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Titolo	Formal Methods for Computational Systems Biology : 8th International School on Formal Methods for the Design of Computer, Communication, and Software Systems, SFM 2008 Bertinoro, Italy, June 2-7, 2008 // edited by Marco Bernardo, Pierpaolo Degano, Gianluigi Zavattaro
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Collana	Programming and Software Engineering, , 2945-9168 ; ; 5016
Altri autori (Persone)	BernardoMarco DeganoPierpaolo <1950-> ZavattaroGianluigi
Disciplina	005.1
Soggetti	Software engineering Compilers (Computer programs) Computer science Computers, Special purpose Computer networks Software Engineering Compilers and Interpreters Computer Science Logic and Foundations of Programming Special Purpose and Application-Based Systems Computer Communication Networks
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Lectures.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Regular Lectures -- Sensitivity Analysis of Stochastic Models of Bistable Biochemical Reactions -- Pathway Logic -- Formal Cell Biology in Biocham -- Hierarchical Modeling for Computational Biology -- Simulation Methods in Systems Biology -- Membrane Computing as a Modeling Framework. Cellular Systems Case Studies -- Petri Nets for Systems and Synthetic Biology -- Process Algebras in Systems Biology -- The BlenX Language: A Tutorial -- BISCA Talks -- Cells in Silico: A

Holistic Approach -- The Calculus of Looping Sequences -- Hybrid Systems and Biology -- λ -Calculus: A λ -Based Process Calculus for the Implementation of Compartmentalised Bio-inspired Calculi -- A Gentle Introduction to Stochastic (Poly)Automata Collectives and the (Bio) Chemical Ground Form.

Sommario/riassunto

This volume presents the set of papers accompanying the lectures of the eighth International School on Formal Methods for the Design of Computer, Communication, and Software Systems (SFM). This series of schools addresses the use of formal methods in computer science as a prominent approach to the rigorous design of computer, communication, and software systems. The main aim of the SFM series is to offer a good spectrum of current research in foundations as well as applications of formal methods, which can be of help for graduate students and young researchers who intend to approach the field. SFM 2008 was devoted to formal techniques for computational systems biology and covered several aspects of the field, including computational models, calculi and logics for biological systems, and verification and simulation methods. The school featured not only regular lectures, but also talks given by people involved in the Italian research project on Bio-Inspired Systems and Calculi with Applications (BISCA). The first part of this volume comprises nine papers based on regular lectures. The paper by Degasperi and Gilmore describes the application of sensitivity analysis techniques to stochastic simulation algorithms. Talcott's paper presents pathway logic, an approach to modeling and analysis of biological processes based on rewriting logic. Fages and Soliman study reaction graphs and action/inhibition graphs used by biologists through formal methods originating from programming theory. The paper by Maus, John, Rühl, and Uhrmacher discusses categories, abstraction hierarchies, and composition hierarchies playing a role in modeling and simulation for computational biology. Gillespie's paper reviews the theory of stochastic chemical kinetics and several simulation methods that are based on that theory.
