technical Marketing PIC: Yi-Kai Lee

Feb 1, 2026 @ MIT iQuHACK 2026 NVIDIA Challenge

Overview

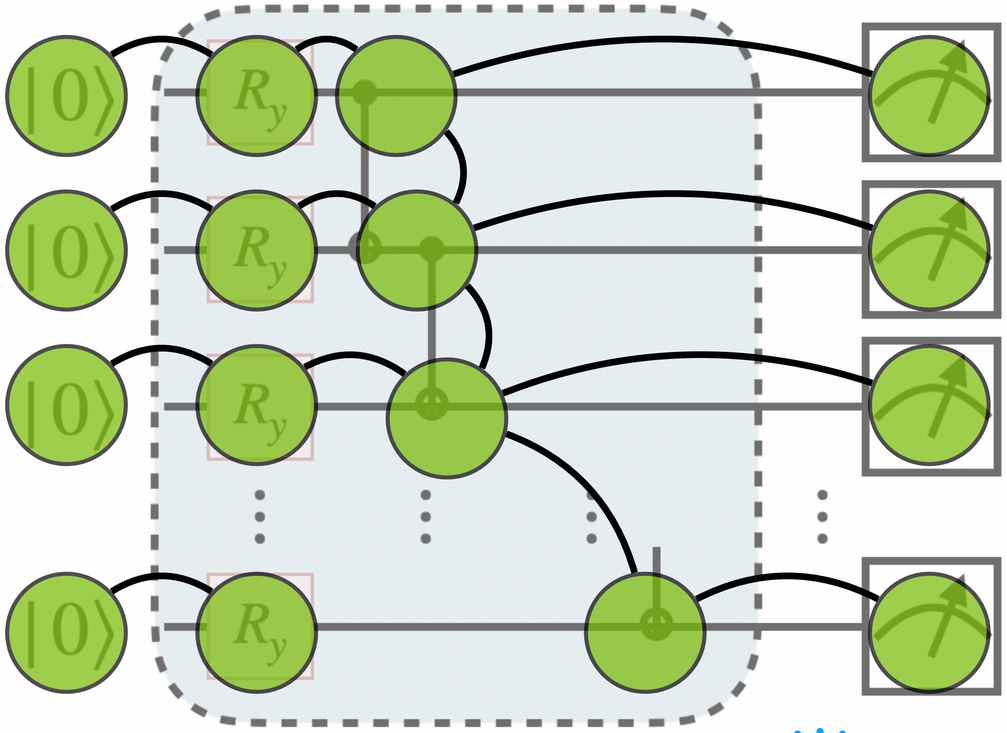




HQKANsformer

$\boldsymbol{p}_\theta$

TN-accelerated Quantum Circuit



Evaluate energy
$\langle E \rangle$

$\partial \langle E \rangle_\theta$

cuPy opt

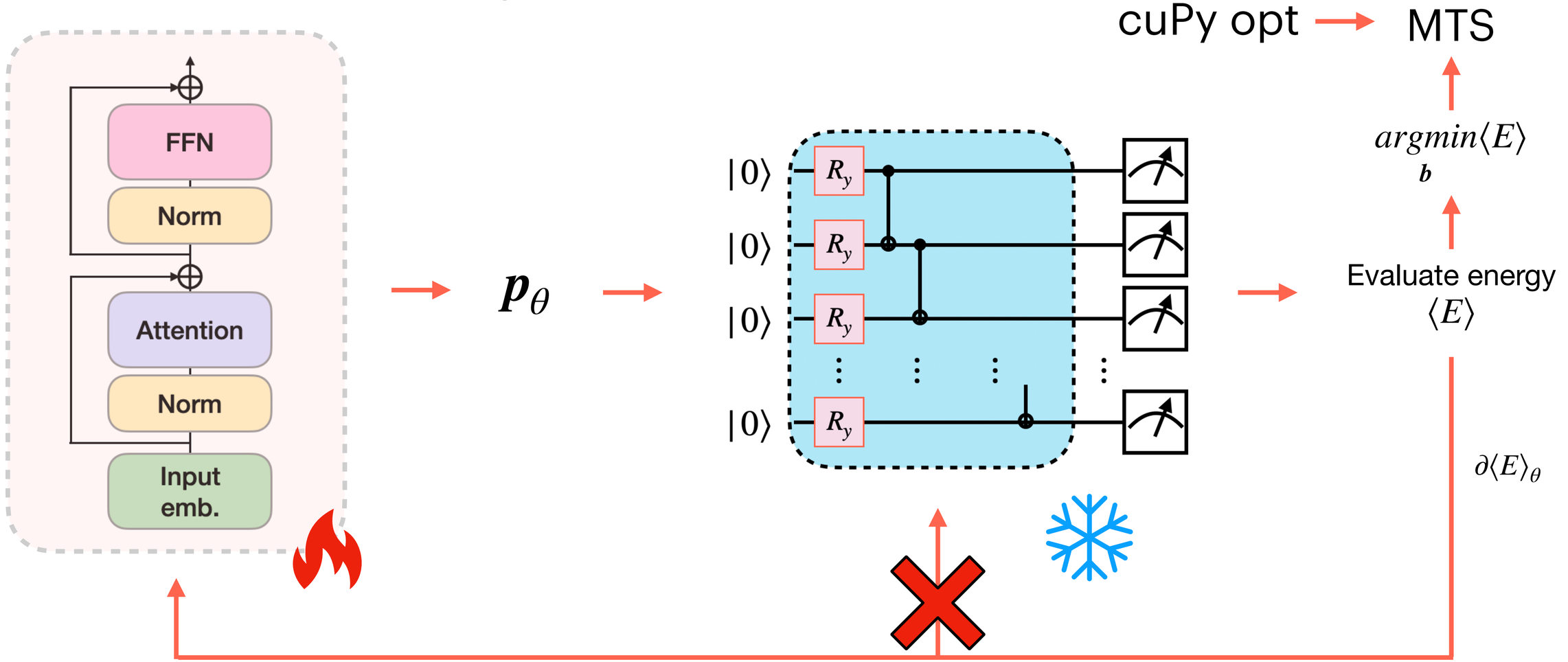
MTS

$argmin \langle E \rangle$
$\boldsymbol{b}$

Architecture

QKAN-enhanced Generative Quantum Eigensolver with Tensor Networks and Memetic Tabu Search Accelerating

- Generative Quantum Eigensolver (GQE)

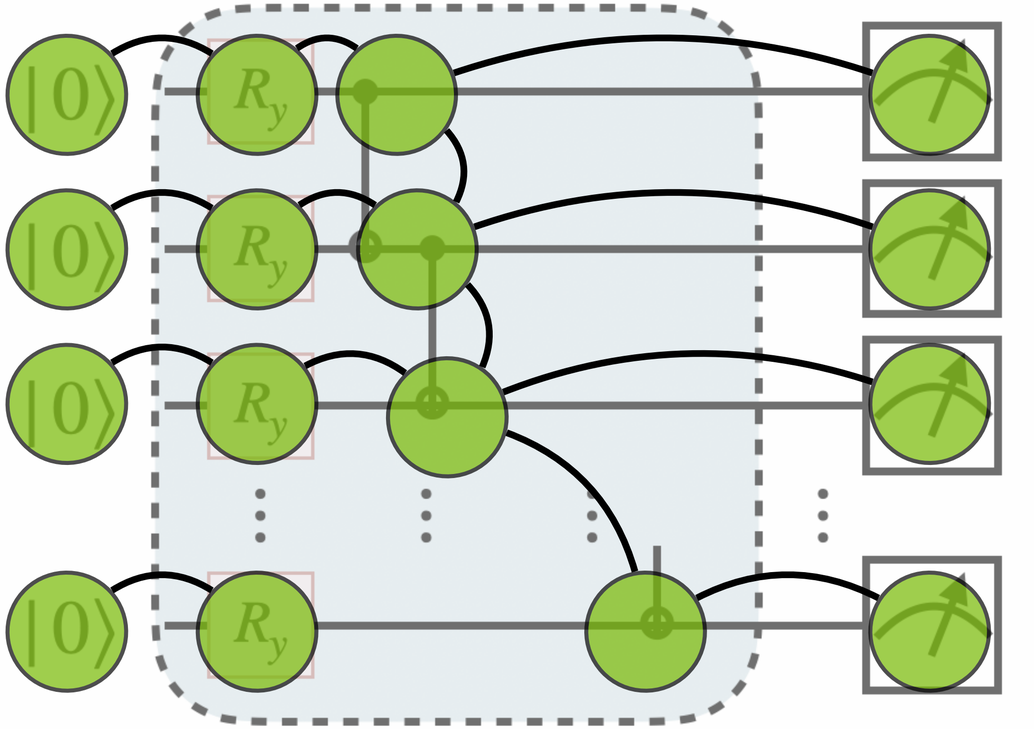


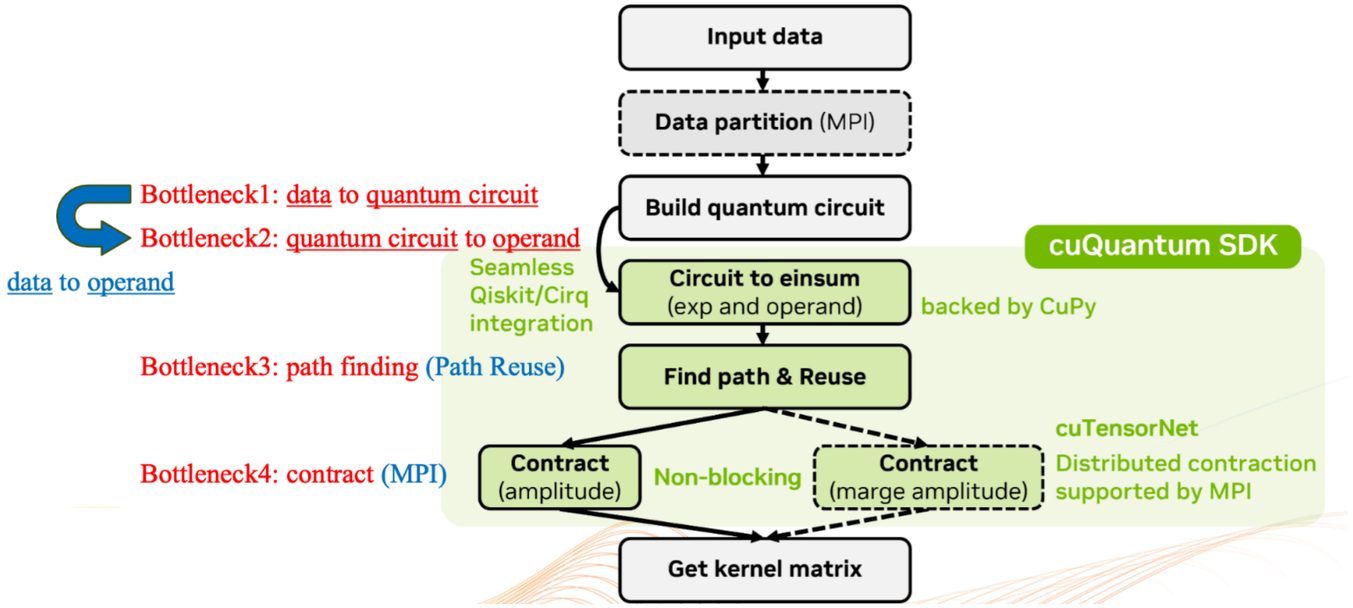
Nakaji et al., "The generative quantum eigensolver (GQE) and its application for ground state search", *arXiv preprint* arXiv:2401.09253, 2024.
Cadavid et al., "Scaling advantage with quantum-enhanced memetic tabu search for LABS", *arXiv preprint* arXiv:2511.04553, 2025.

Architecture

QKAN-enhanced Generative Quantum Eigensolver with Tensor Networks and Memetic Tabu Search Accelerating

- Accelerating quantum circuits evaluation through tensor networks.



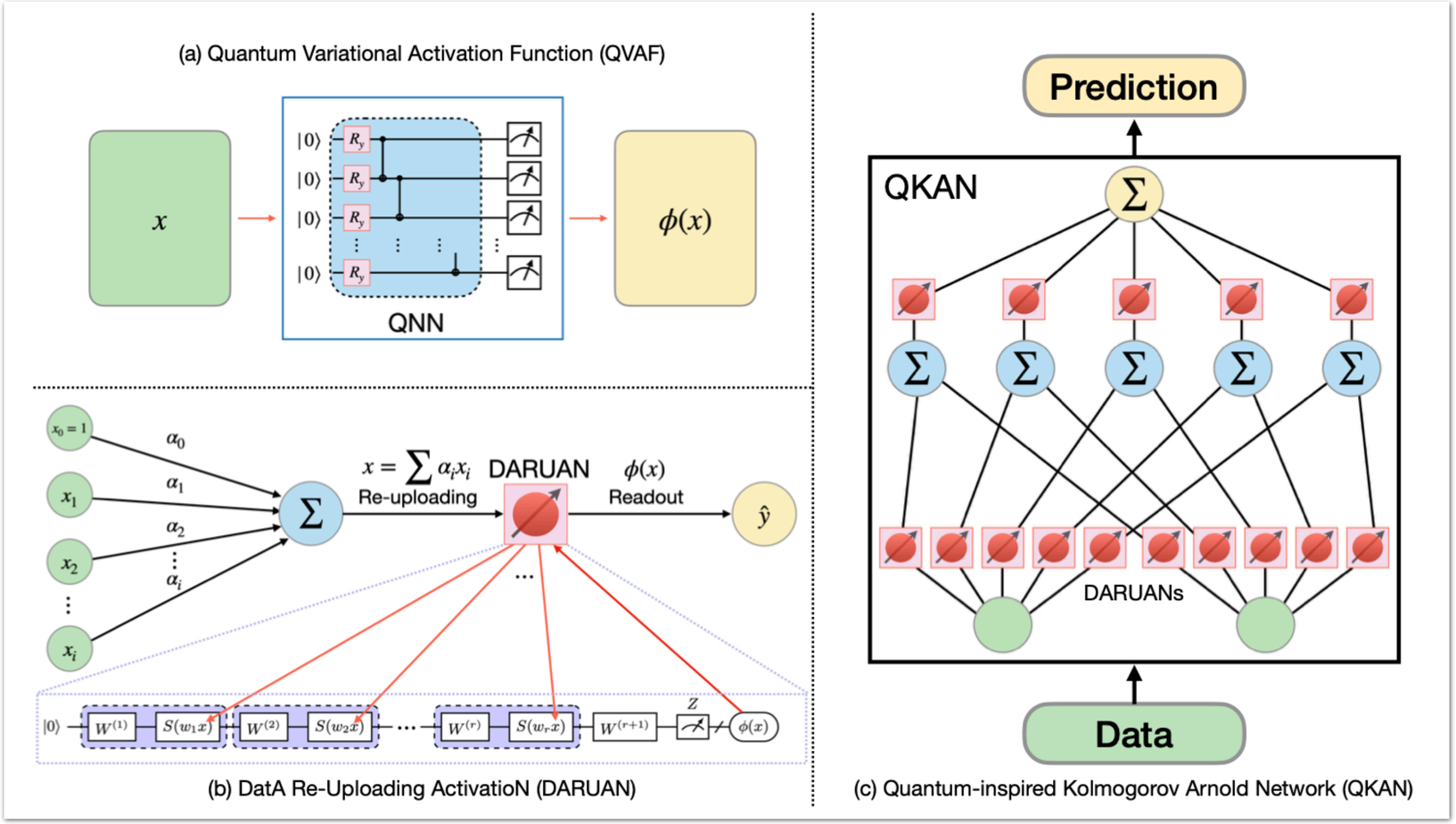


Chen et al., "Validating Large-Scale Quantum Machine Learning: Efficient Simulation of Quantum Support Vector Machines Using Tensor Networks", *Machine Learning: Science and Technology* **6**, 015047, 2025.

Architecture

QKAN-enhanced Generative Quantum Eigensolver with Tensor Networks and Memetic Tabu Search Accelerating

- Quantum-inspired Kolmogorov-Arnold Networks (QKAN)

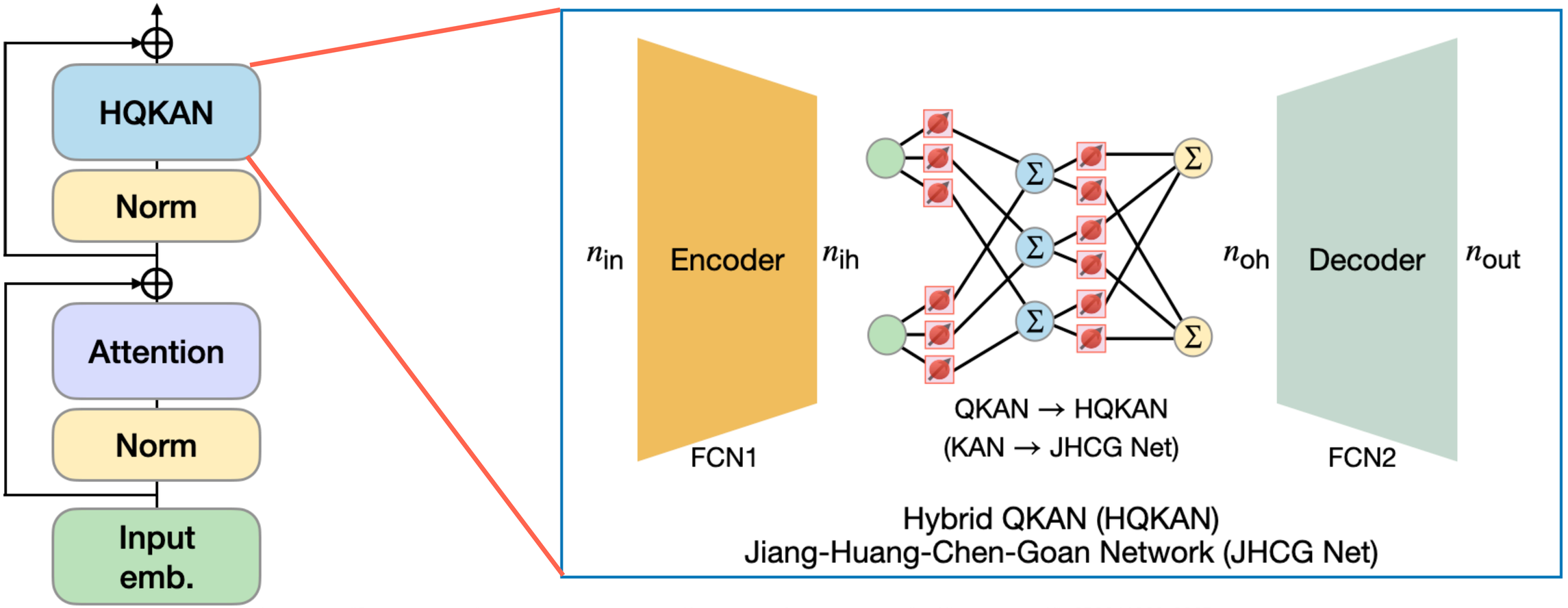


Jiang et al., "Quantum variational activations empower Kolmogorov-Arnold networks", *arXiv preprint* arXiv:2509.14026, 2025.

Architecture

QKAN-enhanced Generative Quantum Eigensolver with Tensor Networks and Memetic Tabu Search Accelerating

- HQKANsformer for parameter/computational efficient and scalable GenAI



Jiang et al., "Quantum variational activations empower Kolmogorov-Arnold networks", *arXiv preprint* arXiv:2509.14026, 2025.
Hsu et al., "QKAN-LSTM: Quantum-inspired Kolmogorov-Arnold Long Short-term Memory", arXiv: 2512.05049, 2025.
Jiang et al., "Quantum-inspired Kolmogorov–Arnold Networks for Scalable and Efficient LLMs", *NVIDIA GTC AI Conference 2026, San Jose CA*, 2026.

Thanks for your attention!

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