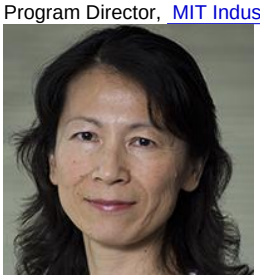
MIT Industrial Liaison Program Faculty Knowledgebase Report

Quantum at a Turning Point

December 11, 2025 10:00 am - 11:00 am

10:00 AM

Welcome and Introduction
Hong Fan
Program Director, MIT Industrial Liaison Program



Hong Fan
Program Director
MIT Industrial Liaison Program

Hong Fan is a Program Director at the Office of Corporate Relations at MIT. She joined OCR in August 2016, brought with her 20+ years of international work experience across semiconductor, consumer electronics, telecom, and higher education.

Prior to joining OCR, Hong spent 12 years in the semiconductor industry with executive functions in strategic marketing, business development, corporate strategy, product management, and product marketing at Analog Devices and MediaTek. During those years, Hong played instrumental roles in identifying emerging business opportunities related to wireless communication networks, smartphones, wearable devices, Internet of Things (IoT), and medical devices and applications. She led cross-functional teams in defining and driving product and market strategy for businesses with annual revenue ranging from $30 million to $100 million.

Prior to joining the semiconductor industry, Hong spent 6 years in the telecommunications and electronics industry, leading engineering teams at companies such as Lucent Technologies and Watkins-Johnson Company for the development of digital signal processing, wireless communications, and micro-controller software.

Before coming to US, Hong was a strategic research staff at the President Office of Shanghai Jiao Tong University, one of the oldest universities in China. She was the first woman to hold this highly selective position.

Hong has a B.S in Electronic Engineering from Shanghai Jiao Tong University, an M.S. in Electrical Engineering from University of Maryland at College Park, and an MBA from Sloan School of Management at MIT. She received numerous academic honors and awards including the McKinsey & Co. Scholarship, the NSF Graduate Research Fellowship, and the Shanghai Outstanding College Graduate Award.

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10:05 AM

Overview of the New MIT Quantum Initiative

Danna Freedman

The MIT Quantum Initiative (QMIT) is an Institute-wide priority to advance MIT's leadership in quantum by applying quantum breakthroughs to the most valuable and consequential challenges in science, technology, industry, and national security. MIT is historically unrivaled in establishing the foundations of quantum science and engineering and in pushing the limits of possibility — smaller, faster, more controlled, more precise, more powerful. QMIT will define the impact of quantum's next era by engaging a wide breadth of domain experts and end users in developing quantum solutions that are accessible, relevant, and profoundly transformative.

10:20 AM

Quantum at a Turning Point

Will Oliver

Quantum computing is moving rapidly from theoretical curiosity to an emerging tool with the potential to reshape entire industries. This session will introduce the core principles, terminology, and architectures of quantum systems, outline what they can and cannot do compared to classical computing, and explore where the field is headed. We'll also touch on the potential implications for high?performance computing environments and why forward?looking organizations are tracking quantum's progress now.

10:40 AM

Entering the Era of Logical Qubits: Introducing QuEra's Neutral-Atom Quantum Computers

Takuya Kitagawa

QuEra is pioneering the development of quantum computers built on neutral atoms — a platform that combines scalability, parallel operations, and flexible connectivity. Originating from Harvard and MIT, QuEra has consistently advanced the frontiers of quantum technology. Notably, the company achieved the industry's first demonstration of magic state distillation, a key milestone toward realizing a fault-tolerant, universal quantum computer through quantum error correction. Since 2022, QuEra's quantum systems have been accessible via the cloud, enabling researchers and developers worldwide to explore quantum algorithms on real hardware. The company's second-generation gate-based quantum computer is now installed at AIST's G-QuAT supercomputing center in Japan, marking a significant step in global quantum infrastructure. In this talk, we will introduce QuEra's technology, its scientific achievements, and its roadmap toward practical, scalable quantum computation — highlighting how QuEra is shaping both the scientific and commercial landscapes of the quantum computing era.

10:50AM

Developing the Foundation for Scalable Quantum Computing: Interconnect Hardware for Modular Networking

Masashi Hirose

Today's quantum computing systems remain largely monolithic and isolated, operating as standalone processors without compatibility with optical fiber networking. This architectural limitation is now a critical barrier to scaling—both in computational capacity and in integration with quantum communication networks. At the center of this challenge lies a missing device class: the quantum interconnect—a hardware interface that enables quantum processors to exchange entangled photons reliably across modules.

NanoQT is pioneering this frontier with the world's first fiber-connectable quantum interconnect, directly integrable with quantum processing units. The technology leverages proprietary nanofiber cavity fabrication, achieving ultra-low optical loss and millimeter-scale photonics engineered from standard optical fiber. By bridging quantum computing units and networks, NanoQT aims to build the physical foundation for modular and distributed quantum computing, enabling scalable and secure quantum information systems. Founded in 2022 as Japan's first quantum computing hardware startup, NanoQT has raised over US $24 million from leading U.S. and Japanese venture investors. The company operates across Tokyo, Palo Alto, and College Park, driving international collaboration at the intersection of quantum computing and communication.

11:00 AM

Closing Remarks
Hong Fan
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