
Discrete Event System Simulation 4th Edition

Operations Research
Discrete Event Systems
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Research CRC Press
 In recent years, there has been a growing debate, particularly in the UK and Europe, over the merits of using discrete-event simulation (DES) and system dynamics (SD); there are now instances where both methodologies were employed on the same problem. This book details each method, comparing each in terms of both theory and their application to various problem situations. It also provides a seamless treatment of various topics--theory, philosophy, detailed mechanics, practical implementation--providing a systematic treatment of the methodologies of DES and SD, which previously have been treated separately. *Discrete Event Systems* IGI Global
 This unique textbook comprehensively introduces the field of discrete event systems, offering a breadth of coverage that makes the material accessible to readers of varied backgrounds. The book emphasizes a unified modeling framework that transcends specific application areas, linking the following topics in a coherent manner: language and automata theory, supervisory control, Petri net theory,

Markov chains and queueing theory, discrete-event simulation, and concurrent estimation techniques. Topics and features: detailed treatment of automata and language theory in the context of discrete event systems, including application to state estimation and diagnosis comprehensive coverage of centralized and decentralized supervisory control of partially-observed systems timed models, including timed automata and hybrid automata stochastic models for discrete event systems and controlled Markov chains discrete event simulation an introduction to stochastic hybrid systems sensitivity analysis and optimization of discrete event and hybrid systems new in the third edition: opacity properties, enhanced coverage of supervisory control, overview of latest software tools This proven textbook is essential to advanced-level students and researchers in a variety of disciplines where the study of discrete event systems is relevant: control, communications, computer engineering, computer science, manufacturing engineering, transportation networks, operations research, and

<p>industrial engineering. Christos G. Cassandras is Distinguished Professor of Engineering, Professor of Systems Engineering, and Professor of Electrical and Computer Engineering at Boston University. Stéphane Lafortune is Professor of Electrical Engineering and Computer Science at the University of Michigan, Ann Arbor.</p> <p><i>*discrete-Event Sys Simulation 3ed</i> CRC Press Offers comprehensive</p>	<p>e coverage of discrete-event simulation, emphasizing and describing the procedures used in operations research - methodology, generation and testing of random numbers, collection and analysis of input data, verification of simulation models and analysis of output data.</p> <p><u>Modeling and Simulation of Discrete Event Systems</u> Nova Publishers</p> <p>This Handbook is a collection of chapters on key issues in</p>	<p>the design and analysis of computer simulation experiments on models of stochastic systems. The chapters are tightly focused and written by experts in each area. For the purpose of this volume “simulation refers to the analysis of stochastic processes through the generation of sample paths (realization) of the processes. Attention focuses on design and analysis issues and the goal of this volume is to</p>
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survey the concepts, principles, tools and techniques that underlie the theory and practice of stochastic simulation design and analysis. Emphasis is placed on the ideas and methods that are likely to remain an intrinsic part of the foundation of the field for the foreseeable future. The chapters provide up-to-date references for both the simulation researcher

and the advanced simulation user, but they do not constitute an introductory level 'how to' guide. Computer scientists, financial analysts, industrial engineers, management scientists, operations researchers and many other professionals use stochastic simulation to design, understand and improve communications, financial, manufacturing, logistics, and service

systems. A theme that runs throughout these diverse applications is the need to evaluate system performance in the face of uncertainty, including uncertainty in user load, interest rates, demand for product, availability of goods, cost of transportation and equipment failures. * Tightly focused chapters written by experts * Surveys concepts, principles,

tools, and techniques that underlie the theory and practice of stochastic simulation design and analysis * Provides an up-to-date reference for both simulation researchers and advanced simulation users

Object-Oriented Computer Simulation of Discrete-Event Systems
Wiley-Interscience
This text presents the basic concepts of discrete event

simulation using ExtendSim 8. The book can be used as either a desk reference or as a textbook for a course in discrete event simulation. This book is intended to be a blend of theory and application, presenting just enough theory to understand how to build a model, designs a simulation experiment, and analyze the results. Most of the text is devoted to building models with

ExtendSim 8, starting with a simple single-server queue and culminating with a transportation depot for package transfer and delivery. I have built all the models contained in this book with ExtendSim 8 LT, which limits the number of modeling blocks, but otherwise has the required ExtendSim 8 capabilities. Each chapter contains practical exercises and problems at the end of the

chapters. ExtendSim 8 LT is not included in this book. Students may obtain ExtendSim 8 LT from Imagine That, Inc. Discrete Event Simulation Using ExtendSim 8 CRC Press Discrete Event Simulation is a process-oriented text/reference that utilizes an eleven-step model to represent the simulation process from problem formulation to implementation and documentation. The book presents the necessary level of detail required to fully develop a model that produces meaningful results and considers the tools necessary to interpret those results. Sufficient background information is provided so that the underlying concepts of simulation are understood. Major topics covered in Discrete Event Simulation include probability and distributional theory, statistical estimation and inference, the generation of random variates, verification and validation techniques, time management methods, experimental design, and programming language considerations. The book also examines distributed simulation and issues related to distributing the physical process over a network of tightly coupled processors. Topics covered in this

area include deadlock, synchronization, rollback, event management, and communication processes. Fully worked examples and numerous practical exercises have been drawn from the engineering disciplines and computer science, although they have been structured so that they will be useful as well to other disciplines such as economics, business administration

, and management science. The presentation of techniques and methods in Discrete Event Simulation make it an ideal text/reference for all practitioners of discrete event simulation. **Handbooks in Operations Research and Management Science: Academic Press** Collecting the work of the foremost scientists in the field,

Discrete-Event Modeling and Simulation: Theory and Applications presents the state of the art in modeling discrete-event systems using the discrete-event system specification (DEVS) approach. It introduces the latest advances, recent extensions of formal techniques, and real-world examples of various applications. The book covers many topics that pertain to several layers

of the modeling and simulation architecture. It discusses DEVS model development support and the interaction of DEVS with other methodologies. It describes different forms of simulation supported by DEVS, the use of real-time DEVS simulation, the relationship between DEVS and graph transformation, the influence of DEVS variants on simulation performance, and

interoperability and composability with emphasis on DEVS standardization. The text also examines extensions to DEVS, new formalisms, and abstractions of DEVS models as well as the theory and analysis behind real-world system identification and control. To support the generation and search of optimal models of a system, a framework is developed based on the system entity structure and

its transformation to DEVS simulation models. In addition, the book explores numerous interesting examples that illustrate the use of DEVS to build successful applications, including optical network-on-chip, construction/building design, process control, workflow systems, and environmental models. A one-stop resource on advances in DEVS theory, applications,

and methodology, this volume offers a sampling of the best research in the area, a broad picture of the DEVS landscape, and trend-setting applications enabled by the DEVS approach. It provides the basis for future research discoveries and encourages the development of new applications. *Discrete-event System Simulation*
CRC Press

Discrete-event simulation has long been an integral part of the design process of complex engineering systems and the modelling of natural phenomena. Many of the systems that we seek to understand or control can be modelled as digital systems. In a digital model, we view the system at discrete instants of time, in effect taking snapshots of the system at these instants. For example, in a computer

network simulation an event can be the sending of a message from one node to another node while in a VLSI logic simulation, the arrival of a signal at a gate may be viewed as an event. Digital systems such as computer systems are naturally susceptible to this approach. However, a variety of other systems may also be modelled this way. These include transportation systems such as air-traffic control

systems, epidemiological models such as the spreading of a virus, and military wargaming models. This book is representative of the advances in this field.

Discrete Event Simulation

Springer Science & Business Media
For junior- and senior-level simulation courses in engineering, business, or computer science. While most books on simulation focus on

particular software tools, Discrete Event System Simulation examines the principles of modeling and analysis that translate to all such tools. This language-independent text explains the basic aspects of the technology, including the proper collection and analysis of data, the use of analytic techniques, verification and validation of models, and designing simulation experiments. It offers an up-to-date

treatment of simulation of manufacturing and material handling systems, computer systems, and computer networks. Students and instructors will find a variety of resources at the associated website, www.bcnn.net /, including simulation source code for download, additional exercises and solutions, web links and errata. [Discrete-Event Simulation](#) Lulu.com This book provides a

<p>basic treatment of discrete-event simulation, including the proper collection and analysis of data, the use of analytic techniques, verification and validation of models, and designing simulation experiments. Contains up-to-date treatment of simulation of manufacturing and material handling systems. Includes numerous solved examples. Offers an integrated website.</p>	<p>Explains how to interpret simulation software output. For those interested in learning more about discrete-event simulation. <u>Discrete-Event Modeling and Simulation</u> Springer Science & Business Media The increased computational power and software tools available to engineers have increased the use and dependence on modeling and computer simulation throughout</p>	<p>the design process. These tools have given engineers the capability of designing highly complex systems and computer architectures that were previously unthinkable. Every complex design project, from integrated circuits, to aerospace vehicles, to industrial manufacturing processes requires these new methods. This book fulfills the essential need of system and control</p>
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engineers at all levels in understanding modeling and simulation. This book, written as a true text/reference has become a standard sr./graduate level course in all EE departments worldwide and all professionals in this area are required to update their skills. The book provides a rigorous mathematical foundation for modeling and computer simulation. It provides a comprehensiv

e framework for modeling and simulation integrating the various simulation approaches. It covers model formulation, simulation model execution, and the model building process with its key activities model abstraction and model simplification, as well as the organization of model libraries. Emphasis of the book is in particular in integrating discrete event and continuous

modeling approaches as well as a new approach for discrete event simulation of continuous processes. The book also discusses simulation execution on parallel and distributed machines and concepts for simulation model realization based on the High Level Architecture (HLA) standard of the Department of Defense. Presents a working foundation necessary for compliance

with High Level Architecture (HLA) standards Provides a comprehensive framework for continuous and discrete event modeling and simulation Explores the mathematical foundation of simulation modeling Discusses system morphisms for model abstraction and simplification Presents a new approach to discrete event simulation of continuous processes

Includes parallel and distributed simulation of discrete event models Presents a concept to achieve simulator interoperability in the form of the DEVS-Bus **Handbook of Simulation** Academic Press Stochastic discrete-event systems (SDES) capture the randomness in choices due to activity delays and the probabilities of decisions. This book delivers a comprehensive

e overview on modeling with a quantitative evaluation of SDES. It presents an abstract model class for SDES as a pivotal unifying result and details important model classes. The book also includes nontrivial examples to explain real-world applications of SDES. **Computer Simulation Applications** Springer Nature Bringing together an international group of researchers

involved in military, business, and health modeling and simulation, Conceptual Modeling for Discrete-Event Simulation presents a comprehensive view of the current state of the art in the field. The book addresses a host of issues, including: What is a conceptual model? How is conceptual modeling in *Multifaceted Modelling and Discrete Event Simulation* Springer Discrete event simulation and

agent-based modeling are increasingly recognized as critical for diagnosing and solving process issues in complex systems. Introduction to Discrete Event Simulation and Agent-based Modeling covers the techniques needed for success in all phases of simulation projects. These include:

- Definition - The reader will learn how to plan a project and communicate using a charter. •

Input analysis

- The reader will discover how to determine defensible sample sizes for all needed data collections. They will also learn how to fit distributions to that data. •
- Simulation - The reader will understand how simulation controllers work, the Monte Carlo (MC) theory behind them, modern verification and validation, and ways to speed up simulation

<p>using variation reduction techniques and other methods. • Output analysis – The reader will be able to establish simultaneous intervals on key responses and apply selection and ranking, design of experiments (DOE), and black box optimization to develop defensible improvement recommendations. • Decision support – Methods to inspire creative alternatives</p>	<p>are presented, including lean production. Also, over one hundred solved problems are provided and two full case studies, including one on voting machines that received international attention. Introduction to Discrete Event Simulation and Agent-based Modeling demonstrates how simulation can facilitate improvements on the job and in local communities. It allows readers to</p>	<p>competently apply technology considered key in many industries and branches of government. It is suitable for undergraduate and graduate students, as well as researchers and other professionals. <i>Performance Evaluation of Industrial Systems</i> CRC Press "This book provides a comprehensive overview of theory and practice in simulation systems focusing on major</p>
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breakthroughs within the technological arena, with particular concentration on the accelerating principles, concepts and applications"-- Provided by publisher.

Modeling Discrete-Event Systems with GPenSIM

Prentice Hall Computer modeling and simulation (M&S) allows engineers to study and analyze complex systems. Discrete-event system (DES)-M&S is used in

modern management, industrial engineering, computer science, and the military. As computer speeds and memory capacity increase, so DES-M&S tools become more powerful and more widely used in solving real-life problems. Based on over 20 years of evolution within a classroom environment, as well as on decades-long experience in developing simulation-based solutions for

high-tech industries, Modeling and Simulation of Discrete-Event Systems is the only book on DES-M&S in which all the major DES modeling formalisms - activity-based, process-oriented, state-based, and event-based - are covered in a unified manner: A well-defined procedure for building a formal model in the form of event graph, ACD, or state graph. Diverse types of modeling templates and

examples that can be used as building blocks for a complex, real-life model. A systematic, easy-to-follow procedure combined with sample C# codes for developing simulators in various modeling formalisms. Simple tutorials as well as sample model files for using popular off-the-shelf simulators such as SIGMA®, ACE®, and Arena®. Up-to-date research results as well as research issues and

directions in DES-M&S Modeling and Simulation of Discrete-Event Systems is an ideal textbook for undergraduate and graduate students of simulation/industrial engineering and computer science, as well as for simulation practitioners and researchers. Conceptual Modeling for Discrete-Event Simulation CRC Press Basic approaches to discrete simulation have been

process simulation languages (e.g., GPSS) and event-scheduling type (e.g., SIMSCRIPT). The trade-offs are that event-scheduling languages offer more modeling flexibility and process-oriented languages are more intuitive to the user. With these considerations in mind, authors David Elizandro and Hamd Discrete Event System Simulation 4e Pearson Higher Ed

Operations Research: A Practical Introduction is just that: a hands-on approach to the field of operations research (OR) and a useful guide for using OR techniques in scientific decision making, design, analysis and management. The text accomplishes two goals. First, it provides readers with an introduction to standard mathematical models and algorithms.

Second, it is a thorough examination of practical issues relevant to the development and use of computational methods for problem solving. Highlights: All chapters contain up-to-date topics and summaries A succinct presentation to fit a one-term course Each chapter has references, readings, and list of key terms Includes illustrative and current applications New exercises

are added throughout the text Software tools have been updated with the newest and most popular software Many students of various disciplines such as mathematics, economics, industrial engineering and computer science often take one course in operations research. This book is written to provide a succinct and efficient introduction to the subject for these students,

while offering a sound and fundamental preparation for more advanced courses in linear and nonlinear optimization, and many stochastic models and analyses. It provides relevant analytical tools for this varied audience and will also serve professionals, corporate managers, and technical consultants. Concepts and Methods in Discrete Event Digital Simulation John Wiley &

Sons
For junior- and senior-level simulation courses in engineering, business, or computer science. While most books on simulation focus on particular software tools, Discrete-Event System Simulation examines the principles of modeling and analysis that translate to all such tools. This language-independent text explains the basic aspects of the technology, including the proper collection and

analysis of data, the use of analytic techniques, verification and validation of models, and designing simulation experiments. It offers an up-to-date treatment of simulation of manufacturing and material handling systems, computer systems, and computer networks. The full text downloaded to your computer With eBooks you can: search for key concepts, words and phrases make highlights and

notes as you study share your notes with friends eBooks are downloaded to your computer and accessible either offline through the Bookshelf (available as a free download), available online and also via the iPad and Android apps. Upon purchase, you'll gain instant access to this eBook. Time limit The eBooks products do not have an expiry date. You will continue to access your

digital ebook products whilst you have your Bookshelf installed. *Discrete-Event System Simulation* 4Th Ed John Wiley & Sons Over the last decades Discrete Event Simulation has conquered many different application areas. This trend is, on the one hand, driven by an ever wider use of this technology in different fields of science and on the other hand by an incredibly creative use of available

software programs through dedicated experts. This book contains articles from scientists and experts from 10 countries. They illuminate the width of application of this technology and the quality of problems solved using Discrete Event Simulation. Practical applications of simulation dominate in the present book. The book is aimed to researchers and students who deal in

their work with Discrete Event Simulation and which want to inform them about current applications. By focusing on discrete event simulation, this book can also serve as an inspiration	source for practitioners for solving specific problems during their work. Decision makers who deal with the question of the introduction of discrete event simulation for planning support and	optimization this book provides a contribution to the orientation, what specific problems could be solved with the help of Discrete Event Simulation within the organization.
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