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| Disciplina              | 005.1015113   |
| Soggetti                | Computer science<br>Artificial intelligence<br>Numerical analysis<br>Computer science - Mathematics<br>Discrete mathematics<br>Computer Science Logic and Foundations of Programming<br>Artificial Intelligence<br>Numerical Analysis<br>Discrete Mathematics in Computer Science   |
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| Formato                 | Materiale a stampa  |
| Livello bibliografico   | Monografia  |
| Note generali           | Includes index.   |
| Nota di contenuto       | Invited Paper -- Co-designing the computational model and the computing substrate -- Contributed Papers -- Generalized Membrane Systems with Dynamical Structure, Petri Nets, and Multiset Approximation Spaces -- Quantum Dual Adversary for Hidden Subgroups and Beyond -- Further Properties of Self-assembly by Hairpin Formation -- The Role of Structure and Complexity on Reservoir Computing Quality -- Lindenmayer Systems and Global Transformations -- Swarm-based multiset rewriting computing models -- DNA Origami Words and Rewriting Systems -- Computational Limitations of Affine Automata -- An Exponentially Growing Nubot System Without State Changes -- Impossibility of Sufficiently Simple |

Chemical Reaction Network Implementations in DNA Strand Displacement -- Quantum Algorithm for Dynamic Programming Approach for DAGs. Applications for Zhegalkin Polynomial Evaluation and Some Problems on DAGs -- Viewing rate-based neurons as biophysical conductance outputting models -- The Lyapunov Exponents of Reversible Cellular Automata Are Uncomputable -- Geometric Tiles and Powers and Limitations of Geometric Hindrance in Self-Assembly -- DNA Computing Units Based on Fractional Coding -- The role of the representational entity in physical computing -- OIM: Oscillator-based Ising Machines for Solving Combinatorial Optimisation Problems -- Relativizations of Nonuniform Quantum Finite Automata Families -- Self-stabilizing Gellular Automata.

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Sommario/riassunto

This book constitutes the proceedings of the 18th International Conference on Unconventional Computation and Natural Computation, UCNC 2019, held in Tokyo, Japan, in June 2019. The 19 full papers presented were carefully reviewed and selected from 32 submissions. The papers cover topics such as hypercomputation; chaos and dynamical systems based computing; granular, fuzzy and rough computing; mechanical computing; cellular, evolutionary, molecular, neural, and quantum computing; membrane computing; amorphous computing, swarm intelligence; artificial immune systems; physics of computation; chemical computation; evolving hardware; the computational nature of self-assembly, developmental processes, bacterial communication, and brain processes.

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