



NVIDIA Launches Ising, the World's First Open AI Models to Accelerate the Path to Useful Quantum Computers

NVIDIA Ising Delivers Breakthrough Performance in Quantum Calibration and Error Correction, Empowering Researchers and Enterprises to Build Scalable, High-Performance Quantum Systems

News Summary:

- The NVIDIA Ising open model family delivers the world's best AI-based quantum processor calibration capabilities, as well as quantum error-correction decoding that is up to 2.5x faster and 3x more accurate than traditional approaches.
- Leading quantum enterprises, academic institutions and research labs adopting Ising include Academia Sinica, Fermi National Accelerator Laboratory, Harvard John A. Paulson School of Engineering and Applied Sciences, Infleqtion, IQM Quantum Computers, Lawrence Berkeley National Laboratory's Advanced Quantum Testbed and the U.K. National Physical Laboratory (NPL).

NVIDIA today announced the world's first family of open source quantum AI models, [NVIDIA Ising](#), designed to help researchers and enterprises build quantum processors capable of running useful applications.

To achieve useful quantum applications at scale, significant breakthroughs are needed in quantum processor calibration and quantum error correction. AI is key for turning today's quantum processors into large-scale, reliable computers. Open models empower developers to build high-performance AI while maintaining total control over their data and infrastructure.

Named after a landmark mathematical model that dramatically simplified the understanding of complex physical systems, the NVIDIA Ising family provides high-performance, scalable AI tools for quantum error correction and calibration -- two of the most critical challenges in building hybrid-quantum classical systems.

Ising models run the world's best quantum processor calibration and enable researchers to tackle much larger, more complex problems with quantum computers by delivering up to 2.5x faster performance and 3x higher accuracy for the decoding process needed for quantum error correction.

"AI is essential to making quantum computing practical," said Jensen Huang, founder and CEO of NVIDIA. "With Ising, AI becomes the control plane -- the operating system of quantum machines -- transforming fragile qubits to scalable and reliable quantum-GPU systems."

The quantum computing market is expected to surpass \$11 billion in 2030, according to analyst firm Resonance. This growth trajectory is highly dependent on continued progress in addressing critical engineering challenges, such as quantum error correction and scalability.

NVIDIA Ising includes state-of-the-art customizable models, tools and data that accelerate quantum processors:

- Ising Calibration: A vision language model that can rapidly interpret and react to measurements from quantum processors. This enables AI agents to automate continuous calibration, reducing the time needed from days to hours.
- Ising Decoding: Two variants of a 3D convolutional neural network model -- optimized for either speed or accuracy -- to perform real-time decoding for quantum error correction. Ising Decoding models are up to 2.5x faster and 3x more accurate than pyMatching, the current open source industry standard.

Ecosystem Adoption

Leading enterprises, academic institutions and research labs are adopting Ising for quantum computing development.

Ising Calibration is already in use by Atom Computing, [Academia Sinica](#), [EeroQ](#), Conductor Quantum, [Fermi National Accelerator Laboratory](#), Harvard John A. Paulson School of Engineering and Applied Sciences, [Infleqtion](#), IonQ, [IQM Quantum Computers](#), [Lawrence Berkeley National Laboratory's Advanced Quantum Testbed](#), [Q-CTRL](#) and the U.K. National Physical Laboratory (NPL).

Ising Decoding is being deployed by Cornell University, [EdenCode](#), Infleqtion, IQM Quantum Computers, Quantum Elements, Sandia National Laboratories, SEEQC, [University of California San Diego](#), UC Santa Barbara, University of Chicago, University of Southern California and Yonsei University.

In addition, NVIDIA is providing a cookbook of quantum computing workflows and training data along with [NVIDIA NIM™](#) microservices, equipping developers to fine-tune models for specific hardware architectures and use cases with minimal

setup. The models can also run locally on researchers' systems, protecting proprietary data.

NVIDIA Ising complements the [NVIDIA CUDA-Q™](#) software platform for hybrid quantum-classical computing and integrates with the [NVIDIA NVQLink™](#) QPU-GPU hardware interconnect for real-time control and quantum error correction, providing researchers and developers with a full suite of tools needed to turn today's qubits into tomorrow's accelerated quantum supercomputers.

Get Started With NVIDIA Open Models

NVIDIA Ising joins NVIDIA's open model portfolio, which includes NVIDIA Nemotron™ for agentic systems, NVIDIA Cosmos™ for physical AI, NVIDIA Alpamayo for autonomous vehicles, NVIDIA Isaac™ GR00T for robotics and NVIDIA BioNeMo™ for biomedical research.

These open models, data and frameworks are available on GitHub, Hugging Face and build.nvidia.com.

Learn more by watching the special address from [NVIDIA Quantum Day](#) and tuning in to this [NVIDIA AI Podcast episode](#).

About NVIDIA

[NVIDIA](#) (NASDAQ: NVDA) is the world leader in AI and accelerated computing.

Certain statements in this press release including, but not limited to, statements as to: with Ising, NVIDIA providing the community with open, performant models and easy-to-use deployment tools for driving advancements toward useful quantum applications; the benefits, impact, performance, and availability of NVIDIA's products, services, and technologies; expectations with respect to NVIDIA's third party arrangements, including with its collaborators and partners; expectations with respect to technology developments; and other statements that are not historical facts are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which are subject to the "safe harbor" created by those sections based on management's beliefs and assumptions and on information currently available to management and are subject to risks and uncertainties that could cause results to be materially different than expectations. Important factors that could cause actual results to differ materially include: global economic and political conditions; NVIDIA's reliance on third parties to manufacture, assemble, package and test NVIDIA's products; the impact of technological development and competition; development of new products and technologies or enhancements to NVIDIA's existing product and technologies; market acceptance of NVIDIA's products or NVIDIA's partners' products; design, manufacturing or software defects; changes in consumer preferences or demands; changes in industry standards and interfaces; unexpected loss of performance of NVIDIA's products or technologies when integrated into systems; and changes in applicable laws and regulations, as well as other factors detailed from time to time in the most recent reports NVIDIA files with the Securities and Exchange Commission, or SEC, including, but not limited to, its annual report on Form 10-K and quarterly reports on Form 10-Q. Copies of reports filed with the SEC are posted on the company's website and are available from NVIDIA without charge. These forward-looking statements are not guarantees of future performance and speak only as of the date hereof, and, except as required by law, NVIDIA disclaims any obligation to update these forward-looking statements to reflect future events or circumstances.

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