IBM and Algorithmiq join forces to pave the way toward useful quantum advantage for quantum chemistry

Collaboration with innovative Finnish software company to explore how to reduce the time and cost of drug discovery and development using quantum computers

Helsinki, 16th November: Algorithmiq, a Helsinki-based quantum computing startup, has entered into an engagement with IBM to progress in its exploration of quantum algorithms that attempt to solve complex issues in life sciences. This collaboration brings together IBM's world-leading hardware, software and quantum applications expertise with Algorithmiq's cutting-edge algorithm developers, to explore ways to dramatically cut the time and cost of drug discovery and development. The work will also contribute any work produced to Qiskit, an open-source SDK for quantum computers, with the aim of promoting and developing this nascent ecosystem. As part of the engagement, Algorithmiq will become part of the IBM Quantum Network.

IBM's researchers are collaborating with Algorithmiq to address how to overcome the main bottlenecks in today's noisy quantum hardware, such as limited speed, accuracy, and scale, for large quantum chemistry simulations. Algorithmiq's novel measurement techniques have shown to greatly reduce runtime in hybrid quantum-classical algorithms. In addition, Algorithmiq's post-processing strategies for error mitigation have shown to significantly improve the accuracy of quantum chemistry simulations. Therefore, this collaboration looks to yield promising results to boost the performance of quantum algorithms on near-term quantum technology.

Founded by a team of world-leading academics in the field, Algorithmiq is focused on leveraging the power of quantum computing so that new drugs can be explored and eventually brought to market, and cost-effectively, leading to precise medical treatments. On average, it currently takes around a decade and $1 billion for a new drug to get to market. Algorithmiq's advances are estimated to reduce the time-to-market of new, more efficient and less harmful drugs, significantly. Algorithmiq's mission is to prevent and cure diseases by exploiting the power of quantum computing combined with a complex systems approach to drug discovery and development.

Sabrina Maniscalco, CEO and co-founder of Algorithmiq: "We are delighted to collaborate with IBM as we look to combine our world-leading quantum algorithms with IBM's best-in-class hardware and quantum chemistry expertise toward realising the full potential of the technology for quantum chemistry simulations. Quantum computing holds the key to revolutionising the process of drug discovery and development. We couldn't be more thrilled to be collaborating with a giant of the technology industry in our pursuit of this mission, placing ourselves at the forefront of innovation and the race to prove useful quantum advantage in the space."

Guillermo Garcia Perez, CSO and co-founder of Algorithmiq: "Whilst unleashing the full power of quantum simulations will likely require fault-tolerant quantum computers, near-term devices like those developed by IBM, combined with our novel algorithms based on informationally complete data, are today already showing progress toward the demonstration of a quantum advantage for chemistry. This is a steppingstone for any application of quantum computers to Life Sciences."

Ivano Tavernelli, Global Leader for Advanced Algorithms for Quantum Simulations, IBM Research: "IBM believes the demonstration of quantum advantage in areas such as quantum chemistry is possible this decade. So, we are excited to collaborate with Algorithmiq in our efforts to push the industry forward, and we are glad to see the promising results they have achieved to date in improving the performance of near-term quantum algorithms. We are glad to support Algorithmiq's

ambition through the IBM Quantum Network, and believe that the company's work could be pivotal in carving a path towards demonstrating quantum advantage with near-term quantum algorithms."

About Algorithmiq

Algorithmiq is harnessing the potential of quantum computing to solve complex problems in life sciences and realise a paradigm shift in drug discovery and development. Founded by a team of world-leading academics in the field, the company aims to leverage the power of quantum computing so that new drugs can be discovered, invented and brought to market quickly, efficiently and cost-effectively, leading to precise medical treatments. In February 2022, the startup announced a $4M seed round backed by investment from CEO & Founders of Tiger Global, K5 Global and numerous angel investors. Alongside Co-Founder and CEO Professor Sabrina Maniscalco, Algorithmiq's Board consists of Jorma Ollila, former CEO and Chairman of Nokia, Haakon Overli, founding General Partner at Dawn Capital, and Co-Founder Dr Jussi Westergren, early investor in Deepmind.

About IBM

For more information, visit https://www.ibm.com/quantum

Contact

Kirsten Nehr
Chief of Staff to Professor Sabrina Maniscalco
Kirsten@algorithmiq.fi

Chris Nay
IBM Research Communications
cnay@us.ibm.com

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