

# Quantum computing - the future of humanity

'I really think that today, our world is moving slowly into the technology of quantum computing. And all preparations are not excessive. '

That is the judgment of the head of quantum computing at Microsoft Todd Holmdahl. About 10 years ago, Todd Holmdahl (now Microsoft vice president of Quantum) is playing a leading role in the Kinect development project - a breakthrough motion sensor accessory for the Xbox 360, for the first time in This man career really applies artificial intelligence and machine learning to develop a breakthrough product. And after the success of Kinect, Todd Holmdahl as 'breaking' many things, he was impressed with the magic that artificial intelligence brought, so much so that Holmdahl had to speak to his children many times. that it is the AI ??that will be the most demanded area in the technology world in the near future, and any child who wants to build a brilliant career, or become a celebrity in the flow. The development of the science and technology world should not ignore an area called quantum computing - quantum computing.



1. 91% of technology managers believe that AI will be the center of the next technology revolution

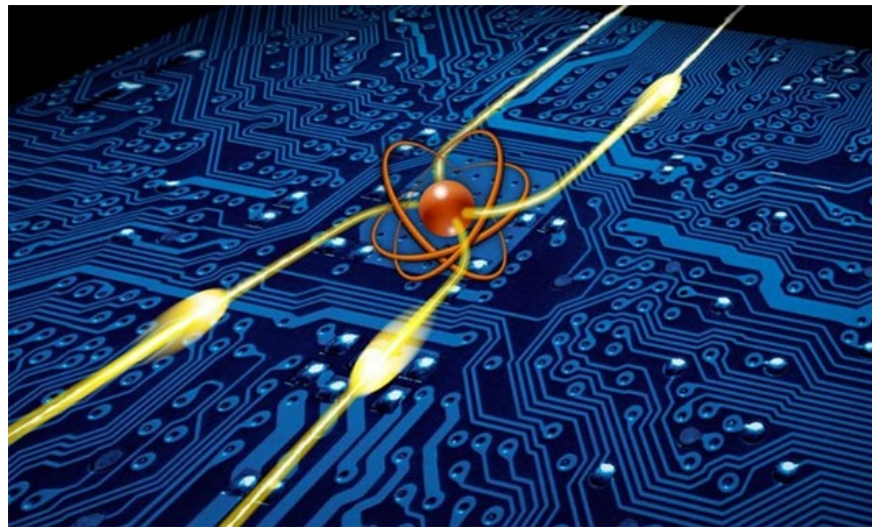
"I told my children that we should do what we are passionate about, because passion will help them feel loved and can develop their career in the most comprehensive way. But if you are simply love Like technology, want a strong job and career in the IT world, take the time to learn about machine learning, AI and quantum computing right now, "Todd Holmdahl told Business Insider in a recent conversation.

And if you are also interested in, or want to direct your children to the potential field and are in great demand not only in Vietnam but also in this world, Todd Holmdahl will have some more advice for friend.

*'I really think that today, our world is moving slowly into the technology of quantum computing. And all preparations are not redundant '.*

## **The potential of quantum computing**

Before learning about the impact of quantum computing on the future of the technology world, we need to understand the basic concepts of this term. If you don't already know, quantum computing is a technology that uses the principles of quantum mechanics to perform complex calculations in a short period of time by many of the fastest supercomputers in the world. You can understand that the next generation of computers may be based on quantum mechanics, no longer the electronic mechanism as it is now, and the quantum computer promises to create a revolution in the world. digital world. If you want to find out more about this futuristic approach to information processing, please refer to the article 'What is quantum computer and how did the person develop this technology?' ours.



### 1. Even Bill Gates doesn't understand the algorithm behind quantum computing

Basically, quantum computers possess special properties that allow them to handle more exponential information than conventional computers, also known as "classic" computers. For a classical computer, data is represented as binary strings 1 and 0. However, quantum computers can represent data as 0, 1 or both at the same time, by mathematical reasons. Learning complex - means they can handle more data at the same time.

It can be seen that quantum computers will be a particularly useful method, which can be applied in areas that require large computing needs such as stock market prediction, finding transport routes. more efficient, food production, chemistry, pharmaceutical research, cryptography and many other important areas.

"Quantum computing is an opportunity to simplify the process of dealing with some 'classic' issues that humanity is facing such as health care or climate change, and at the same time can solve them. within just a few hours or seconds through quantum computer systems, "Holmdahl said.

At the same time, many leading experts in the field of information technology in general and quantum computing in particular argue that we still have 5 to 10 years to 'run' for the time when computers count Death will overcome the "classical limit" in most important tasks.

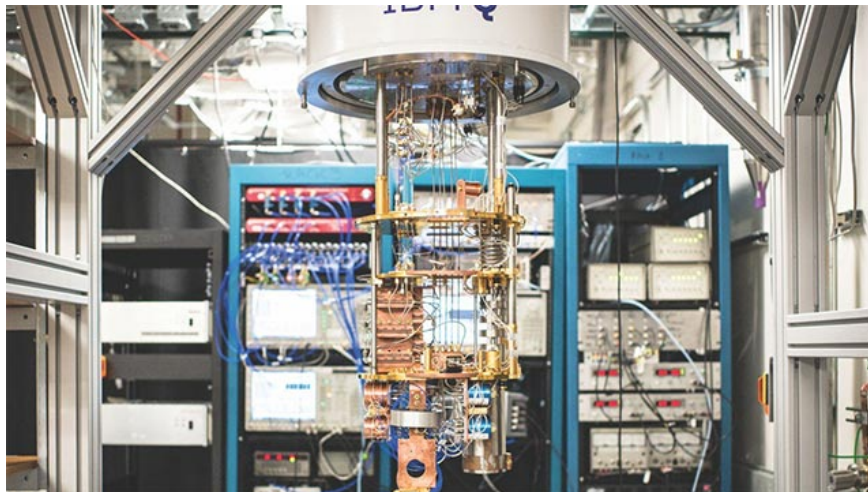


1. Successful fabrication of quantum compass to atomic level, replacing GPS in the future

## **The interest in quantum computing is increasing**

Indeed, the world is becoming more and more interested in the superiority that quantum computing brings. In 2018, only less than 1% of IT organizations received funding for the quantum computing projects they were deploying. However, according to calculations by investment analysis company Gartner, until 2023, it is estimated that this number will increase to 20%, ie increase to 20 times after only 5 years. Besides, according to analysts at Forrester, venture capital companies have 'poured' a total of \$ 85 million into quantum computing in 2015, and only two years later, this number has skyrocketed. up to more than 400 million dollars.

"We are really at a time when many businesses start to think seriously about the advantages of quantum computing in addressing the most challenging issues of humankind in the near future." , Krysta Svore, general manager of quantum software at Microsoft.



1. AI engineer Facebook talks about deep learning, new programming languages ??and hardware for artificial intelligence

Currently at Microsoft, Todd Holmdahl is the head of a team of developers working on the construction of a topology qubit (qubit topological) project, which refers to the electron fragmentation technology to store information in many place at the same time. It can be said that this is a relatively different way of taking advantage of the power of quantum computing compared to the approach of another large company like Intel, IBM and Google, which are using circuits Superconducting to make quantum computers, similar to the basic way we have ever seen on classical computers today.

Although analysts believe that Microsoft 's approach is more risky, there are two sides to it, if this method succeeds, it could put Microsoft ahead of its competitors by holding on to a much more powerful quantum computer.

## **"The biggest challenge in our generation"**

Quantum computers are still in the early stages of a real boom, but Mr. Holmdahl hopes to have more investment projects, encouraging people to conduct research and build hardware and computer software. death, especially in young people. In fact, the most significant efforts recorded at the moment only stop at Microsoft investing in a summit to discuss the discovery and training of more talents in the field. Quantum computing area, and preaching a quantum programming course for college students.

"The issue of Microsoft 's top priority at the present time is to successfully produce a quantum computer that can expand and benefit customers and at the same time for our future. With that in mind, we need to be able to accelerate progress in quantum computing research as well as to ensure sustainable development in the future. generations of quantum developers with strong skills and qualifications, "said Krysta Svore director.



### 1. The 5G era is near, but are security procedures ready?

Perhaps it was too late for Holmdahl to direct his children to the world of quantum computing - something he should have done a decade earlier. However, Holmdahl still believes that the opportunity will never end, as long as you have enough determination and learning spirit.

"This is an area that has, is, and will grow stronger than ever. We need a large amount of talent to maintain as well as a source of motivation for that development. You can see that Microsoft is trying to invest in the

development of human resources in the field of quantum computing. It can be said that this will be one of the biggest tasks in our generation who are responsible for IT businesses. Act now to contribute to the creation of a great future, 'said Todd Holmdahl.

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