

Matlab Cable Model

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5th International Conference on Biomedical Engineering in Vietnam - Vo Van Toi 2014-11-18

This volume presents the proceedings of the Fifth International Conference on the Development of Biomedical Engineering in Vietnam which was held from June 16-18, 2014 in Ho Chi Minh City. The volume reflects the progress of Biomedical Engineering and discusses problems and solutions. I aims identifying new challenges, and shaping future directions for research in biomedical engineering fields including medical instrumentation, bioinformatics, biomechanics, medical imaging, drug delivery therapy, regenerative medicine and entrepreneurship in medical devices.

Advances in Power and Energy Engineering - Yuanzhang Sun 2016-04-05

Energy and power are playing pivotal roles in social and economic developments of the modern world. Energy and power engineers and technologists have made our lives much more comfortable and affordable. However, due to the demands of the global population on resources and the environment, innovations of more reliable and sustainable energy res

Home Networking Basis - Walter Y. Chen 2003

A complete reference resource for the emerging Home Networking industry, this title includes executable examples in Matlab and Simulink, as well some examples in PC executable code. Numerous technical transmission methods are explained in detail.

Design and Modeling of Mechanical Systems—III - Mohamed Haddar 2017-11-25

This book offers a collection of original peer-reviewed contributions presented at the 7th International Congress on Design and Modeling of Mechanical Systems (CMSM'2017), held in Hammamet, Tunisia, from the 27th to the 29th of March 2017. It reports on both research findings, innovative industrial applications and case studies concerning mechanical systems and related to modeling and analysis of materials and structures, multiphysics methods, nonlinear dynamics, fluid structure interaction and vibroacoustics, design and manufacturing engineering. Continuing on the tradition of the previous editions, this proceedings offers a broad overview on the state-of-the art in the field and a useful resource for academic and industry specialists active in the field of design and modeling of mechanical systems. CMSM'2017 was jointly organized by two leading Tunisian research laboratories: the Mechanical, Modeling and Manufacturing Laboratory of the National Engineering School of Sfax and the Mechanical Engineering Laboratory of the National Engineering School of Monastir..

Cable-Driven Parallel Robots - Andreas Pott 2018-03-27

Cable-driven parallel robots are a new kind of lightweight manipulators with excellent scalability in terms of size, payload, and dynamics capacities. For the first time, a comprehensive compendium is presented of the field of cable-driven parallel robots. A thorough theory of cable robots is setup leading the reader from first principles to the latest results in research. The main topics covered in the book are classification, terminology, and fields of application for cable-driven parallel robots. The geometric foundation of the standard cable model is introduced followed by statics, force distribution, and stiffness. Inverse and forward kinematics are addressed by elaborating efficient algorithms. Furthermore, the workspace is introduced and different algorithms are detailed. The book contains the dynamic equations as well as simulation models with applicable parameters. Advanced cable models are described taking into account pulleys, elastic cables, and sagging cables. For practitioner, a descriptive design method is stated including methodology, parameter synthesis, construction design, component selection, and calibration. Rich

examples are presented by means of simulation results from sample robots as well as experimental validation on reference demonstrators. The book contains a representative overview of reference demonstrator system. Tables with physical parameters for geometry, cable properties, and robot parameterizations support case studies and are valuable references for building custom cable robots. For scientist, the book provides the starting point to address new scientific challenges as open problems are named and a commented review of the literature on cable robot with more than 500 references are given.

Mobile Radio Communications and 5G Networks - Nikhil Marriwala 2022

This book features selected high-quality papers from the second International Conference on Mobile Radio Communications and 5G Networks (MRCN 2021), held at University Institute of Engineering and Technology, Kurukshetra University, Kurukshetra, India, during 10-12 June 2021. The book features original papers by active researchers presented at the International Conference on Mobile Radio Communications and 5G Networks. It includes recent advances and upcoming technologies in the field of cellular systems, 2G/2.5G/3G/4G/5G and beyond, LTE, WiMAX, WMAN, and other emerging broadband wireless networks, WLAN, WPAN, and various home/personal networking technologies, pervasive and wearable computing and networking, small cells and femtocell networks, wireless mesh networks, vehicular wireless networks, cognitive radio networks and their applications, wireless multimedia networks, green wireless networks, standardization of emerging wireless technologies, power management and energy conservation techniques.

Optical Fiber Communications Systems - Le Nguyen Binh 2010-04-19

Carefully structured to provide practical knowledge on fundamental issues, *Optical Fiber Communications Systems: Theory and Practice with MATLAB® and Simulink® Models* explores advanced modulation and transmission techniques of lightwave communication systems. With coverage ranging from fundamental to modern aspects, the text presents optical communication techniques and applications, employing single mode optical fibers as the transmission medium. With MATLAB and Simulink models that illustrate methods, it supplies a deeper understanding of future development of optical systems and networks. The book begins with an overview of the development of optical fiber communications technology over the last three decades of the 20th century. It describes the optical transmitters for direct and external modulation technique and discusses the detection of optical signals under direct coherent and incoherent reception. The author also covers lumped Er:doped and distributed Raman optical amplifiers with extensive models for the amplification of signals and structuring the amplifiers on the Simulink platform. He outlines a design strategy for optically amplified transmission systems coupled with MATLAB Simulink models, including dispersion and attenuation budget methodology and simulation techniques. The book concludes with coverage of advanced modulation formats for long haul optical fiber transmission systems with accompanied Simulink models. Although many books have been written on this topic over the last two decades, most of them present only the theory and practice of devices and subsystems of the optical fiber communications systems in the fields, but do not illustrate any computer models to represent the true practical aspects of engineering practice. This book fills the need for a text that emphasizes practical computing models that shed light on the behavior and dynamics of the devices.

Calculus for Cognitive Scientists - James Peterson 2016-02-11

This book shows cognitive scientists in training how mathematics, computer science and science can be

usefully and seamlessly intertwined. It is a follow-up to the first two volumes on mathematics for cognitive scientists, and includes the mathematics and computational tools needed to understand how to compute the terms in the Fourier series expansions that solve the cable equation. The latter is derived from first principles by going back to cellular biology and the relevant biophysics. A detailed discussion of ion movement through cellular membranes, and an explanation of how the equations that govern such ion movement leading to the standard transient cable equation are included. There are also solutions for the cable model using separation of variables, as well an explanation of why Fourier series converge and a description of the implementation of MatLab tools to compute the solutions. Finally, the standard Hodgkin - Huxley model is developed for an excitable neuron and is solved using MatLab.

Recent Advances in Intelligent Information Systems and Applied Mathematics - Oscar Castillo 2020-01-31
This book describes the latest advances in intelligent techniques such as fuzzy logic, neural networks, and optimization algorithms, and their relevance in building intelligent information systems in combination with applied mathematics. The authors also outline the applications of these systems in areas like intelligent control and robotics, pattern recognition, medical diagnosis, time series prediction, and optimization of complex problems. By sharing fresh ideas and identifying new targets/problems it offers young researchers and students new directions for their future research. The book is intended for readers from mathematics and computer science, in particular professors and students working on theory and applications of intelligent systems for real-world applications.

Advances in Civil Engineering and Building Materials IV - Shuenn-Yih Chang 2015-05-06
Covering a wide range of topics, *Advances in Civil Engineering and Building Materials IV* presents the latest developments in:- Structural Engineering- Road & Bridge Engineering- Geotechnical Engineering- Architecture & Urban Planning- Transportation Engineering- Hydraulic Engineering- Engineering Management- Computational Mechanics- Constru

Harmonics in Offshore Wind Power Plants - Jakob Bærholm Glasdam 2015-10-26
This book reports on cutting-edge findings regarding harmonic stability assessment for offshore wind power plants (OWPPs). It presents a timely investigation of the harmonic stability interaction between OWPPs on the one hand, and associated control systems in the wind turbines and other power electronic devices in the transmission system on the other. The book particularly focuses on voltage-sourced converter high-voltage direct current (VSC-HVDC) and static compensator (STATCOM) systems. From a practical perspective, the book reports on appropriate models for power electronic devices. It describes how the frequency domain evaluation approach can be assessed by comparing results obtained with the Nyquist stability criterion against the more detailed electromagnetic transient based model realized in the PSCAD/EMTDC simulation program. The book also provides a concise yet complete overview of large OWPPs that incorporate power electronic devices on a broad scale, and highlights selected challenges and opportunities in the context of real-world applications.

Advanced Solutions in Power Systems - Mircea Eremia 2016-08-31
Provides insight on both classical means and new trends in the application of power electronic and artificial intelligence techniques in power system operation and control This book presents advanced solutions for power system controllability improvement, transmission capability enhancement and operation planning. The book is organized into three parts. The first part describes the CSC-HVDC and VSC-HVDC technologies, the second part presents the FACTS devices, and the third part refers to the artificial intelligence techniques. All technologies and tools approached in this book are essential for power system development to comply with the smart grid requirements. Discusses detailed operating principles and diagrams, theory of modeling, control strategies and physical installations around the world of HVDC and FACTS systems Covers a wide range of Artificial Intelligence techniques that are successfully applied for many power system problems, from planning and monitoring to operation and control Each chapter is carefully edited, with drawings and illustrations that helps the reader to easily understand the principles of operation or application *Advanced Solutions in Power Systems: HVDC, FACTS, and Artificial Intelligence* is written for graduate students, researchers in transmission and distribution networks, and power system operation. This book also serves as a reference for professional software developers and practicing engineers.

Distribution System Modeling and Analysis with MATLAB (R) and WindMil (R) - WILLIAM H.. KERESTES KERSTING (ROBERT.) 2022-08-08

This fifth edition of the book includes new sections on electric vehicle loads and the impact they have on voltage drop and transformers in distribution systems. A new and improved tape-shield cable model has been developed to produce more accurate impedance modeling of underground cables.

Design of Unmanned Aerial Systems - Mohammad H. Sadraey 2020-04-13
Provides a comprehensive introduction to the design and analysis of unmanned aircraft systems with a systems perspective Written for students and engineers who are new to the field of unmanned aerial vehicle design, this book teaches the many UAV design techniques being used today and demonstrates how to apply aeronautical science concepts to their design. *Design of Unmanned Aerial Systems* covers the design of UAVs in three sections—vehicle design, autopilot design, and ground systems design—in a way that allows readers to fully comprehend the science behind the subject so that they can then demonstrate creativity in the application of these concepts on their own. It teaches students and engineers all about: UAV classifications, design groups, design requirements, mission planning, conceptual design, detail design, and design procedures. It provides them with in-depth knowledge of ground stations, power systems, propulsion systems, automatic flight control systems, guidance systems, navigation systems, and launch and recovery systems. Students will also learn about payloads, manufacturing considerations, design challenges, flight software, microcontroller, and design examples. In addition, the book places major emphasis on the automatic flight control systems and autopilots. Provides design steps and procedures for each major component Presents several fully solved, step-by-step examples at component level Includes numerous UAV figures/images to emphasize the application of the concepts Describes real stories that stress the significance of safety in UAV design Offers various UAV configurations, geometries, and weight data to demonstrate the real-world applications and examples Covers a variety of design techniques/processes such that the designer has freedom and flexibility to satisfy the design requirements in several ways Features many end-of-chapter problems for readers to practice *Design of Unmanned Aerial Systems* is an excellent text for courses in the design of unmanned aerial vehicles at both the upper division undergraduate and beginning graduate levels.

VLSI Design: Circuits, Systems and Applications - Jie Li 2018-01-02
This book gathers a collection of papers by international experts presented at the International Conference on NextGen Electronic Technologies (ICNETS2-2017), which cover key developments in the field of electronics and communication engineering. ICNETS2 encompassed six symposia covering all aspects of the electronics and communications domains, including relevant nano/micro materials and devices. This book showcases the latest research in very-large-scale integration (VLSI) Design: Circuits, Systems and Applications, making it a valuable resource for all researchers, professionals, and students working in the core areas of electronics and their applications, especially in digital and analog VLSI circuits and systems. **Simulation of Dynamic Systems with MATLAB® and Simulink®** - Harold Klee 2018-02-02

Continuous-system simulation is an increasingly important tool for optimizing the performance of real-world systems. The book presents an integrated treatment of continuous simulation with all the background and essential prerequisites in one setting. It features updated chapters and two new sections on Black Swan and the Stochastic Information Packet (SIP) and Stochastic Library Units with Relationships Preserved (SLURP) Standard. The new edition includes basic concepts, mathematical tools, and the common principles of various simulation models for different phenomena, as well as an abundance of case studies, real-world examples, homework problems, and equations to develop a practical understanding of concepts.

Bridge Maintenance, Safety, Management and Life-Cycle Optimization - Dan Frangopol 2010-07-07
Bridge Maintenance, Safety, Management and Life-Cycle Optimization contains the lectures and papers presented at IABMAS 2010, the Fifth International Conference of the International Association for Bridge Maintenance and Safety (IABMAS), held in Philadelphia, Pennsylvania, USA from July 11 through 15, 2010. All major aspects of bridge maintenance, s

Mathematical Modeling in Systems Biology - Brian P. Ingalls 2013-07-05
An introduction to the mathematical concepts and techniques needed for the construction and analysis of

models in molecular systems biology. Systems techniques are integral to current research in molecular cell biology, and system-level investigations are often accompanied by mathematical models. These models serve as working hypotheses: they help us to understand and predict the behavior of complex systems. This book offers an introduction to mathematical concepts and techniques needed for the construction and interpretation of models in molecular systems biology. It is accessible to upper-level undergraduate or graduate students in life science or engineering who have some familiarity with calculus, and will be a useful reference for researchers at all levels. The first four chapters cover the basics of mathematical modeling in molecular systems biology. The last four chapters address specific biological domains, treating modeling of metabolic networks, of signal transduction pathways, of gene regulatory networks, and of electrophysiology and neuronal action potentials. Chapters 3-8 end with optional sections that address more specialized modeling topics. Exercises, solvable with pen-and-paper calculations, appear throughout the text to encourage interaction with the mathematical techniques. More involved end-of-chapter problem sets require computational software. Appendixes provide a review of basic concepts of molecular biology, additional mathematical background material, and tutorials for two computational software packages (XPPAUT and MATLAB) that can be used for model simulation and analysis.

MATLAB - Vasilios Katsikis 2012-09-26

This excellent book represents the second part of three-volumes regarding MATLAB-based applications in almost every branch of science. The present textbook contains a collection of 13 exceptional articles. In particular, the book consists of three sections, the first one is devoted to electronic engineering and computer science, the second is devoted to MATLAB/SIMULINK as a tool for engineering applications, the third one is about Telecommunication and communication systems and the last one discusses MATLAB toolboxes.

Introduction to Simulink with Engineering Applications - Steven T. Karris 2006

This text is an introduction to Simulink, a companion application to MATLAB. It is written for students at the undergraduate and graduate programs, as well as for the working professional. Although some previous knowledge of MATLAB would be helpful, it is not absolutely necessary; Appendix A of this text is an Introduction to MATLAB to enable the reader to begin learning both MATLAB and Simulink to perform graphical computations and programming. Chapters 2 through 18 describe the blocks of all Simulink libraries. Their application is illustrated with practical examples through Simulink models, some of which are supplemented with MATLAB functions, commands, and statements. Chapters 1 and 19 contain several Simulink models to illustrate various applied math and engineering applications. Appendix B is an introduction to difference equations as they apply to discrete-time systems, and Appendix C introduces the reader to random generation procedures. This text supplements our Numerical Analysis with MATLAB and Spreadsheet Applications, ISBN 0-9709511-1-6. It is self-contained; the blocks of each library are described in an orderly fashion that is consistent with Simulink's documentation. This arrangement provides insight into how a model is used and how its parts interact with each another. Like MATLAB, Simulink can be used with both linear and nonlinear systems, which can be modeled in continuous time, sample time, or a hybrid of these. Examples are provided in this text. Most of the examples presented in this book can be implemented with the Student Versions of MATLAB and Simulink. A few may require the full versions of these outstanding packages, and can be skipped. Some add-ons, known as Toolboxes and Blocksets can be obtained from The MathWorks, Inc., 3 Apple Hill Drive, Natick, MA 01760-2098, USA, www.mathworks.com.

International Conference on Advancements of Medicine and Health Care through Technology; 23 - 26 September 2009 Cluj-Napoca, Romania - Simona Vlad 2010-02-01

Projections for advances in medical and biological technology will transform medical care and treatment. This in great part is due to the result of the interaction and collaboration between medical sciences and engineering. These advances will result in substantial progress in health care and in the quality of life of the population. Frequently however, the implications of technologies in terms of increasing recurrent costs, additional required support services, change in medical practice and training needs are underestimated. As a result, the widespread irrational use of technologies leads to a wastage of scarce resources and weakens health systems performance. To avoid such problems, a systematic and effective Health Technology System

must be developed and introduced, requiring the support and commitment of decision makers of all levels of the health system. The MediTech2009 conference aims to provide a special opportunity for the Romanian professionals involved in basic - search, R&D, industry and medical applications to exchange their know-how and build up collaboration in one of the most human field of science and techniques. The conference is intended to be an international forum for researchers and practitioners interested in the advance in, and applications of biomedical engineering to exchange the latest research results and ideas in the areas covered by the topics (and not only!). We believe the reader will find the proceedings an impressive document of progress to date in this rapidly changing field.

Renewable Energy and the Environment - Md. Rabiul Islam 2017-12-16

This book discusses a number of important topical technical and non-technical issues related to the global energy, environment and socio-economic developments for professionals and students directly and indirectly involved in the relevant fields. It shows how renewable energy offers solutions to mitigate energy demand and helps achieve a clean environment, and also addresses the lack of a clear vision in the development of technology and a policy to reach the mandatory global renewable energy targets to reduce greenhouse gas emissions and stimulate socio-economic development. The book is structured in such a way that it provides a consistent compilation of fundamental theories, a compendium of current research and development activities as well as new directions to overcome critical limitations; future technologies for power grids and their control, stability and reliability are also presented.

Proceedings of the 2011 International Conference on Informatics, Cybernetics, and Computer Engineering (ICCE2011) November 19-20, 2011, Melbourne, Australia - Liangzhong Jiang 2011-11-24

The volume includes a set of selected papers extended and revised from the International Conference on Informatics, Cybernetics, and Computer Engineering. Intelligent control is a class of control techniques, that use various AI computing approaches like neural networks, Bayesian probability, fuzzy logic, machine learning, evolutionary computation and genetic algorithms. Intelligent control can be divided into the following major sub-domains: Neural network control Bayesian control Fuzzy (logic) control Neuro-fuzzy control Expert Systems Genetic control Intelligent agents (Cognitive/Conscious control) New control techniques are created continuously as new models of intelligent behavior are created and computational methods developed to support them. Networks may be classified according to a wide variety of characteristics such as medium used to transport the data, communications protocol used, scale, topology, organizational scope, etc. ICCE 2011 Volume 1 is to provide a forum for researchers, educators, engineers, and government officials involved in the general areas of Intelligent Control and Network Communication to disseminate their latest research results and exchange views on the future research directions of these fields. 90 high-quality papers are included in the volume. Each paper has been peer-reviewed by at least 2 program committee members and selected by the volume editor. Special thanks to editors, staff of association and every participants of the conference. It's you make the conference a success. We look forward to meeting you next year.

Progress in Advanced Computing and Intelligent Engineering - Chhabi Rani Panigrahi 2020-10-29

This book features high-quality research papers presented at the 4th International Conference on Advanced Computing and Intelligent Engineering (ICACIE 2019), Department of Computer Science, Rama Devi Women's University, Bhubaneswar, Odisha, India. It includes sections describing technical advances and contemporary research in the fields of advanced computing and intelligent engineering, which are based on the presented articles. Intended for postgraduate students and researchers working in the discipline of computer science and engineering, the book also appeals to researchers in the domain of electronics as it covers hardware technologies and future communication technologies.

Computational Kinematics - Saïd Zeghloul 2017-07-03

This is the proceedings of IFToMM CK 2017, the 7th International Workshop on Computational Kinematics that was held in Futuroscope-Poitiers, France in May 2017. Topics treated include: kinematic design and synthesis, computational geometry in kinematics, motion analysis and synthesis, theory of mechanisms, mechanism design, kinematical analysis of serial and parallel robots, kinematical issues in biomechanics, molecular kinematics, kinematical motion analysis and simulation, geometric constraint solvers, deployable

and tensegrity structures, robot motion planning, applications of computational kinematics, education in computational kinematics, and theoretical foundations of kinematics. Kinematics is an exciting area of computational mechanics and plays a central role in a great variety of fields and industrial applications nowadays. Apart from research in pure kinematics, the field deals with problems of practical relevance that need to be solved in an interdisciplinary manner in order for new technologies to develop. The results presented in this book should be of interest for practicing and research engineers as well as Ph.D. students from the fields of mechanical and electrical engineering, computer science, and computer graphics.

Cable-Driven Parallel Robots - Clément Gosselin 2017-07-05

This book presents proceedings of the third international conference in this field, continuing the success of the previous events. The peer-reviewed and the selected papers are arranged to make the proposed book the most recent and complete overview on the State-of-the-Art in Cable-Driven Parallel Robots! The conference took place 2017 in Quebec, QC, Canada,

Reliability and Safety of Cable-Supported Bridges - Naiwei Lu 2021-06-17

Bridge design and construction technologies have experienced remarkable developments in recent decades, and numerous long-span bridges have been built or are under construction all over the world. Cable-supported bridges, including cable-stayed bridges and suspension bridges, are the main type of these long-span bridges, and are widely used in highways crossing gorges, rivers, and gulfs, due to their superior structural mechanical properties and beautiful appearance. However, cable-supported bridges suffer from harsh environmental effects and complex loading conditions, such as heavier traffic loads, strong winds, corrosion effects, and other natural disasters. Therefore, the lifetime safety evaluation of these long-span bridges considering the rigorous service environments is an essential task. Features: Presents a comprehensive explanation of system reliability evaluation for all aspects of cable-supported bridges. Includes a comprehensive presentation of the application of system reliability theory in bridge design, safety control, and operational management. Addresses fatigue reliability, dynamic reliability and seismic reliability assessment of bridges. Presents a complete investigation and case study in each chapter, allowing readers to understand the applicability for real-world scenarios. Reliability and Safety of Cable-Supported Bridges provides a comprehensive application and guidelines for system reliability techniques in cable-supported bridges. Serving as a practical educational resource for both undergraduate and graduate level students, practicing engineers, and researchers, it also intends to provide an intuitive appreciation for probability theory, statistical methods, and reliability analysis methods.

AC-DC Power System Analysis - J. Arrillaga 1998

A graduate-level textbook that can also serve as a reference for engineers and researchers working on problems in modern power systems. Emphasizes incorporating HVDC converters and systems into the analysis of power systems, but describes algorithms that can be extended to other industrial components such as drives and smelters and to the flexible AC transmission systems technology. Considers only system studies, influenced by steady-state or transient converter control; and not fast transients such as lightning. Annotation copyrighted by Book News, Inc., Portland, OR

ROMANSY 22 - Robot Design, Dynamics and Control - Vigen Arakelian 2018-05-19

This proceedings volume contains papers that have been selected after review for oral presentation at ROMANSY 2018, the 22nd CISM-IFTToMM Symposium on Theory and Practice of Robots and Manipulators. These papers cover advances on several aspects of the wide field of Robotics as concerning Theory and Practice of Robots and Manipulators. ROMANSY 2018 is the 22nd event in a series that started in 1973 as one of the first conference activities in the world on Robotics. The first event was held at CISM (International Centre for Mechanical Science) in Udine, Italy on 5-8 September 1973. It was also the first topic conference of IFTToMM (International Federation for the Promotion of Mechanism and Machine Science) and it was directed not only to the IFTToMM community.

PROCEEDINGS OF THE 16TH ANNUAL CONFERENCE OF CHINA ELECTROTECHNICAL SOCIETY - Jinghan He

This book gathers outstanding papers presented at the 16th Annual Conference of China Electrotechnical Society, organized by China Electrotechnical Society (CES), held in Beijing, China, from September 24 to 26, 2021. It covers topics such as electrical technology, power systems, electromagnetic emission

technology, and electrical equipment. It introduces the innovative solutions that combine ideas from multiple disciplines. The book is very much helpful and useful for the researchers, engineers, practitioners, research students, and interested readers.

Implantable Neural Protheses 1 - David Zhou 2009-06-10

Significant progress has been made in the development of neural prostheses to restore human functions and improve the quality of human life. Biomedical engineers and neuroscientists around the world are working to improve design and performance of existing devices and to develop novel devices for artificial vision, artificial limbs, and brain-machine interfaces. This book, *Implantable Neural Protheses 1: Devices and Applications*, is part one of a two-book series and describes state-of-the-art advances in techniques associated with implantable neural prosthetic devices and their applications. Devices covered include sensory prosthetic devices, such as visual implants, cochlear implants, auditory midbrain implants, and spinal cord stimulators. Motor prosthetic devices, such as deep brain stimulators, Bion microstimulators, the brain control and sensing interface, and cardiac electro-stimulation devices are also included. Progress in magnetic stimulation that may offer a non-invasive approach to prosthetic devices is introduced. Regulatory approval of implantable medical devices in the United States and Europe is also discussed.

Cable-Driven Parallel Robots - Tobias Bruckmann 2012-09-09

Gathering presentations to the First International Conference on Cable-Driven Parallel Robots, this book covers classification and definition, kinematics, workspace analysis, cable modeling, hardware/prototype development, control and calibration and more.

Tidal Circulation and Flushing Characteristics of the Nauset Marsh System - David G. Aubrey 1997
Various interested bodies (i.e., National Park Service, Cape Cod Commission, and the Town of Orleans) charged with management of the Nauset Marsh system on Cape Cod, Massachusetts, commissioned a study of the estuarine circulation within the Nauset system. Recent significant morphological changes in the system have changed mixing processes and residence times for the embayment. This study specifically addressed the differing water circulation and residence times arising from a migrating single inlet (dominant condition) and dual inlet (1992-1996) situations. These residence times are to be used by the Cape Cod Commission to identify nitrogen-sensitive sub-embayments based on various assumptions of build-out and nutrient loading. The Nauset Marsh system has experienced considerable development in recent years; proper management of this resource area requires knowledge of the consequences of such development. This study provides a defensible basis for evaluating nutrient loading and potential eutrophication arising from development in the watershed around Nauset embayment. However, since morphological changes occur on a rapid basis in this area, the issue of residence time should be re-examined periodically. For instance, rapid onshore migration of the southern barrier beach is threatening closure of the south channel, a condition which could adversely affect water quality in Nauset Harbor in the near future. A process should be established to examine the sensitivity of residence times for rapidly changing morphology.

Robotics and Mechatronics - Chin-Hsing Kuo 2019-09-26

This book gathers the latest advances, innovations and applications in the field of robotics and mechatronics, as presented by leading international researchers and engineers at the 6th IFTToMM International Symposium on Robotics and Mechatronics (ISRM), held in Taipei, Taiwan, on October 28-30, 2019. It covers highly diverse topics, including mechanism synthesis, analysis, and design, kinematics and dynamics of multibody systems, modelling and simulation, sensors and actuators, novel robotic systems, industrial- and service-related robotics and mechatronics, medical robotics, and historical developments in robotics and mechatronics. The contributions, which were selected through a rigorous international peer-review process, share exciting ideas that spur novel research directions and foster new, multidisciplinary collaborations.

Earthquake Engineering Frontiers in the New Millennium - Y.X. Hu 2017-11-22

This volume comprises papers presented at the China-US Millennium Symposium on Earthquake Engineering, held in Beijing, China, on November 8-11, 2000. This conference provides a forum for advancing the field of earthquake engineering through multi-lateral cooperation.

Multi-terminal Direct-Current Grids - Nilanjan Chaudhuri 2014-09-09

A generic DC grid model that is compatible with the standard AC system stability model is presented and used to analyse the interaction between the DC grid and the host AC systems. A multi-terminal DC (MTDC) grid interconnecting multiple AC systems and offshore energy sources (e.g. wind farms) across the nations and continents would allow effective sharing of intermittent renewable resources and open market operation for secure and cost-effective supply of electricity. However, such DC grids are unprecedented with no operational experience. Despite lots of discussions and specific visions for setting up such MTDC grids particularly in Europe, none has yet been realized in practice due to two major technical barriers: Lack of proper understanding about the interaction between a MTDC grid and the surrounding AC systems. Commercial unavailability of efficient DC side fault current interruption technology for conventional voltage sourced converter systems This book addresses the first issue in details by presenting a comprehensive modeling, analysis and control design framework. Possible methodologies for autonomous power sharing and exchange of frequency support across a MTDC grid and their impact on overall stability is covered. An overview of the state-of-the-art, challenges and on-going research and development initiatives for DC side fault current interruption is also presented.

Advances in Structural Vibration - Subashisa Dutta 2020-10-11

This book consists of selected and peer-reviewed papers presented at the 13th International Conference on Vibration Problems (ICOVP 2017). The topics covered in this book include different structural vibration problems such as dynamics and stability under normal and seismic loading, and wave propagation. The book also discusses different materials such as composite, piezoelectric, and functionally graded materials for improving the stiffness and damping properties of structures. The contents of this book can be useful for beginners, researchers and professionals interested in structural vibration and other allied fields.

Hydraulic and Civil Engineering Technology VI - M. Yang 2021-11-09

New technologies, such as improved testing and physical modeling methods, together with numerical studies and other novel techniques, have led to many developments in the fields of hydraulic and civil engineering in recent years. This book presents proceedings from HCET 2021, the 6th International Technical Conference on Frontiers of Hydraulic and Civil Engineering Technology, held in Sanya, China, on 28 and 29 August 2021. The conference highlighted the latest advances, innovations and applications in the fields of hydraulic and civil engineering, and served as a platform to promote and celebrate interdisciplinary study. The book contains 89 papers, selected from 178 contributions and divided into 4 sections: Modern Civil Engineering; Water and Hydraulic Engineering; Environment Engineering and Sciences; and Transdisciplinary Engineering and Technology. Topics covered involve both theoretical and practical knowledge and understanding, primarily in the areas of hydraulics and water resource engineering, civil engineering, environmental engineering and sciences, transportation engineering, coastal and ocean engineering and transdisciplinary engineering and technology. The book, which presents a

wealth of exciting ideas that will open novel research directions and foster multidisciplinary collaboration among specialists in various fields, will be of interest to all academics, researchers, practitioners and policymakers seeking to understand and tackle civil and hydraulic engineering challenges by adopting appropriate, sustainable, solutions.

Modeling and Simulation of Systems Using MATLAB and Simulink - Devendra K. Chaturvedi 2017-12-19

Not only do modeling and simulation help provide a better understanding of how real-world systems function, they also enable us to predict system behavior before a system is actually built and analyze systems accurately under varying operating conditions. Modeling and Simulation of Systems Using MATLAB® and Simulink® provides comprehensive, state-of-the-art coverage of all the important aspects of modeling and simulating both physical and conceptual systems. Various real-life examples show how simulation plays a key role in understanding real-world systems. The author also explains how to effectively use MATLAB and Simulink software to successfully apply the modeling and simulation techniques presented. After introducing the underlying philosophy of systems, the book offers step-by-step procedures for modeling different types of systems using modeling techniques, such as the graph-theoretic approach, interpretive structural modeling, and system dynamics modeling. It then explores how simulation evolved from pre-computer days into the current science of today. The text also presents modern soft computing techniques, including artificial neural networks, fuzzy systems, and genetic algorithms, for modeling and simulating complex and nonlinear systems. The final chapter addresses discrete systems modeling. Preparing both undergraduate and graduate students for advanced modeling and simulation courses, this text helps them carry out effective simulation studies. In addition, graduate students should be able to comprehend and conduct simulation research after completing this book.

A Comprehensive Physically Based Approach to Modeling in Bioengineering and Life Sciences - Riccardo Sacco 2019-07-18

A Comprehensive Physically Based Approach to Modeling in Bioengineering and Life Sciences provides a systematic methodology to the formulation of problems in biomedical engineering and the life sciences through the adoption of mathematical models based on physical principles, such as the conservation of mass, electric charge, momentum, and energy. It then teaches how to translate the mathematical formulation into a numerical algorithm that is implementable on a computer. The book employs computational models as synthesized tools for the investigation, quantification, verification, and comparison of different conjectures or scenarios of the behavior of a given compartment of the human body under physiological and pathological conditions. Presents theoretical (modeling), biological (experimental), and computational (simulation) perspectives Features examples, exercises, and MATLAB codes for further reader involvement Covers basic and advanced functional and computational techniques throughout the book