DNA Multiplier: A Design Architecture of a Multiplier Circuit Using DNA Molecules

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Abstract : Nanomedicine and bioengineering use biological systems that can perform computing operations. In a biocomputational circuit, different types of biomolecules and DNA (Deoxyribose Nucleic Acid) are used as active components. DNA computing has the capability of performing parallel processing and a large storage capacity that makes it diverse from other computing systems. In most processors, the multiplier is treated as a core hardware block, and multiplication is one of the time-consuming and lengthy tasks. In this paper, cost-effective DNA multipliers are designed using algorithms of molecular DNA operations with respect to conventional ones. The speed and storage capacity of a DNA multiplier are also much higher than a traditional silicon-based multiplier.

Keywords : biological systems, DNA multiplier, large storage, parallel processing
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