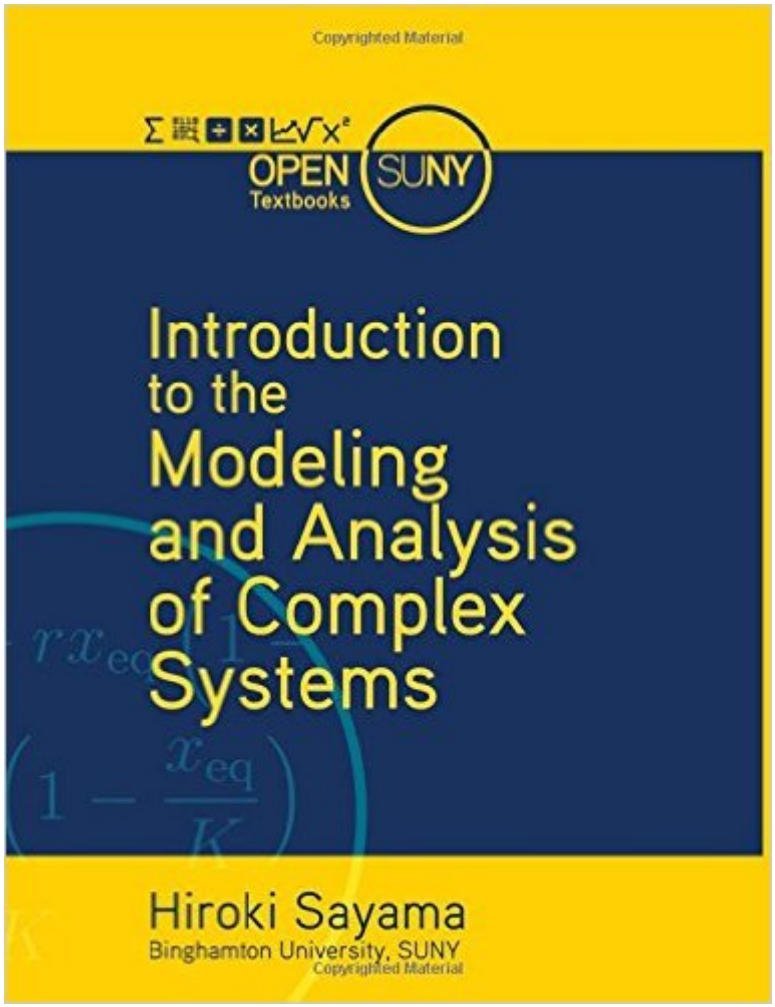
Introduction To The Modeling And Analysis Of Complex Systems



Synopsis

Introduction to the Modeling and Analysis of Complex Systems introduces students to mathematical/computational modeling and analysis developed in the emerging interdisciplinary field of Complex Systems Science. Complex systems are systems made of a large number of microscopic components interacting with each other in nontrivial ways. Many real-world systems can be understood as complex systems, where critically important information resides in the relationships between the parts and not necessarily within the parts themselves. This textbook offers an accessible yet technically-oriented introduction to the modeling and analysis of complex systems. The topics covered include: fundamentals of modeling, basics of dynamical systems, discrete-time models, continuous-time models, bifurcations, chaos, cellular automata, continuous field models, static networks, dynamic networks, and agent-based models. Most of these topics are discussed in two chapters, one focusing on computational modeling and the other on mathematical analysis. This unique approach provides a comprehensive view of related concepts and techniques, and allows readers and instructors to flexibly choose relevant materials based on their objectives and needs. Python sample codes are provided for each modeling example. This textbook is also available free online from the Open SUNY Textbooks website (http://textbooks.opensuny.org).

Book Information

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Customer Reviews

you can get the PDF for free, it is opensource...just google it.

If you are interested in dynamical environment modeling this book will be your main reference. You

will be able to convert your thoughts into a model after reading this book. This book covers a simplest linear models to the much complex agent based models. I highly recommend this book.

One of the most straightforward and helpful resources I have come across to make what are typically difficult topics graspable, sensible, and fun. Big ups Hiroki!

Introduction to the Modeling and Analysis of Complex Systems An Introduction to Genetic Algorithms (Complex Adaptive Systems) Object-Oriented Analysis and Design for Information Systems: Modeling with UML, OCL, and IFML The Art of Computer Systems Performance Analysis: Techniques for Experimental Design, Measurement, Simulation, and Modeling Modeling and Analysis of Dynamic Systems Atmospheric and Space Flight Dynamics: Modeling and Simulation with MATLABÂ® and SimulinkÂ® (Modeling and Simulation in Science, Engineering and Technology) Spreadsheet Modeling and Decision Analysis: A Practical Introduction to Business Analytics Spreadsheet Modeling & Decision Analysis: A Practical Introduction to Management Science (with Essential Resources Printed Access Card) Chocolate Modeling Cake Toppers: 101 Tasty Ideas for Candy Clay, Modeling Chocolate, and Other Fondant Alternatives Modeling Agency Tips: Get Listed with Fashion Modeling Agencies and Find Your Dream Job The Model's Bible & Global Modeling Agency Contact List - An Insider's Guide on How to Break into the Fashion Modeling Industry The Simple Genetic Algorithm: Foundations and Theory (Complex Adaptive Systems) Performance Evaluation of Complex Systems: Techniques and Tools: Performance 2002. Tutorial Lectures (Lecture Notes in Computer Science) Software Quality Assurance: In Large Scale and Complex Software-intensive Systems Diversity and Complexity (Primers in Complex Systems) A Crude Look at the Whole: The Science of Complex Systems in Business, Life, and Society Investigating Human Error: Incidents, Accidents, and Complex Systems Systems Thinking For Social Change: A Practical Guide to Solving Complex Problems, Avoiding Unintended Consequences, and Achieving Lasting Results Signals and Boundaries: Building Blocks for Complex Adaptive Systems (MIT Press) The Computational Beauty of Nature: Computer Explorations of Fractals, Chaos, Complex Systems, and Adaptation