Sequenceable DNA Algorithms

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We give an introduction to DNA Strand Displacement: a technique that is used to program interactions between DNA strands in such a way, e.g., as to emulate the kinetics of an arbitrary finite network of chemical reactions. We discuss current capabilities and trends in DNA nanotechnology, including "high throughput" equipment that can read and write DNA massively in parallel.

High throughput DNA synthesis and sequencing render easily feasible a new class of algorithms that use $O(n^2)$ structures in input and output. We give two examples of such algorithms, for detecting the coincidence of events, and for detecting the preorder of evens, over the course of an experiment in a biochemical soup.