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Soggetti	Computational intelligence Control engineering Chemistry, Physical and theoretical Robotics Automation Artificial intelligence Computational Intelligence Control and Systems Theory Theoretical Chemistry Control, Robotics, Automation Artificial Intelligence
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Introduction -- Theory and Background -- Chemical Definitions -- The Proposed Chemical Reaction Algorithm -- Application Problems -- Simulation Results -- Conclusions.
Sommario/riassunto	In this book, a novel optimization method inspired by a paradigm from nature is introduced. The chemical reactions are used as a paradigm to propose an optimization method that simulates these natural processes. The proposed algorithm is described in detail and then a set of typical complex benchmark functions is used to evaluate the performance of the algorithm. Simulation results show that the proposed optimization algorithm can outperform other methods in a set of benchmark functions. This chemical reaction optimization

paradigm is also applied to solve the tracking problem for the dynamic model of a unicycle mobile robot by integrating a kinematic and a torque controller based on fuzzy logic theory. Computer simulations are presented confirming that this optimization paradigm is able to outperform other optimization techniques applied to this particular robot application.
