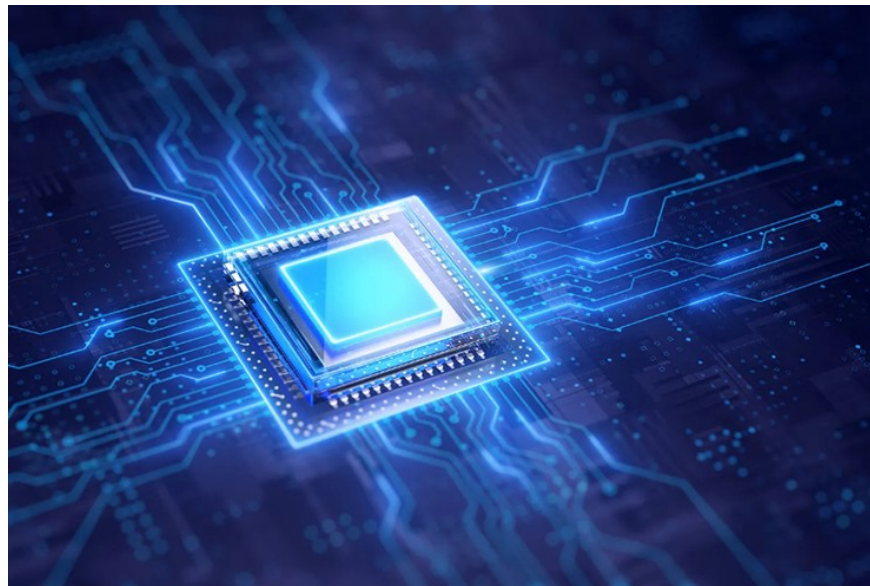


Breakthrough AI chip processes at the speed of light, as small as a grain of salt

Engineers are working to develop new ways to combine artificial intelligence (AI) with advanced technologies.

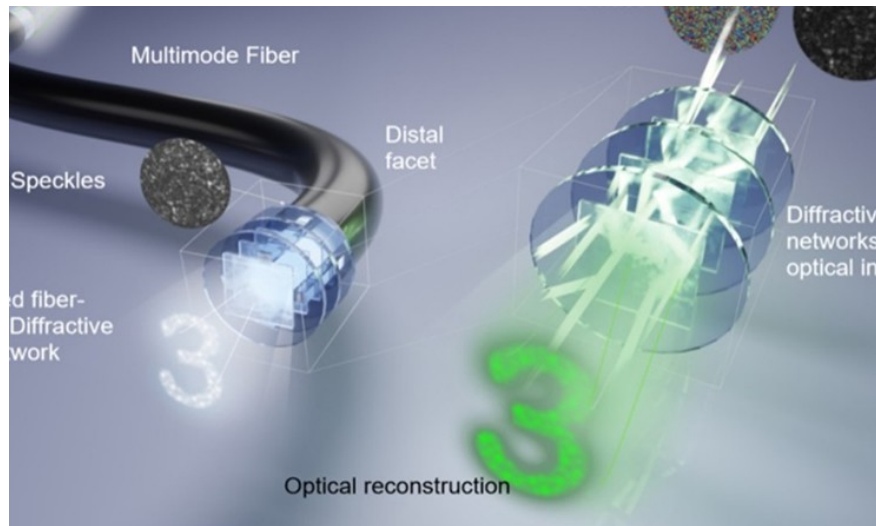
Recently, a research team introduced a light-controlled AI chip, which is compact in size, only the size of a grain of salt, enough to be placed at the end of an optical fiber but still powerful in processing information at the speed of light.



The data processing speed of the new AI chip is equivalent to the speed of light.

Unlike traditional computers that rely on electronic circuits, which often consume a lot of energy and cause delays in data processing, the new chip operates based on a technology called diffractive neural networks. This technology was developed from research at the University of California, Los Angeles (USA) in 2018, when it first demonstrated the potential of diffractive neural networks in speeding up data processing by leveraging light.

Published in the journal Nature Photonics, the new version of the chip shrinks the technology to fit on the tip of an optical fiber, allowing for instantaneous data processing with minimal power consumption. The AI chip is capable of processing data trillions of times faster than traditional AI hardware, while consuming a fraction of the power. Instead of waiting for a computer to interpret optical signals, the chip performs calculations immediately as light passes through thanks to its ability to directly manipulate light.



The applications of the new AI chip are very potential.

This advancement could have major implications for many areas of technology, including medical imaging, quantum communications, and advanced computing. Integrating the chip into tiny endoscope cameras could help medical professionals get clearer images of the human body. Furthermore, the light-controlled AI chip could potentially be integrated with quantum photonic systems, opening the door to major advances in quantum computing.

However, the technology also faces some challenges. The researchers said that inconsistencies in manufacturing could affect the performance of the chips. In addition, because of their fixed design, the chips need to be customized for each specific application, which could make it difficult to scale up production.



The energy used for the chip is very small.

Despite this, researchers believe that overcoming these challenges is possible, although it will take time. With recent advances in AI, such as AI-designed computer chips and research into AI perception, the technology could soon become mainstream in the future.

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