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Editorial

Editorial on DNA Computing

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DESCRIPTION

NA computing is the process of performing calculations using biomolecules instead of traditional silicon chips. The idea that individual molecules (or atoms) can be used in calculations dates back to 1959, when American physicist Richard Feynman published his ideas on nanotechnology. However, DNA computing was not physically realized until 1994 when American computer scientist Leonard Adleman showed how to use molecules to solve computational problems.

DNA computing is the use of biomolecular components in place of standard artificial hardware (such as silicon chips) in computer technology. Instead of traditional code (such as common binary variants), DNA computing uses a 4-digit genetic alphabet.

It consists of:

A-Adenine

G-guanine

C-cytosine

T-thymine

To understand what DNA computing is, how it works, and why DNA computing is so important, first look at it as a type of everyday classic computing. Even if such a thing is possible, we are not going to play games on DNA computers right away. Silicon chips will be with us for a very long time. DNA computing is used to solve problems beyond the capabilities of classic computers, just as quantum computers can instantly break RSA encryption, but classic computers do the same. It takes thousands of years to do so. DNA computing was first described in 1994 by computer scientist Leonard Adleman at the University of Southern California. After studying the structure of DNA, he was urged to write an article in Science Magazine showing how to solve the infamous mathematical and computational problem known as the Hamiltonian Path Problem, commonly referred to as the "Traveling Salesman" problem. The Hamiltonian path problem is a slightly different version of the traveling salesman problem and is essentially interchangeable for our purposes). Scientists have developed a new type of DNA device that can be used in the body. This could pave the way for another system that can filter infected cells from some very healthy cells. This machine operates by a mechanism called RNA interference (RNAi). In this mechanism, small RNA molecules inhibit the protein development of genes. The performance of the adleman DNA computer proves that DNA can be used to analyze complex mathematical formulas. But this first DNA machine is far from intimidating silicon computers in terms of efficiency. Davis and computer scientists at the California Institute of Technology have created DNA molecules that can be self-organized using 6-bit inputs to effectively execute their own programs. Microsoft also has a DNA computing programming language that can help DNA computing work if bioprocessor technology advances enough to perform more complex algorithms. In addition, Microsoft plans to integrate DNA computing into cloud services by 2020 and actively build DNA storage space to integrate with cloud computing. The Adleman DNA machine generated a collection of potential answers very easily, but it took Adleman days to narrow down the options. The purpose of the DNA computing department is to establish a system that can function independently of human intervention. It will take several years for DNA computer components to evolve logic gates and biochips into functional and viable DNA devices. Scientists believe that if such a computer had ever been developed, it would be lighter and more reliable.

The interaction of chemists, biologists, mathematicians, and software engineers to identify and model key biological processes and algorithms within cells makes DNA computing very attractive. I am. Traditional machines perform linear calculations (that is, they take over tasks one at a time). Still, the computational power of parallel DNA has the potential to solve math problems in hours. This will take years for electronic computers. DNA machines are in the very early stages of development, but in reality many areas are actively used (or lack of technology). From a technical point of view, traditional DNA computing technology has already been applied to the real problem of breaking the data encryption standard DES. While

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this challenge has already been solved by conventional techniques in much less time than the DNA method provides, DNA models are much more versatile, efficient and inexpensive. A machine composed of DNA and enzymes was developed by Israeli researchers.