

The Wealth Perspective

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The Financial Times reports that Google's research team, led by John Martin, has demonstrated quantum supremacy for the first time. The computer they developed, named Sycamore and which has a 53 qubit design, performed a task in 3 minutes 20 seconds that the most powerful classic computer, Summit, would have taken 10,000 years to perform. The researchers claim that this means "quantum supremacy" when quantum computers carry out calculations previously thought impossible.

"This dramatic speed-up relative to all known classical algorithms provides an experimental realization of quantum supremacy on a computational task and heralds the advent of a much-anticipated computing paradigm," the authors wrote.

Will Oliver, MIT quantum computer specialist, likened this achievement to the Wright Brothers. He went on to say this will speed up research in the field and the immense processing power will usher in breakthroughs in new drugs and materials.

Qubits make up the heart of quantum computers. They are very error prone and to get them to work researchers have to encase the whole machine in insulation because they only work at near absolute zero temps. They also are extremely vulnerable to hiccups (errors) created by magnetic and vibration forces. In fact, one of the obstacles the researchers had to overcome was too many errors to correct, making the machine useless.

Jeff Welser leads IBM's quantum efforts. He uses the example of a caffeine molecule which has 95 electrons. To simulate this you would need 10 to the 48th power classical bits. As a reference there are 10 to the 50th power atoms on the planet earth so it's impossible to do on a classic computer. You could do this on a very fault tolerant quantum system with 160 qubits.

Better drugs, better materials, better batteries may be possible because of quantum computers' potential to run simulations that will give researchers much needed insight into how the different molecules will interact with each other.

Dario Gill, one of IBM's quantum researchers, makes the point that classical computers are good at some things and quantum computers are good at others. Dario feels both will help each other in the future.

Researchers are still working on a quantum machine that will be easier to build, manage, and scale. We are still many years off from a practical machine that is available to most researchers. Some rudimentary machines are available on the web for programmers to work with today.

Jeff Welser of IBM also believes the ability of quantum computers to break cryptography and intrude on the internet's privacy has been overestimated. He says you would need machines with thousands of qubits to do that.

Thanks,
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MIT Tech Review Martin Giles / VentureBeat.com Dean Takahashi/ Financial times Madhumita Murgia Richard Waters

2019 Market Results

S&P 500	+22.3%
NASDAQ Composite	+26.4%
Dow Industrials	+17.2%
Russell 2000	+17.9%
Dow Global	+13.3%

Source the Wall Street Journal 11/04/19

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