

Are careers in quantum computing viable?

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A quantum computer is to a traditional computer what a light bulb is to a candle. Quantum computers, if and when they become viable, will solve in seconds problems traditional machines take thousands or millions of years to solve. The exciting news is that the era of quantum computers may not be too far.

Last October, scientists at Google claimed they attained "quantum supremacy". A term used to state that a quantum computer has solved a challenging problem a traditional computer would take thousands of years to resolve.

Google's Sycamore computer attained quantum supremacy when it generated a random set of numbers which the fastest supercomputer in the world would take ten thousand years to produce. The era of quantum computing may be dawning. The potential of such computers is nearly limitless. Their possible creation begs the question whether careers in quantum computing are viable.

Career scope

Today quantum computers



are being built by a handful of leading technology companies, including Google, IBM, and Amazon. Smaller companies like Rigetti and D-Wave are also trying to create the world's first quantum computer to solve real-world problems. Today, besides Google's Sycamore computer, which still cannot solve practical problems, there is no working quantum computer. But leading companies are betting big on the technology. They believe quan-

tum computers will be the most significant technology of the century.

Students interested in careers in quantum computing have to be exceptionally bright. Unlike a traditional computer science course which is well structured and points to a well-defined career path, a job in quantum computing, like quantum mechanics, is filled with uncertainty. And while quantum computers, should they become a reality, hold enor-

mous potential, some experts question whether a working quantum computer can ever be built.

What challenges do quantum computers solve

There is no working quantum computer as yet. Today even experts in the field say that interpreting the results produced by quantum computers is difficult. Also telling a quantum computer what to

CAREERS IN QUANTUM COMPUTING

The power of the first working quantum computer will exceed that of today's fastest supercomputer. Quantum computers will revolutionise life on earth. And it would be imprudent to discard them as fanciful and impractical.

When over the next few decades, a few quantum computers are built, the world's job market will be dramatically disrupted. There will however be a growing need for exceptionally bright scientists and engineers who can programme a quantum computer and interpret their output. Such individuals will be the equivalent of modern-day oracles who can predict where the economy is heading and how millions can be cured of fatal illnesses. As seers of a new age, they will be well paid and enjoy an excellent social cache. It is highly plausible that such jobs are just a few decades away.

compute for is a huge challenge.

But many are striving to create a quantum computer because the difference between it and traditional supercomputers is so vast that calling a quantum computer a "computer" may be a misnomer. The technology will be as much more sophisticated than the world's fastest supercomputer as supercomputers

are from the abacus. Should a working quantum computer be created, it will solve a dazzling array of problems.

For instance, a quantum computer will make portfolio managers redundant. The technology is powerful enough to give precise second-by-second stock price movements. Such power means portfolio managers who don't use quantum computers, will be obsolete.

The implications of receiv-

ing precise stock movements are staggering and hugely disruptive. Today a significant percentage of the global workforce is employed in the financial services industry. Their job is to predict the movement of stocks. When or if a quantum computer is created most such positions will be lost. Why would leading investment firms pay people to predict where the market is going when a computer can tell precisely how the market will behave?

Another awesome power of quantum computers is they will be able to accurately model and predict how a drug molecule will react inside the human body. For drug companies, they are the Holy Grail. Pharmaceutical companies will be able to model precisely the effects of a new drug. By doing so, they will save billions, if not more, on expensive research and development and testing.

— The writer is Founder, CallHippo


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