Activity

[1]
Time/Place: Nov. 13-14, 2025, Asia University, Taichung
Title: INTERNATIONAL SYMPOSIUM ON QUANTUM AI & THE FUTURE OF LIFE

[2]
Time/Place: Oct. 21, 2025, 10 am, Room M003, Asia University, Taiwan
Title: Building robust, reliable, and reproducible bioinformatics pipelines for medical research
Speaker: Dr. Wei-Hung Pan, Senior Data Scientist, *Silence Therapeutics, Berlin, Germany*

[3]
Time/Place: Oct. 20, 2025, 15 pm, Room A101, Asia University, Taiwan

Title: Quantum meet AI: The Rise of a New Civilization

Speaker: Chair Professor Ching-Ray Chang
Director, Chung Yuan Christian University Quantum Information Center
National Taiwan University, Taiwan

[4]
Time/Place: Oct. 17, 2025, 14:00 – 17:00 pm,
Room A115 & A110, Asia University, Taiwan
Title: Introduction to the Quantum AI Research Center (QAIRC)
Speaker: Vice Director, Ka-Lok Ng, AIQRC, Department of Bioinformatics and Medical Engineering, Asia University, Taiwan
Visitors: FPT University, Vietnam

Awards & Achievements

Asia University proudly congratulates **Ms. Aninda Astuti**, Ph.D. student in the **Department of Bioinformatics and Medical Engineering** and member of the **AI and Quantum Research Center (AIQRC)**, for receiving the **Best Paper Award** at the *2025 Second International Conference on Artificial Intelligence for Medicine, Health, and Care (AIxMHC)*, held on **October 13–15, 2025, in Taichung, Taiwan**.

Her paper, *"Enhancing the Performance and Speed of Quantum Support Vector Classifier via Neural Quantum Embedding and Tensor Network,"* introduces a hybrid quantum framework that integrates **Neural Quantum Embedding (NQE)** and **Tensor Network (TN)** techniques to enhance the efficiency and classification accuracy of **Quantum Support Vector Classifiers (QSVCs)**. The study highlights the potential of combining **quantum machine learning** and **tensor-based optimization** for the effective analysis of complex biomedical data.

This research was conducted in collaboration with **Professor Tai-Yue Li** (**National Center for High-Performance Computing (NCHC, Taiwan), , Simon See (NVIDIA) and Ka-Lok Ng (AIQRC).**

Research news in quantum machine learning

Enhancing Support Vector Classification and Regression with an Adaptive Quantum–Classical Dual Kernel

The **Quantum Support Vector Machine (QSVM)** is revolutionizing Quantum AI by leveraging **quantum-enhanced feature spaces** to encode classical data into high-dimensional Hilbert spaces, capturing complex nonlinear correlations beyond classical models. Meanwhile, classical SVMs remain effective through **Linear, Polynomial, and RBF kernels** for optimal decision boundaries.

Combining the strengths of both, researchers have developed a **hybrid quantum-classical dual kernel framework** for classification and regression. By integrating quantum and classical kernels via an **adaptive weighted linear combination**, the approach improves **expressivity, interpretability, and robustness**.

Tests on real-world datasets show remarkable results: **100% classification accuracy on the Wine dataset**, and for regression tasks, **R² scores of 89.61% (ideal) and 89.32% (noisy)** with lower RMSE values (**27.97 ideal; 28.76 noisy**) compared to single-kernel methods. Evaluations on IBM Qiskit's quantum backends confirm the framework's **robustness and practical feasibility** for quantum-enhanced machine learning applications.

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Recent progress in quantum computing

NVIDIA Releases cuQuantum Python v25.09.0 with Major API Enhancements

NVIDIA has announced the release of **cuQuantum Python v25.09.0**, introducing several powerful updates to accelerate quantum simulations. The new version adds support for **real-valued quantum circuits and Pauli strings** across key TensorNet APIs, along with a **new JAX extension** that enables seamless integration with JAX-based quantum dynamics frameworks. It also introduces **extreme eigenspectrum computation** for non-batched Hermitian operators via the new OperatorSpectrumSolver.

Deprecated APIs from previous versions have been removed, and compatibility has been updated to **CUDA 12 and 13** (CUDA 11 is no longer supported). The release also resolves multiple stability issues related to multi-GPU execution and mixed-state operations. With these updates, cuQuantum Python continues to strengthen its position as a leading toolkit for **high-performance quantum computing and simulation** on NVIDIA GPUs.

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Prepared by Miss Aninda Astuti and Professor Ka-Lok Ng, Vice Director, AIQRC & Department of Bioinformatics and Medical Engineering, Asia University.

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