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Introduction to Discrete Event Systems Principles of Discrete Event Simulation
Synthesis and Control of Discrete Event Systems Use Cases of Discrete Event
Simulation Discrete-event System Simulation Supervisory Control of Discrete-Event
Systems Control of Discrete-Event Systems Modeling and Simulation of Discrete Event
Systems Structures of Discrete Event Simulation Discrete-Event Modeling and
Simulation Stability Analysis of Discrete Event Systems Discrete-Event Simulation
Out-of-order Parallel Discrete Event Simulation for Electronic System-level Design
Control of Discrete-Event Systems Discrete Event Systems Discrete-event System
Simulation Discrete Event Simulation Object-Oriented Computer Simulation of
Discrete-Event Systems Dynamic Models and Discrete Event Simulation Modeling and
Control of Logical Discrete Event Systems Modeling and Control of Discrete-event
Dynamic Systems Concepts and Methods in Discrete Event Digital Simulation
Supervisory Control of Discrete Event Systems Using Petri Nets Discrete Event
Systems Parallel and Distributed Discrete Event Simulation Discrete-event Simulation
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Discrete Event Systems: Modeling and Control Discrete Event Simulation Perturbation

Analysis of Discrete Event Dynamic Systems Modeling Discrete-Event Systems with
GPenSIM Concurrent and Comparative Discrete Event Simulation Multifaceted Modelling
and Discrete Event Simulation Discrete-Event Control of Stochastic Networks:
Multimodularity and Regularity Modeling and Control of Discrete-event Dynamic
Systems Discrete-Event Simulation and System Dynamics for Management Decision Making

Introduction to Discrete Event Systems

2021-11-11

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 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

Principles of Discrete Event Simulation

1995-04-01

this book aims at providing a view of the current trends in the development of research on synthesis and control of discrete event systems papers collected in this volume are based on a selection of talks given in june and july 2001 at two independent meetings the workshop on synthesis of concurrent systems held in newcastle upon tyne as a satellite event of icatpn icacsd and organized by ph darondeau and l lavagno and the symposium on the supervisory control of discrete event systems scodes held in paris as a satellite event of cav and organized by b caillaud and x xie synthesis is a generic term that covers all procedures aiming to construct from specifications given as input objects matching these specifications the ories and applications of synthesis have been studied and developed for long in connection with logics programming automata discrete event systems and hardware circuits logics and programming are outside the scope of this book whose focus is on discrete event systems and supervisory control the stress today in this field is on a better applicability of theories and algorithms to practical systems design coping with decentralization or distribution and caring for an efficient realization of the synthesized systems or controllers are of the utmost importance in areas so diverse as the supervision of embedded or manufacturing systems or the

implementation of protocols in software or in hard ware

Synthesis and Control of Discrete Event Systems

2013-04-17

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

Use Cases of Discrete Event Simulation

2012-04-24

offers comprehensive 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

Discrete-event System Simulation

1996

this book shows how supervisory control theory sct supports the formulation of various control problems of standard types like the synthesis of controlled dynamic invariants by state feedback and the resolution of such problems in terms of naturally definable control theoretic concepts and properties like reachability controllability and observability it exploits a simple abstract model of controlled discrete event systems des that has proved to be tractable appealing to control specialists and expressive of a range of control theoretic ideas it allows readers to choose between automaton based and dually language based forms of sct depending on whether their preference is for an internal structural or external behavioral description of the problem the monograph begins with two chapters on algebraic and linguistic preliminaries and the fundamental concepts and results of sct are

2023-09-21

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introduced to handle complexity caused by system scale architectural approaches the horizontal modularity of decentralized and distributed supervision and the vertical modularity of hierarchical supervision are introduced supervisory control under partial observation and state based supervisory control are also addressed in the latter a vector des model that exploits internal regularity of algebraic structure is proposed finally sct is generalized to deal with timed des by incorporating temporal features in addition to logical ones researchers and graduate students working with the control of discrete event systems or who are interested in the development of supervisory control methods will find this book an invaluable aid in their studies the text will also be of assistance to researchers in manufacturing logistics communications and transportation areas which provide plentiful examples of the class of systems being discussed

Supervisory Control of Discrete-Event Systems

2018-08-17

control of discrete event systems provides a survey of the most important topics in the discrete event systems theory with particular focus on finite state automata petri nets and max plus algebra coverage ranges from introductory material on the basic notions and definitions of discrete event systems to more recent results special attention is given to results on supervisory control state estimation and fault diagnosis of both centralized and distributed decentralized systems developed in the framework of the distributed supervisory control of large plants disc project

later parts of the text are devoted to the study of congested systems though fluidization an over approximation allowing a much more efficient study of observation and control problems of timed petri nets finally the max plus algebraic approach to the analysis and control of choice free systems is also considered control of discrete event systems provides an introduction to discrete event systems for readers that are not familiar with this class of systems but also provides an introduction to research problems and open issues of current interest to readers already familiar with them most of the material in this book has been presented during a ph d school held in cagliari italy in june 2011

Control of Discrete-Event Systems

2012-07-27

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

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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

Modeling and Simulation of Discrete Event Systems

2013-09-30

the book presents a philosophy for simulation modeling and a new simulation language it gives an overview of the development of mainly discrete event simulation the techniques and data structures that this development brought along and the impact it had on general computer science in fact many seminal ideas coming up in modern operating systems and concurrent programming like data structures that make algorithms fast have their origin in discrete simulation

Structures of Discrete Event Simulation

1988

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complex artificial dynamic systems require advanced modeling techniques that can accommodate their asynchronous concurrent and highly non linear nature discrete event systems specification devts provides a formal framework for hierarchical construction of discrete event models in a modular manner allowing for model re use and reduced development time discrete event modeling and simulation presents a practical approach focused on the creation of discrete event applications the book introduces the cd tool an open source framework that enables the simulation of discrete event models after setting up the basic theory of devts and cell devts the author focuses on how to use the cd tool to define a variety of models in biology physics chemistry and artificial systems they also demonstrate how to map different modeling techniques such as finite state machines and vhdl to devts the in depth coverage elaborates on the creation of simulation software for devts models and the 3d visualization environments associated with these tools a much needed practical approach to creating discrete event applications this book offers world class instruction on the field s most useful modeling tools

Discrete-Event Modeling and Simulation

2017-12-19

an authoritative presentation on an important emerging field discrete event systems are ubiquitous in modern society and we rely heavily on their proper design correct operation and performance written by leaders in the field who have helped establish the foundations of the theory and applied the methods to a wide variety of

applications stability analysis of discrete event systems is useful both as a textbook homework problems are included and for researchers in systems and control theory this book includes many examples and three detailed case studies computer network load balancing manufacturing system scheduling and intelligent control systems important features of this book include a concise introduction to discrete event system modeling including petri nets comprehensive treatment of stability concepts and lyapunov analysis methods stability of petri models case studies in computer network load balancing system behavior and analysis manufacturing system scheduler design and analysis intelligent control system modeling and analysis for expert control systems an outlook on the role of stability concepts and analysis in intelligent autonomous and hybrid systems

Stability Analysis of Discrete Event Systems

1998-03-16

this is an excellent and well written text on discrete event simulation with a focus on applications in operations research there is substantial attention to programming output analysis pseudo random number generation and modelling and these sections are quite thorough methods are provided for generating pseudo random numbers including combining such streams and for generating random numbers from most standard statistical distributions isi short book reviews 22 2 august 2002

Discrete-Event Simulation

2013-03-09

this book offers readers a set of new approaches and tools a set of tools and techniques for facing challenges in parallelization with design of embedded systems it provides an advanced parallel simulation infrastructure for efficient and effective system level model validation and development so as to build better products in less time since parallel discrete event simulation pdes has the potential to exploit the underlying parallel computational capability in today s multi core simulation hosts the author begins by reviewing the parallelization of discrete event simulation identifying problems and solutions she then describes out of order parallel discrete event simulation ooo pdes a novel approach for efficient validation of system level designs by aggressively exploiting the parallel capabilities of todays multi core pcs this approach enables readers to design simulators that can fully exploit the parallel processing capability of the multi core system to achieve fast speed simulation without loss of simulation and timing accuracy based on this parallel simulation infrastructure the author further describes automatic approaches that help the designer quickly to narrow down the debugging targets in faulty esl models with parallelism

Out-of-order Parallel Discrete Event Simulation for Electronic System-level Design

2014-07-24

control of discrete event systems provides a survey of the most important topics in the discrete event systems theory with particular focus on finite state automata petri nets and max plus algebra coverage ranges from introductory material on the basic notions and definitions of discrete event systems to more recent results special attention is given to results on supervisory control state estimation and fault diagnosis of both centralized and distributed decentralized systems developed in the framework of the distributed supervisory control of large plants disc project later parts of the text are devoted to the study of congested systems though fluidization an over approximation allowing a much more efficient study of observation and control problems of timed petri nets finally the max plus algebraic approach to the analysis and control of choice free systems is also considered control of discrete event systems provides an introduction to discrete event systems for readers that are not familiar with this class of systems but also provides an introduction to research problems and open issues of current interest to readers already familiar with them most of the material in this book has been presented during a ph d school held in cagliari italy in june 2011

Control of Discrete-Event Systems

2012-07-27

discrete event systems analysis and control is the proceedings of wodes2000 the 5th workshop on discrete event systems held in ghent belgium on august 21 23 2000 this book provides a survey of the current state of the art in the field of modeling analysis and control synthesis of discrete event systems lecture notes for a mini course on sensitivity analysis for performance evaluation of timed discrete event systems and 48 carefully selected papers covering all areas of discrete event theory and the most important applications domains topics include automata theory and supervisory control 12 petri net based models for discrete event systems and their control synthesis 11 max and timed automata models 9 applications papers related to scheduling failure detection and implementation of supervisory controllers 7 formal description of plcs 6 and finally stochastic models of discrete event systems 3

Discrete Event Systems

2012-12-06

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

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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 bcnn net including simulation source code for download additional exercises and solutions web links and errata

Discrete-event System Simulation

2013-07-17

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

Discrete Event Simulation

1992-12-21

object oriented computer simulation of discrete event systems offers a comprehensive presentation of a wide repertoire of computer simulation techniques available to the modelers of dynamic systems unlike other books on simulation this book includes a complete and balanced description of all essential issues relevant to computer simulation of discrete event systems and it teaches simulation users how to design program and exploit their own computer simulation models in addition it uses the object oriented methodology throughout the book as its main programming platform the reader is expected to have some background in the theory of probability and statistics and only a little programming experience in c as the book is not tied down to any particular simulation language the book also provides 50 complete simulation problems to assist with writing such simulation programs object oriented computer simulation of discrete event systems demonstrates the basic and generic concepts used in computer simulation of discrete event systems in a comprehensive

uniform and self contained manner

Object-Oriented Computer Simulation of Discrete-Event Systems

2012-12-06

this book aims to clarify exactly how simulation studies can be carried out in the system theory paradigm while providing a realistically complete coverage of discrete event simulation in its more traditional aspects it focuses on the subclass of predictive generative and dynamic system models

Dynamic Models and Discrete Event Simulation

2020-11-26

the field of discrete event systems has emerged to provide a formal treatment of many of the man made systems such as manufacturing systems communication networks automated traffic systems database management systems and computer systems that are event driven highly complex and not amenable to the classical treatments based on differential or difference equations discrete event systems is a growing field that utilizes many interesting mathematical models and techniques in this book we focus on a high level treatment of discrete event systems where the order of events rather than their occurrence times is the principal concern such treatment is needed to

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guarantee that the system under study meets desired logical goals in this framework discrete event systems are modeled by formal languages or equivalently by state machines the field of logical discrete event systems is an interdisciplinary field it includes ideas from computer science control theory and operations research our goal is to bring together in one book the relevant techniques from these fields this is the first book of this kind and our hope is that it will be useful to professionals in the area of discrete event systems since most of the material presented has appeared previously only in journals the book is also designed for a graduate level course on logical discrete event systems it contains all the necessary background material in formal language theory and lattice theory the only prerequisite is some degree of mathematical maturity

Modeling and Control of Logical Discrete Event Systems

2012-12-06

discrete event dynamic systems pervade our world they are of great importance in modern manufacturing processes transportation and various forms of computer and communications networking this book begins with the mathematical basics required for the study of des and moves on to present various tools used in their modeling and control industrial examples illustrate the concepts and methods discussed making this book an invaluable aid for students embarking on further courses in control manufacturing engineering or computer studies

Modeling and Control of Discrete-event Dynamic Systems

2007-08-17

supervisory control of discrete event systems using petri nets presents a novel approach to its subject the concepts of supervisory control and discrete event systems are explained and the background material on general petri net theory necessary for using the book s control techniques is provided a large number of examples is used to illustrate the concepts and techniques presented in the text and there are plenty of references for those interested in additional study or more information on a particular topic supervisory control of discrete event systems using petri nets is intended for graduate students advanced undergraduates and practicing engineers who are interested in the control problems of manufacturing communication and computer networks chemical process plants and other high level control applications the text is written from an engineering perspective but it is also appropriate for students of computer science applied mathematics or economics the book contains enough background material to stand alone as an introduction to supervisory control with petri nets but it may also be used as a supplemental text in a course on discrete event systems or intelligent autonomous control

Concepts and Methods in Discrete Event Digital

Simulation

1973

a unified and rigorous treatment of the associated stochastic optimization problems is provided and recent advances in perturbation theory encompassed throughout the book emphasis is upon concepts rather than mathematical completeness with the advantage that the reader only requires a basic knowledge of probability statistics and optimization

Supervisory Control of Discrete Event Systems Using Petri Nets

2012-12-06

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

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include transportation systems such as air traffic control systems epidemiological models such as the spreading of a virus and military war gaming models this book is representative of the advances in this field

Discrete Event Systems

1993-10-19

contenido models random number generation discrete event simulation statistics next event simulation discrete random variables continuous random variables output analysis input modeling projects

Parallel and Distributed Discrete Event Simulation

2002

this book provides a clear understandable and motivated account on the subject that spans both conventional and modern materials about discrete event systems material that up to now has been presented in the literature in different fields such as the graph theory the probability theory the automata s theory and the queueing theory the book gives a complete introduction to the discrete event system theory and simultaneously applies the theory to practical problems the book gives students of computer sciences system sciences and of electrical engineering a clear unambiguous and relevant account of discrete event systems numerous illustrations are included

for better understanding problems as well as their solutions are included in each chapter it can be used as a basic introduction for undergraduates and graduate students although it is logically self contained it presupposes the mathematical maturity acquired by students with two years of calculus

Discrete-event Simulation

2006

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 devts 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 devts theory applications and methodology this volume offers a sampling of the best research in the area a broad picture of the devts landscape and trend setting applications enabled by the devts approach it provides the basis for future research discoveries and encourages the development of new applications

Discrete-event System Simulation

2010*

in any production environment discrete event simulation is a powerful tool for the analysis planning and operating of a manufacturing facility operations managers can use simulation to improve their production systems by eliminating bottlenecks reducing cycle time and cost and increasing capacity utilization offering a hands on tutorial on h

Discrete-event System Theory

1995

discrete event physics introduces a new branch of physics concerned with elucidating the meaning of concepts traditionally studied in that discipline it is complementary

to mathematical and experimental physics being focused on the same ideas but having different specific goals the theory has a fundamentally dynamic nature based on structured discrete events events are defined and interrelated using a formal language developed for such purposes this volume extends the theory and discusses applications that clarify its utility in overcoming imperfections in traditional approaches to the treatment of physics problems the general inadequacy of the operational paradigm for property definition the long standing problem of probability definition confusion arising from indiscriminate use of the term wave the definition of meaning knowledge and understanding in science the definitions of energy and entropy the solution of the paradox of einstein podolski and rosen the solution of non locality problems in double slit interference experiments

Discrete-Event Modeling and Simulation

2018-09-03

research of discrete event systems is strongly motivated by applications in flexible manufacturing in traffic control and in concurrent and real time software verification and design just to mention a few important areas discrete event system theory is a promising and dynamically developing area of both control theory and computer science discrete event systems are systems with non numerically valued states inputs and outputs the approaches to the modelling and control of these systems can be roughly divided into two groups the first group is concerned with the automatic design of controllers from formal specifications of logical requirements

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this research owes much to the pioneering work of p j ramadge and w m wonham at the beginning of the eighties the second group deals with the analysis and optimization of system throughput waiting time and other performance measures for discrete event systems the present book contains selected papers presented at the joint workshop on discrete event systems wodes 92 held in prague czechoslovakia on august 26 28 1992 and organized by the institute of information theory and automation of the czechoslovak academy of sciences prague czechoslovakia by the automatic control laboratory of the swiss federal institute of technology eth zurich switzerland and by the department of computing science of the university of groningen groningen the netherlands

Simulation of Industrial Systems

2007-12-19

how will the discrete event simulation team and the organization measure complete success of discrete event simulation what is our discrete event simulation strategy can we do discrete event simulation without complex expensive analysis what are the usability implications of discrete event simulation actions is a fully trained team formed supported and committed to work on the discrete event simulation improvements defining designing creating and implementing a process to solve a challenge or meet an objective is the most valuable role in every group company organization and department unless you are talking a one time single use project there should be a process whether that process is managed and implemented by humans ai or a

combination of the two it needs to be designed by someone with a complex enough perspective to ask the right questions someone capable of asking the right questions and step back and say what are we really trying to accomplish here and is there a different way to look at it this self assessment empowers people to do just that whether their title is entrepreneur manager consultant vice president cxo etc they are the people who rule the future they are the person who asks the right questions to make discrete event simulation investments work better this discrete event simulation all inclusive self assessment enables you to be that person all the tools you need to an in depth discrete event simulation self assessment featuring 711 new and updated case based questions organized into seven core areas of process design this self assessment will help you identify areas in which discrete event simulation improvements can be made in using the questions you will be better able to diagnose discrete event simulation projects initiatives organizations businesses and processes using accepted diagnostic standards and practices implement evidence based best practice strategies aligned with overall goals integrate recent advances in discrete event simulation and process design strategies into practice according to best practice guidelines using a self assessment tool known as the discrete event simulation scorecard you will develop a clear picture of which discrete event simulation areas need attention your purchase includes access details to the discrete event simulation self assessment dashboard download which gives you your dynamically prioritized projects ready tool and shows your organization exactly what to do next your exclusive instant access details can be found in your book

Discrete Event Physics

2012-03-06

dynamic systems deds are almost endless military c3i ilogistic systems the emergency ward of a metropolitan hospital back offices of large insurance and brokerage fums service and spare part operations of multinational fums the point is the pervasive nature of such systems in the daily life of human beings yet deds is a relatively new phenomenon in dynamic systems studies from the days of galileo to newton to quantum mechanics and cosmology of the present dynamic systems in nature are primarily differential equations based and time driven a large literature and endless success stories have been built up on such continuous variable dynamic systems cvds it is however equally clear that deds are fundamentally different from cvds they are event driven asynchronous mostly man made and only became significant during the past generation increasingly however it can be argued that in the modem world our lives are being impacted by and dependent upon the efficient operations of such deds yet compared to the successful paradigm of differential equations for cvds the mathematical modelling of deds is in its infancy nor are there as many successful and established techniques for their analysis and synthesis the purpose of this series is to promote the study and understanding of the modelling analysis control and management of deds the idea of the series came from editing a special issue of the proceedings of iee on deos during 1988

Discrete Event Systems: Modeling and Control

2012-12-06

modeling discrete event systems with gpcsim describes the design and applications of general purpose petri net simulator gpcsim which is a software tool for modeling simulation and performance analysis of discrete event systems the brief explains the principles of modelling discrete event systems as well as the design and applications of gpcsim it is based on the author s lectures that were given on modeling simulation and performance analysis of discrete event systems the brief uses gpcsim to enable the efficient modeling of complex and large scale discrete event systems gpcsim which is based on matlab is designed to allow easy integration of petri net models with a vast number of toolboxes that are available on the matlab the book offers an approach for developing models that can interact with the external environment this will help readers to solve problems in industrial diverse fields these problems include airport capacity evaluation for aviation authorities finding bottlenecks in supply chains scheduling drilling operations in the oil and gas industry and optimal scheduling of jobs in grid computing this brief is of interest to researchers working on the modeling simulation and performance evaluation of discrete event systems as it shows them the design and applications of an efficient modeling package since the book also explains the basic principles of modeling discrete event systems in a step by step manner it is also of interest to final year undergraduate and postgraduate students

Discrete Event Simulation

2018-04-27

concurrent simulation is over twenty years old during that period it has been widely adopted for the simulation of faults in digital circuits for which it provides a combination of extreme efficiency and generality yet it is remarkable that no book published so far presents a correct and sufficiently detailed treatment of concurrent simulation a first reason to welcome into print the effort of the authors is therefore that it provides a much needed account of an important topic in design automation this book is however unique for several other reasons it is safe to state that no individual has contributed more than ernst ulrich to the development of digital logic simulation for concurrent simulation one may say that ernst has contributed more than the rest of the world we would find such a claim difficult to dispute the unique experience of the authors confers a special character to this book it is authoritative inspired and focused on what is conceptually important another unique aspect of this book perhaps the one that will be the most surprising for many readers is that it is strongly projected towards the future concurrent simulation is presented as a general experimentation methodology and new intriguing applications are analyzed the discussion of multi domain concurrent simulation recent work of karen panetta lentz and ernst ulrich is fascinating

Perturbation Analysis of Discrete Event Dynamic Systems

2012-12-06

opening new directions in research in both discrete event dynamic systems as well as in stochastic control this volume focuses on a wide class of control and of optimization problems over sequences of integer numbers this is a counterpart of convex optimization in the setting of discrete optimization the theory developed is applied to the control of stochastic discrete event dynamic systems some applications are admission routing service allocation and vacation control in queuing networks pure and applied mathematicians will enjoy reading the book since it brings together many disciplines in mathematics combinatorics stochastic processes stochastic control and optimization discrete event dynamic systems algebra

Modeling Discrete-Event Systems with GPenSIM

2018-02-28

discrete event dynamic systems deds permeate our world they are of great importance in modern manufacturing processes transportation and various forms of computer and communications networking this book begins with the mathematical basics required for the study of deds and moves on to present various tools used in their modeling and control industrial examples illustrate the concepts and methods discussed making this book an invaluable aid for students embarking on further courses in control

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manufacturing engineering or computer studies

Concurrent and Comparative Discrete Event Simulation

2012-12-06

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

Multifaceted Modelling and Discrete Event Simulation

1984

Discrete-Event Control of Stochastic Networks:

Multimodularity and Regularity

2003-12-15

Modeling and Control of Discrete-event Dynamic Systems

2009-10-12

Discrete-Event Simulation and System Dynamics for Management Decision Making

2014-03-31

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