https://www.dailymail.co.uk/news/article-9021073/Chinese-scientists-claim-achieved-quantum-supremacy-new-computer.html

Chinese scientists 'build quantum computer able to perform nearly 100 trillion times faster than the world's most advanced supercomputer'

- China claimed it has achieved quantum supremacy in the technology race
- US and China been competing to lead in development of quantum computing
- Tech is said to be 100trillion times faster than most advanced supercomputer
- Comes after tech giant Google announced quantum supremacy late last year

By LYDIA CATLING FOR MAILONLINE

Chinese scientists claim to have built a quantum computer which is 100trillion times faster than the world's most advanced supercomputer - **Japan**'s Fugaku. The prototype of the groundbreaking machine is able to perform a calculation which would take a traditional computer billions of years to figure out.

The breakthrough means the country has achieved quantum supremacy, a significant milestone as **China** and the US compete to lead in quantum computing technology.

It comes as late last year tech giant Google claimed to have demonstrated superiority over conventional machines.

Quantum computing is a fledgling technology which uses the weird world of quantum physics to achieve vastly sped-up information processing.

Normal, 'classical' computers store data as so-called 'bits' that can either be a '0' or a '1'. Quantum bits — qubits — instead can be both at once.

This allows groups of qubits in a quantum computer to store more data using less energy than a classical computer could using the same number of bits.

Such devices may one day revolutionise tasks that would take normal computers years, such as seeking new drugs and optimising city and transportation planning.

While big tech firms such as Google, Microsoft, IBM and Intel are said to be avidly pursuing quantum computing technology, scientists in China have claimed quantum supremacy for themselves.

The latest research, conducted by experts at the University of Science and Technology of China, Hefei, was published in **Science** journal and suggested no

existing computer is able to perform a task as quickly and the technology is unlikely to be overturned, **Bloomberg** reports.

Chinese researchers, **The Independent** report, adopted a different approach to quantum computing than that used by Google. As a result, it is said to be 10billion times faster than the technology the American tech firm announced late last year. It is also said to be 100trillion times faster than the Fugaku supercomputer. A supercomputer computes 1/0 ratio and can deliver large numbers of computing cycles per second. A quantum computer aims to utilise new quantum algorithms to accelerate digital computation.

In 2019, Google claimed it had developed a processor - named Sycamore - that performs in three minutes and 20 seconds work that would take classical computers 10,000 years.

In a bid to win the tech race, China is building a new National Laboratory for Quantum Information Sciences, costing $10billion.

Meanwhile, earlier this year President Trump has provide $1billion worth of funding for artificial intelligence and quantum information research. Trump's daughter and adviser Ivanka took to Twitter in October 2019 to credit her father's government for Google's claims of quantum supremacy.

She wrote: 'It’s official! The US has achieved quantum supremacy! In a collaboration between the Trump Admin, Google and UC Santa Barbara, quantum computer Sycamore has completed a calculation in 3 min 20 sec that would take about 10,000 years for a classical comp.

'#QIS is a critical industry of the future. That’s why signed the National Quantum Initiative Act into law, supporting robust quantum R&D. 'We’re proud to have contributed to this major milestone, ushering in the next gen of quantum tech in the USA!'

COMMENTS

Sir Roger Daley, Here, United Kingdom, 2 weeks ago

I wonder who they stole the blueprints from?

https://www.dailymail.co.uk/sciencetech/article-9078855/NASA-scientists-achieve-long-distance-quantum-teleportation-time.html

NASA scientists achieve long-distance 'quantum teleportation' over 27 miles for the first time – paving the way for unhackable networks that transfer data faster than the speed of light

Scientists built a 27-mile long prototype quantum internet in the US

- They successfully used quantum entanglement to teleport signals instantly
- The phenomenon sees qubits, the quantum equivalent of computer bits, pair up and respond instantly

Scientists have demonstrated long-distance 'quantum teleportation' – the instant transfer of units of quantum information known as qubits – for the first time.

The qubits were transferred faster than the speed of light over a distance of 27 miles, laying the foundations for a quantum internet service, which could one day revolutionise computing.

Quantum communication systems are faster and more secure than regular networks because they use photons rather than computer code, which can be hacked. But their development relies on cutting-edge scientific theory which transforms our understanding of how computers work. In a quantum internet, information stored in qubits (the quantum equivalent of computer bits) is shuttled, or 'teleported', over long distances through entanglement. Entanglement is a phenomenon whereby two particles are linked in such a way that information shared with one is shared with the other at exactly the same time. This means that the quantum state of each particle is dependent on the state of the other – even when they are separated by a large distance.

Quantum teleportation, therefore, is the transfer of quantum states from one location to the other.

However, it is highly sensitive to environmental interference that can easily disrupt the quality or 'fidelity' of teleportation, so proving the theory in practice has been technologically challenging.

In their latest experiment, researchers from Caltech, NASA, and Fermilab (Fermi National Accelerator Laboratory) built a unique system between two labs separated by 27 miles (44km).

The system comprises three nodes which interact with one another to trigger a sequence of qubits, which pass a signal from one place to the other instantly.

The 'teleportation' is instant, occurring faster than the speed of light, and the researchers reported a fidelity of more than 90 percent, according to the new study, published in **PRX Quantum**.
Fidelity is used to measure how close the resulting qubit signal is to the original message that was sent.

'This high fidelity is important especially in the case of quantum networks designed to connect advanced quantum devices, including quantum sensors,' explains Professor Maria Spiropulu from Caltech.

The findings of the project are crucial to hopes of a future quantum internet as well as pushing the boundaries of what scientists known about the quantum realm.

Although the technology is yet to reach the point of being rolled out beyond sophisticated tests such as this, there are already plans for how policy makers will employ the technology.

For example, the US Department of Energy hopes to erect a quantum network between its laboratories across the states.

The power of a quantum computer running on quantum internet will likely exceed the speeds of the world's current most sophisticated supercomputers by around 100 trillion times.

'People on social media are asking if they should sign up for a quantum internet provider (jokingly of course),' Professor Spiropulu told **Motherboard**.
'We need (a lot) more R&D work.'

COMMENTS

edddieg, Torquay, 24 minutes ago

The advertising industry will be looking at how to monetise this

Candiru, NoWhereVileTX, United States, 31 minutes ago

Most all networks are considered unhackable until the first person hacks it. It's just a matter of time.