

Algorithmiq launches new drug discovery platform, Aurora

Finnish startup aims to demonstrate quantum advantage on chemistry simulations for the first time with hardware-agnostic software

Helsinki, 17 November: [Algorithmiq](#), a Helsinki-based startup developing quantum algorithms to solve complex issues in life sciences, has launched Aurora, a state-of-the-art drug discovery platform. The development of Aurora will help to realise a paradigm shift in drug discovery and development, enabling Algorithmiq to revolutionise the way new drugs are discovered, so they can be brought to market quickly, efficiently and cost-effectively.

Using its proprietary method of extracting information from quantum devices, Algorithmiq will be able to demonstrate useful quantum advantage as early as next year. Aurora will be used to solve useful problems related to drug discovery such as protein-ligand binding on a quantum computer.

One of the greatest challenges in drug discovery is the ability to predict with extreme accuracy the binding of drug molecules to certain proteins in our body that are responsible for a given disease. This is crucial to understand the functioning of drugs and eventually to cure diseases.

Aurora combines the most advanced classical and quantum algorithms for chemical simulations in one platform. It operates a three-step process: pre-processing, processing, and post-processing. It works by optimising the input for the quantum computer - reducing the complexity of the problem by modelling only the most relevant part of the molecules - then performs the calculation on the hardware, before 'cleaning up' any errors. Algorithmiq's patented and scalable method of extracting useful information from quantum computers scales as the number of qubits increases, keeping it at the cutting edge of state-of-the-art hardware.

Backed by the CEOs and founders of Tiger Global, K5 Global, Dawn Capital and other significant angel investors, Algorithmiq expects to be the first company to achieve useful quantum advantage, a phrase which refers to the demonstration that quantum computers can solve useful problems that conventional computers cannot solve, on near-term quantum hardware. Aurora will bring Algorithmiq closer to achieving its vision of creating a world in which every disease can be prevented or cured and where it does not take, on average, 10 years and \$1 billion for pharmaceutical companies to bring life-saving drugs to market.

Professor Sabrina Maniscalco, Co-founder and CEO of Algorithmiq said, "Focused on life sciences and scalable, Aurora is the first of its kind. Not only can the platform run on the current noisy near-term quantum devices of today, but it will be able to adapt in line with new hardware developments. The power of Aurora is to achieve what was thought to be impossible not even five years ago. With the current progress we have made at Algorithmiq, we will be able to harness the power of quantum computers to solve complex algorithms much faster and sooner than expected. We're excited to open Aurora up to commercial partners."

Dr Guillermo García-Pérez, Co-founder and CSO of Algorithmiq said, "There is a vast space of chemical compounds which currently remains largely unexplored where new combinations of molecules remain

undiscovered but could hold the key to curing diseases that do not have a cure at this time. This space is currently 10^{63} , far greater than the total number of all stars in the universe, around 10^{24} . Yet, this space could now become accessible through the use of quantum computers. Aurora is the key to accessing this, and will as a result, enable us at Algorithmiq to work towards developing life-saving drugs in a timely and cost-efficient manner.”

Dr Matteo Rossi, Co-founder and CTO of Algorithmiq: “Aurora is a hardware-agnostic platform that runs on a multitude of apparatuses, ranging from photonics devices to superconductors to trapped ions. As a result, Aurora can be tailored to fit the industry standard and most up-to-date hardware.”

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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.

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