

Colleges of Science, Engineering, and Artificial Innovative Intelligence Join Forces, the Quantum Computing Center Undertakes a Million-dollar Project

Campus focus

The College of Engineering, through its self-raised funds, established the "Center for Advanced Quantum Computing (CAQC)" last semester and is now collaborating across disciplines with the Colleges of Science and Artificial Innovative Intelligence. Deans Tzung-Hang Lee and Tzenge-Lien Shih visited the Golden Eagle alumnus and Chairman of Skywentex International Corp., Andy Chen, on January 12 and signed a contract for industry-academia cooperation. They provided research funding of NT\$ 1 million and commissioned the three colleges to conduct a research project on "Theoretical Evaluation of Distributed Quantum Computing Efficiency" this year.

CAQC, affiliated with the College of Engineering, collaborates across colleges with the Colleges of Science and Artificial Innovative Intelligence, utilizing the Science Building as its operational platform. Directed by Dr. Shih and advised by Dr. Lee, it also includes Assistant Professor Jun-Yi Wu from the Department of Physics as the Executive Secretary and Chair of the AI Department, Dr. Kuo-Chung Yu as the Deputy Executive Secretary for conducting relevant research and promoting applications. The center will actively apply for and implement key university research projects, undertake research projects commissioned by external organizations, and collaborate with international scholars and institutions on related research.

Dr. Lee, Dean of the College of Artificial Innovative Intelligence and concurrently the College of Engineering, shared that quantum computers, which utilize quantum bits for computation, can exponentially increase computing speed and can be applied in encryption, logistics optimization, financial forecasting, drug development, and other fields. The development and innovation of quantum computing technology are imminent and are

indispensable components of big data and algorithm development.

Dr. Wu stated that the number of quantum bits on a single quantum computing processor is an important quality factor for measuring its computational capability and has a physical limit. At the end of last year, IBM Q introduced a quantum computing module for distributed quantum computing, aiming to break through this physical limit and achieve large-scale quantum computing. Currently, the primary development direction of CAQC is focused on "distributed quantum computing," aiming to propose a novel architecture for distributed quantum computing and integrate AI machine learning to achieve efficient, high-speed, and stable distributed quantum computing.



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