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Stochastic Simulation and Applications in Finance with MATLAB Programs explains the fundamentals of Monte Carlo simulation techniques, their use in the numerical resolution of stochastic differential equations and their current applications in finance. Building on an integrated approach, it provides a pedagogical treatment of the need-to-know materials in risk management and financial engineering. The book takes readers through the basic concepts, covering the most recent research and problems in the area, including: the quadratic re-sampling technique, the Least Squared Method, the dynamic programming and Stratified State Aggregation technique to price American options, the extreme value simulation technique to price exotic options and the retrieval of volatility method to estimate Greeks. The authors also present modern term structure of interest rate models and pricing swaptions with the BGM market model, and give a full explanation of corporate securities valuation and credit risk based on the structural approach of

Merton. Case studies on financial guarantees illustrate how to implement the simulation techniques in pricing and hedging. NOTE TO READER: The CD has been converted to URL. Go to the following website www.wiley.com/go/huyhnstochastic which provides MATLAB programs for the practical examples and case studies, which will give the reader confidence in using and adapting specific ways to solve problems involving stochastic processes in finance.

This book constitutes the proceedings of the 4th International Conference on Network Security and Applications held in Chennai, India, in July 2011. The 63 revised full papers presented were carefully reviewed and selected from numerous submissions. The papers address all technical and practical aspects of security and its applications for wired and wireless networks and are organized in topical sections on network security and applications, ad hoc, sensor and ubiquitous computing, as well as peer-to-peer networks and trust management. Modeling and Simulation in Ecotoxicology with Applications in MATLAB and SimulinkCRC Press The volume set LNAI 11740 until LNAI 11745 constitutes the proceedings of the 12th International Conference on Intelligent Robotics and Applications, ICIRA 2019, held in Shenyang, China, in August 2019. The total of 378 full and 25 short papers presented in these proceedings was carefully

reviewed and selected from 522 submissions. The papers are organized in topical sections as follows:

Part I: collective and social robots; human biomechanics and human-centered robotics; robotics for cell manipulation and characterization; field robots; compliant mechanisms; robotic grasping and manipulation with incomplete information and strong disturbance; human-centered robotics; development of high-performance joint drive for robots; modular robots and other mechatronic systems; compliant manipulation learning and control for lightweight robot. Part II: power-assisted system and control; bio-inspired wall climbing robot; underwater acoustic and optical signal processing for environmental cognition; piezoelectric actuators and micro-nano manipulations; robot vision and scene understanding; visual and motional learning in robotics; signal processing and underwater bionic robots; soft locomotion robot; teleoperation robot; autonomous control of unmanned aircraft systems. Part III: marine bio-inspired robotics and soft robotics: materials, mechanisms, modelling, and control; robot intelligence technologies and system integration; continuum mechanisms and robots; unmanned underwater vehicles; intelligent robots for environment detection or fine manipulation; parallel robotics; human-robot collaboration; swarm intelligence and multi-robot cooperation; adaptive and learning control system; wearable and assistive

devices and robots for healthcare; nonlinear systems and control. Part IV: swarm intelligence unmanned system; computational intelligence inspired robot navigation and SLAM; fuzzy modelling for automation, control, and robotics; development of ultra-thin-film, flexible sensors, and tactile sensation; robotic technology for deep space exploration; wearable sensing based limb motor function rehabilitation; pattern recognition and machine learning; navigation/localization. Part V: robot legged locomotion; advanced measurement and machine vision system; man-machine interactions; fault detection, testing and diagnosis; estimation and identification; mobile robots and intelligent autonomous systems; robotic vision, recognition and reconstruction; robot mechanism and design. Part VI: robot motion analysis and planning; robot design, development and control; medical robot; robot intelligence, learning and linguistics; motion control; computer integrated manufacturing; robot cooperation; virtual and augmented reality; education in mechatronics engineering; robotic drilling and sampling technology; automotive systems; mechatronics in energy systems; human-robot interaction.

The book serves to be both a textbook and a reference for the theory and laboratory courses offered to undergraduate and graduate engineering students, and for practicing engineers.

The purpose of this handbook is to allow users to learn and master the mathematics software package MATLAB®, as well as to serve as a quick reference to some of the most used instructions in the package. A unique feature of this handbook is that it can be used by the novice and by experienced users alike. For experienced users, it has four chapters with examples and applications in engineering, finance, physics, and optimization. Exercises are included, along with solutions available for the interested reader on the book's web page. These exercises are a complement for the interested reader who wishes to get a deeper understanding of MATLAB. Features Covers both MATLAB and introduction to Simulink Covers the use of GUIs in MATLAB and Simulink Offers downloadable examples and programs from the handbook's website Provides an introduction to object oriented programming using MATLAB Includes applications from many areas Includes the realization of executable files for MATLAB programs and Simulink models

Driven by the advancement of industrial mathematics and the need for impact case studies, Inverse Problems with Applications in Science and Engineering thoroughly examines the state-of-the-art of some representative classes of inverse and ill-posed problems for partial differential equations (PDEs). The natural practical applications of this

examination arise in heat transfer, electrostatics, porous media, acoustics, fluid and solid mechanics – all of which are addressed in this text. Features:

Covers all types of PDEs — namely, elliptic (Laplace's, Helmholtz, modified Helmholtz, biharmonic and Stokes), parabolic (heat, convection, reaction and diffusion) and hyperbolic (wave)

Excellent reference for post-graduates and researchers in mathematics, engineering and any other scientific discipline that deals with inverse problems Contains both theory and numerical algorithms for solving all types of inverse and ill-posed problems

An introductory textbook covering dynamics and controls of engineering systems, with particular focus on mechanical engineering systems Presents and illustrates the process of translating systems in the physical world to mathematical models in the conceptual world during the derivations of equations of motion Includes problems and solutions Contains a separate chapter for operating principles of sensors or transducers and their equations of motion

Covers graphical methods for control system analysis and design Presents modern control system analysis as a foundation for a second or graduate course in control engineering Includes applications of MATLAB® for numerical solutions to various questions in system dynamics in order to verify exact solutions and enhance understanding as well as

interpretation of solutions

Real-Time Simulation Technologies: Principles, Methodologies, and Applications is an edited compilation of work that explores fundamental concepts and basic techniques of real-time simulation for complex and diverse systems across a broad spectrum. Useful for both new entrants and experienced experts in the field, this book integrates coverage of detailed theory, acclaimed methodological approaches, entrenched technologies, and high-value applications of real-time simulation—all from the unique perspectives of renowned international contributors. Because it offers an accurate and otherwise unattainable assessment of how a system will behave over a particular time frame, real-time simulation is increasingly critical to the optimization of dynamic processes and adaptive systems in a variety of enterprises. These range in scope from the maintenance of the national power grid, to space exploration, to the development of virtual reality programs and cyber-physical systems. This book outlines how, for these and other undertakings, engineers must assimilate real-time data with computational tools for rapid decision making under uncertainty. Clarifying the central concepts behind real-time simulation tools and techniques, this one-of-a-kind resource: Discusses the state of the art, important challenges, and high-impact developments in simulation technologies Provides a basis for the study of real-time simulation as a fundamental and foundational technology Helps readers develop and refine principles that are applicable across a wide variety of application domains As science moves toward more advanced technologies, unconventional design approaches, and unproven regions of the design space, simulation tools are increasingly critical to successful design and operation of technical systems in a growing number of application

domains. This must-have resource presents detailed coverage of real-time simulation for system design, parallel and distributed simulations, industry tools, and a large set of applications.

Parallel MATLAB for Multicore and Multinode Computers is the first book on parallel MATLAB and the first parallel computing book focused on the design, code, debug, and test techniques required to quickly produce well-performing parallel programs. MATLAB is currently the dominant language of technical computing with one million users worldwide, many of whom can benefit from the increased power offered by inexpensive multicore and multinode parallel computers. MATLAB is an ideal environment for learning about parallel computing, allowing the user to focus on parallel algorithms instead of the details of implementation. This book covers more parallel algorithms and parallel programming models than any other parallel programming book due to the succinctness of MATLAB and presents a "hands-on" approach with numerous example programs. Wherever possible, the examples are drawn from widely known and well-documented parallel benchmark codes representative of many real applications.

Written in two parts, the first revises the ideas and theoretical bases necessary for a good understanding of the techniques used in the second, which deals with applications of MATLAB(R) and SIMULINK(R) in process control and digital signal processing. Each application is treated through various techniques including the classical methods of automation and of deterministic and random digital processing using fuzzy logic and neural networks. The preceding mathematical study of the physical processes goes from finding the equations to editing the analogical model. The following SIMULINK(R) toolbox functions and blocks have been used: Control System, Signal Processing, Neural Network and Fuzzy Logic.

Over the years, MATLAB has evolved into a powerful tool that provides assistance to professionals, scientists and engineers in diversifying their areas of expertise. Teachers and students alike have accepted the fact that very few choices exist to replace MATLAB as a tool that helps enhance the ability to understand and visualize. The effort here is to help the fledgling learner know the basic ideas and principles behind programming in MATLAB and the application of the vast storehouse of tools available in the library and supporting documentation.

This introduction to dynamical systems theory guides readers through theory via example and the graphical MATLAB interface; the SIMULINK® accessory is used to simulate real-world dynamical processes. Examples included are from mechanics, electrical circuits, economics, population dynamics, epidemiology, nonlinear optics, materials science and neural networks. The book contains over 330 illustrations, 300 examples, and exercises with solutions. This book presents an original combination of three well-known methodological approaches for nonlinear data analysis: recurrence, networks, and fuzzy logic. After basic concepts of these three approaches are introduced, this book presents recently developed methods known as fuzzy recurrence plots and fuzzy recurrence networks. Computer programs written in MATLAB, which implement the basic algorithms, are included to facilitate the understanding of the developed ideas. Several applications of these techniques to biomedical problems, ranging from cancer and neurodegenerative disease to depression, are illustrated to show the potential of fuzzy recurrence methods. This book opens a new door to theorists in complex systems science as well as specialists in medicine, biology, engineering, physics, computer science, geosciences, and social economics to address issues in experimental nonlinear signal and data

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Exploring roles critical to environmental toxicology, Modeling and Simulation in Ecotoxicology with Applications in MATLAB and Simulink covers the steps in modeling and simulation from problem conception to validation and simulation analysis. Using the MATLAB and Simulink programming languages, the book presents examples of mathematical functions a

MATLAB is an indispensable asset for scientists, researchers, and engineers. The richness of the MATLAB computational environment combined with an integrated development environment (IDE) and straightforward interface, toolkits, and simulation and modeling capabilities, creates a research and development tool that has no equal. From quick code prototyping to full blown deployable applications, MATLAB stands as a de facto development language and environment serving the technical needs of a wide range of users. As a collection of diverse applications, each book chapter presents a novel application and use of MATLAB for a specific result.

Matlab est un standard pour la recherche scientifique et l'ingénierie. Cet ouvrage présente des applications concrètes de contrôle de procédé et de traitement du signal mettant en oeuvre les fonctionnalités de Matlab 5 et Simulink 2 et des boîtes à outils. Il s'adresse aux étudiants et professeurs des écoles d'ingénieurs, IUT, BTS, aux chercheurs universitaires ainsi qu'aux techniciens et ingénieurs de l'industrie.

Master the tools of MATLAB through hands-on examples Shows How to Solve Math Problems Using MATLAB The mathematical software MATLAB® integrates computation, visualization, and programming to produce a powerful tool for a number of different tasks in

mathematics. Focusing on the MATLAB toolboxes especially dedicated to science, finance, and engineering, MATLAB® with Applications to Engineering, Physics and Finance explains how to perform complex mathematical tasks with relatively simple programs. This versatile book is accessible enough for novices and users with only a fundamental knowledge of MATLAB, yet covers many sophisticated concepts to make it helpful for experienced users as well. The author first introduces the basics of MATLAB, describing simple functions such as differentiation, integration, and plotting. He then addresses advanced topics, including programming, producing executables, publishing results directly from MATLAB programs, and creating graphical user interfaces. The text also presents examples of Simulink® that highlight the advantages of using this software package for system modeling and simulation. The applications-dedicated chapters at the end of the book explore the use of MATLAB in digital signal processing, chemical and food engineering, astronomy, optics, financial derivatives, and much more. This volume comprises the select proceedings of the annual convention of the Computer Society of India. Divided into 10 topical volumes, the proceedings present papers on state-of-the-art research, surveys, and succinct reviews. The volumes cover diverse topics ranging from communications networks to big data analytics, and from system architecture to cyber security. This volume focuses on ICT Based Innovations. The contents of this book will be useful to researchers and students alike.

The third international conference on INformation Systems Design and Intelligent Applications (INDIA – 2016) held in Visakhapatnam, India during January 8-9, 2016. The book covers all aspects of information system design, computer science and technology, general sciences, and educational research. Upon a double blind review process, a number of high quality papers are selected and collected in the book, which is composed of three different volumes, and covers a variety of topics, including natural language processing, artificial intelligence, security and privacy, communications, wireless and sensor networks, microelectronics, circuit and systems, machine learning, soft computing, mobile computing and applications, cloud computing, software engineering, graphics and image processing, rural engineering, e-commerce, e-governance, business computing, molecular computing, nano-computing, chemical computing, intelligent computing for GIS and remote sensing, bio-informatics and bio-computing.

These fields are not only limited to computer researchers but also include mathematics, chemistry, biology, bio-chemistry, engineering, statistics, and all others in which computer techniques may assist.

The five-volume set LNCS 9155-9159 constitutes the refereed proceedings of the 15th International Conference on Computational Science and Its Applications, ICCSA 2015, held in Banff, AB, Canada, in June 2015. The 232 revised full papers presented in 22 workshops and a general track were carefully reviewed and selected from 780 initial submissions for inclusion in this volume. They cover various areas in computational

science ranging from computational science technologies to specific areas of computational science such as computational geometry and security. Due to the increasing world population, energy consumption is steadily climbing, and there is a demand to provide solutions for sustainable and renewable energy production, such as wind turbines and photovoltaics. Power electronics are being used to interface renewable sources in order to maximize the energy yield, as well as smoothly integrate them within the grid. In many cases, power electronics are able to ensure a large amount of energy saving in pumps, compressors, and ventilation systems. This book explains the operations behind different renewable generation technologies in order to better prepare the reader for practical applications. Multiple chapters are included on the state-of-the-art and possible technology developments within the next 15 years. The book provides a comprehensive overview of the current renewable energy technology in terms of system configuration, power circuit usage, and control. It contains two design examples for small wind turbine system and PV power system, respectively, which are useful for real-life installation, as well as many computer simulation models.

Biomedical Engineering is an exciting and emerging interdisciplinary field that combines engineering with life sciences. The relevance of this area can be perceived in our everyday lives every time we go to hospital, receive medical treatment or even when we buy health products such as an automatic blood pressure monitor device.

Over the past years we have experienced a great technological development in health care and this is due to the joint work of engineers, mathematicians, physicians, computer scientists and many other professionals. This book introduces a collection of papers organized into three sections that provide state of the art examples of practical applications in Biomedical Engineering in the area of Biomedical Signal Processing and Modelling, Biomaterials and Prosthetic Devices, and Biomedical Image Processing.

This is a short, focused introduction to MATLAB, a comprehensive software system for mathematical and technical computing. It contains concise explanations of essential MATLAB commands, as well as easily understood instructions for using MATLAB's programming features, graphical capabilities, simulation models, and rich desktop interface. Written for MATLAB 7, it can also be used with earlier (and later) versions of MATLAB. This book teaches how to graph functions, solve equations, manipulate images, and much more. It contains explicit instructions for using MATLAB's companion software, Simulink, which allows graphical models to be built for dynamical systems. MATLAB's new "publish" feature is discussed, which allows mathematical computations to be combined with text and graphics, to produce polished, integrated, interactive documents. For the beginner it explains everything needed to start using MATLAB, while experienced users making the switch to MATLAB 7 from an earlier version will also find much useful information here.

This proceedings volume brings together some 189 peer-

reviewed papers presented at the International Conference on Information Technology and Computer Application Engineering, held 27-28 August 2013, in Hong Kong, China. Specific topics under consideration include Control, Robotics, and Automation, Information Technology, Intelligent Computing and Telecommunication, Computer Science and Engineering, Computer Education and Application and other related topics. This book provides readers a state-of-the-art survey of recent innovations and research worldwide in Information Technology and Computer Application Engineering, in so-doing furthering the development and growth of these research fields, strengthening international academic cooperation and communication, and promoting the fruitful exchange of research ideas. This volume will be of interest to professionals and academics alike, serving as a broad overview of the latest advances in the dynamic field of Information Technology and Computer Application Engineering.

For a variety of reasons, the MATLAB®-Java interface was never fully documented. This is really quite unfortunate: Java is one of the most widely used programming languages, having many times the number of programmers and programming resources as MATLAB. Also unfortunate is the popular claim that while MATLAB is a fine programming platform for prototyping, it is not suitable for real-world, modern-looking applications. Undocumented Secrets of MATLAB®-Java Programming aims to correct this misconception. This book shows how using Java can significantly improve MATLAB program appearance and functionality, and that this can be done easily and even without any prior Java knowledge. Readers are led step-by-step from simple to complex customizations. Code snippets, screenshots, and numerous online references are provided to enable the utilization of this book as both a sequential tutorial

and as a random-access reference suited for immediate use. Java-savvy readers will find it easy to tailor code samples for their particular needs; for Java newcomers, an introduction to Java and numerous online references are provided. This book demonstrates how The MATLAB programming environment relies on Java for numerous tasks, including networking, data-processing algorithms and graphical user-interface (GUI) We can use MATLAB for easy access to external Java functionality, either third-party or user-created Using Java, we can extensively customize the MATLAB environment and application GUI, enabling the creation of visually appealing and usable applications

The two-volume set LNCS 5072 and 5073 constitutes the refereed proceedings of the International Conference on Computational Science and Its Applications, ICCSA 2008, held in Perugia, Italy, in June/July, 2008. The two volumes contain papers presenting a wealth of original research results in the field of computational science, from foundational issues in computer science and mathematics to advanced applications in virtually all sciences making use of computational techniques. The topics of the fully refereed papers are structured according to the five major conference themes: computational methods, algorithms and scientific applications, high performance technical computing and networks, advanced and emerging applications, geometric modelling, graphics and visualization, as well as information systems and information technologies. Moreover, submissions from more than 20 workshops and technical sessions in the areas, such as embedded systems, geographical analysis, computational geometry, computational geomatics, computer graphics, virtual reality, computer modeling, computer algebra, mobile communications, wireless networks, computational forensics, data storage, information security, web learning, software

engineering, computational intelligence, digital security, biometrics, molecular structures, material design, ubiquitous computing, symbolic computations, web systems and intelligence, and e-education contribute to this publication. This four-volume set (CCIS 643, 644, 645, 646) constitutes the refereed proceedings of the 16th Asia Simulation Conference and the First Autumn Simulation Multi-Conference, AsiaSim / SCS AutumnSim 2016, held in Beijing, China, in October 2016. The 265 revised full papers presented were carefully reviewed and selected from 651 submissions. The papers in this second volume of the set are organized in topical sections on HMI and robot simulations; modeling and simulation for intelligent manufacturing; military simulation; visualization and virtual reality.

We are entering a new era in production agronomics. Agricultural scientists the world over call for the development of techniques that simultaneously increase soil carbon storage and reduce agriculture's energy use. In response, site-specific or precision agriculture has become the focus and direction for the three motivating forces that are changing. Among the wide range of programming tools available, the technical analysis and calculations are realized by MATLAB®, which is recognized as a convenient and effective tool for modern science and technology. Thus, mastering its latest versions and practical solutions is increasingly essential for the creation of new products in mechanics, electronics, chemistry, life sciences, and modern industry. Modern mechanical and tribology sciences specialists widely use computers and some special programs, but need a universal tool for solving, simulating, and modeling specific problems from their area. There is plenty of information available on MATLAB® for the general engineer, but there is a gap in the field for research that applies MATLAB® to two wide, interdisciplinary, and topical areas: tribology and mechanics.

MATLAB® is used as a tool for subsequent computer solutions, applying it to both traditional and modern problems of mechanics and materials sciences. The problem solving in this book includes calculations of the mechanical parts, machine elements, production process, quality assurance, fluid mechanics parameters, thermodynamic and rheological properties of the materials as well as the state equations, descriptive statistics, and more. This book is ideal for scientists, students and professors of engineering courses, self-instructing readers, programmers, computer scientists, practitioners, and researchers looking for concise and clear information on learning and applying MATLAB® software to mechanics, tribology, and material physics.

The International Conference on Intelligent Computing (ICIC) was formed to provide an annual forum dedicated to the emerging and challenging topics in artificial intelligence, machine learning, bioinformatics, and computational biology, etc. It aims to bring together researchers and practitioners from both academia and industry to share ideas, problems and solutions related to the multifaceted aspects of intelligent computing. ICIC 2008, held in Shanghai, China, September 15–18, 2008, constituted the 4th International Conference on Intelligent Computing. It built upon the success of ICIC 2007, ICIC 2006 and ICIC 2005 held in Qingdao, Kunming and Hefei, China, 2007, 2006 and 2005, respectively. This year, the conference concentrated mainly on the theories and methodologies as well as the emerging applications of intelligent computing. Its aim was to unify the picture of contemporary intelligent computing techniques as an integral concept that highlights the trends in advanced computational intelligence and bridges theoretical research with applications. Therefore, the theme for this conference was “Emerging Intelligent Computing Technology and

Applications”. Papers focusing on this theme were solicited, addressing theories, methodologies, and applications in science and technology.

Most available books on computational electrodynamics are focused on FDTD, FEM, or other specific technique developed in microwave engineering. In contrast, Fourier Modal Method and Its Applications in Computational Nanophotonics is a complete guide to the principles and detailed mathematics of the up-to-date Fourier modal method of optical analysis. It takes readers through the implementation of MATLAB® codes for practical modeling of well-known and promising nanophotonic structures. The authors also address the limitations of the Fourier modal method. Features Provides a comprehensive guide to the principles, methods, and mathematics of the Fourier modal method Explores the emerging field of computational nanophotonics Presents clear, step-by-step, practical explanations on how to use the Fourier modal method for photonics and nanophotonics applications Includes the necessary MATLAB codes, enabling readers to construct their own code Using this book, graduate students and researchers can learn about nanophotonics simulations through a comprehensive treatment of the mathematics underlying the Fourier modal method and examples of practical problems solved with MATLAB codes.

This book includes papers from the 5th International Conference on Robot Intelligence Technology and Applications held at KAIST, Daejeon, Korea on December 13–15, 2017. It covers the following areas: artificial intelligence, autonomous robot navigation, intelligent robot system design, intelligent sensing and control, and machine vision. The topics

included in this book are deep learning, deep neural networks, image understanding, natural language processing, speech/voice/text recognition, reasoning & inference, sensor integration/fusion/perception, multisensor data fusion, navigation/SLAM/localization, distributed intelligent algorithms and techniques, ubiquitous computing, digital creatures, intelligent agents, computer vision, virtual/augmented reality, surveillance, pattern recognition, gesture recognition, fingerprint recognition, animation and virtual characters, and emerging applications. This book is a valuable resource for robotics scientists, computer scientists, artificial intelligence researchers and professionals in universities, research institutes and laboratories. The book presents several approaches in the key areas of practice for which the MATLAB software package was used. Topics covered include applications for: -Motors -Power systems -Robots -Vehicles The rapid development of technology impacts all areas. Authors of the book chapters, who are experts in their field, present interesting solutions of their work. The book will familiarize the readers with the solutions and enable the readers to enlarge them by their own research. It will be of great interest to control and electrical engineers and students in the fields of research the book covers.

This book presents the various design methods of a state-feedback control law and of an observer. The

considered systems are of continuous-time and of discrete-time nature, monovaria- ble or multivariable, the last ones being of main consideration. Three different approaches are described: • Linear design methods, with an emphasis on decoupling strategies, and a general formula for multivariable controller or observer design; • Quadratic optimization methods: Linear Quadratic Control (LQC), optimal Kalman filtering, Linear Quadratic Gaussian (LQG) control; • Linear matrix inequalities (LMIs) to solve linear and quadratic problems. The duality between control and observation is taken to advantage and extended up to the mathematical domain. A large number of exercises, all given with their detailed solutions, mostly obtained with MATLAB, reinforce and exemplify the practical orientation of this book. The programs, created by the author for their solving, are available on the Internet sites of Springer and of MathWorks for downloading. This book is targeted at students of Engineering Schools or Universities, at the Master's level, at engineers desiring to design and implement innovative control methods, and at researchers. MODELING OF DYNAMIC SYSTEMS takes a unique, up-to-date approach to systems dynamics and related controls coverage for undergraduate students and practicing engineers. It focuses on the model development of engineering problems rather than response analysis and simulation once a model

is available, though these are also covered. Linear graphing and bond graph approaches are both discussed, and computational tools are integrated throughout. Electrical, mechanical, fluid, and thermal domains are covered, as are problems of multiple domains (mixed systems); the unified and integrated approaches taken are rapidly becoming the standard in the modeling of mechatronic engineering systems. The fields of computer vision and image processing are constantly evolving as new research and applications in these areas emerge. Staying abreast of the most up-to-date developments in this field is necessary in order to promote further research and apply these developments in real-world settings. Computer Vision: Concepts, Methodologies, Tools, and Applications is an innovative reference source for the latest academic material on development of computers for gaining understanding about videos and digital images. Highlighting a range of topics, such as computational models, machine learning, and image processing, this multi-volume book is ideally designed for academicians, technology professionals, students, and researchers interested in uncovering the latest innovations in the field.

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