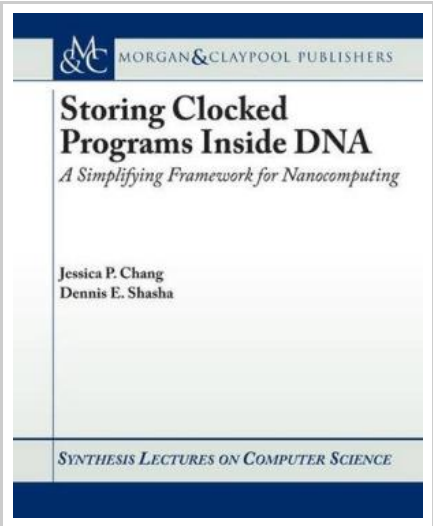

Storing Clocked Programs Inside DNA: A Simplifying Framework for Nanocomputing

By Dennis E. Shasha

Morgan & Claypool Publishers. Paperback. Book Condition: New. Paperback. 80 pages. Dimensions: 9.1in. x 7.3in. x 0.3in.In the history of modern computation, large mechanical calculators preceded computers. A person would sit there punching keys according to a procedure and a number would eventually appear. Once calculators became fast enough, it became obvious that the critical path was the punching rather than the calculation itself. That is what made the stored program concept vital to further progress. Once the instructions were stored in the machine, the entire computation could run at the speed of the machine. This book shows how to do the same thing for DNA computing. Rather than asking a robot or a person to pour in specific strands at different times in order to cause a DNA computation to occur (by analogy to a person punching numbers and operations into a mechanical calculator), the DNA instructions are stored within the solution and guide the entire computation. We show how to store straight line programs, conditionals, loops, and a rudimentary form of subroutines. To achieve this goal, the book proposes a complete language for describing the intrinsic topology of DNA complexes and nanomachines, along with the dynamics of such...

Reviews

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