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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. The Concrete Solutions series of International Conferences on Concrete Repair began in 2003, with a conference held in St. Malo, France in association with INSA Rennes, followed by the second conference in 2006 (with INSA again, at St. Malo, France), and the third conference in 2009 (in Padova and Venice, in association with the University of Pado This book gathers papers presented at the International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing (JCM 2016), held on 14-16 September, 2016, in Catania, Italy. It reports on cutting-edge topics in product design and manufacturing, such as industrial methods for integrated product and process design; innovative

design; and computer-aided design. Further topics covered include virtual simulation and reverse engineering; additive manufacturing; product manufacturing; engineering methods in medicine and education; representation techniques; and nautical, aeronautics and aerospace design and modeling. The book is divided into eight main sections, reflecting the focus and primary themes of the conference. The contributions presented here will not only provide researchers, engineers and experts in a range of industrial engineering subfields with extensive information to support their daily work; they are also intended to stimulate new research directions, advanced applications of the methods discussed, and future interdisciplinary collaborations. The three volume set LNAI 4251, LNAI 4252, and LNAI 4253 constitutes the refereed proceedings of the 10th International Conference on Knowledge-Based Intelligent Information and Engineering Systems, KES 2006, held in Bournemouth, UK in October 2006. The 480 revised papers presented were carefully reviewed and selected from about 1400 submissions. The papers present a wealth of original research results from the field of intelligent information processing. Differential equations play a vital role in the modeling of physical and engineering problems, such as those in solid and fluid mechanics, viscoelasticity, biology, physics, and many other areas. In general, the parameters, variables and initial conditions within a model are considered as being defined exactly. In reality there may be only vague, imprecise or incomplete information about the variables and parameters available. This can result from errors in measurement, observation, or experimental data; application of different operating conditions; or maintenance induced errors. To overcome uncertainties or lack of precision, one can use a fuzzy environment in parameters, variables and initial conditions in place of exact (fixed) ones, by turning general differential equations into Fuzzy Differential Equations ("FDEs"). In real applications it can be complicated to obtain exact solution of fuzzy differential equations due to complexities in fuzzy arithmetic, creating the need for use of reliable and efficient numerical techniques in the solution of fuzzy differential equations. These include fuzzy ordinary and partial, fuzzy linear and nonlinear, and fuzzy arbitrary order differential equations. This unique work?provides a new direction for the reader in the use of basic concepts of fuzzy differential equations, solutions and its applications. It can serve as an essential reference work for students, scholars, practitioners, researchers and academicians in engineering and science who need to model uncertain physical problems. The Internet of Things describes a world in which smart technologies enable objects with a network to communicate with each other and interface with humans effortlessly. This connected world of convenience and technology does not come without its drawbacks, as interconnectivity implies hackability. Security Solutions for Hyperconnectivity and the Internet of Things offers insights from cutting-edge research about the strategies and techniques that can be implemented to protect against cyber-attacks. Calling for revolutionary protection strategies to reassess security, this book is an essential resource for programmers, engineers, business professionals, researchers, and advanced students in relevant fields. This proceedings book gathers selected papers presented at the 16th Scientific and Technical Conference "Transport Systems. Theory and Practice", organised by the Department of Transport Systems and Traffic Engineering at the Faculty of Transport of the Silesian University of Technology. The conference was held on 16-18 September 2019 in Katowice (Poland). More details at www.TSTP.polsl.pl Which of the multi-criteria methods should be applied to support decision-making processes while tackling problems of sustainable transport solutions? How can individual issues encountered when implementing smart solutions in transport systems be solved? What advanced tools can be used to assess the current condition of selected elements of transport systems (both in terms of transport infrastructure and traffic streams)? What data concerning transport processes can be collected automatically and how can we use it? What is the right approach to the problem of the development of the spatial planning of transport systems? This book provides the answers to these and many other questions. It also includes a wealth of numerical analyses based on significant data sets, illustrating the close affiliation between smart transport systems and environment-friendly solutions. The book primarily addresses the needs of three target groups: •

Scientists and researchers (ITS field) • Those working for local authorities (responsible for the transport systems at the urban and regional levels) • Representatives of business (traffic strategy management) and industry (manufacturers of ITS components). Continuous improvements in technological applications have allowed more opportunities to develop systems with user-focused designs. This not only leads to higher success in day-to-day usage, but it increases the overall probability of technology adoption. Design Solutions for User-Centric Information Systems provides a comprehensive examination of the latest strategies and methods for creating technological systems with end users as the focal point of the design process. Highlighting innovative practices and applications across a variety of areas, such as cloud-based computing services, e-government adoption, and logistics evaluation, this book is an ideal reference source for computer engineers, practitioners, project managers, graduate students, and researchers interested in the enhancement of user-centric information system development. Fundamentals of Hydraulic Engineering Systems, Fourth Edition is a very useful reference for practicing engineers who want to review basic principles and their applications in hydraulic engineering systems. This fundamental treatment of engineering hydraulics balances theory with practical design solutions to common engineering problems. The author examines the most common topics in hydraulics, including hydrostatics, pipe flow, pipelines, pipe networks, pumps, open channel flow, hydraulic structures, water measurement devices, and hydraulic similitude and model studies. Chapters dedicated to groundwater, deterministic hydrology, and statistical hydrology make this text ideal for courses designed to cover hydraulics and hydrology in one semester. Held every four years, the International Congress on Fracture is the premier international forum for the exchange of ideas between scientists and engineers involved in producing and using materials resistant to fracture and fatigue. This major six-volume work which forms the proceedings of the Seventh International Congress on Fracture therefore provides the most comprehensive account available of the current status of research into fracture and fatigue, and the application of this knowledge to the design, fabrication and operation of materials and structures. As such, it will be an essential reference for materials scientists and mechanical, structural, aeronautical and design engineers with an interest in fracture and its prevention. This book deals with certain aspects of material science, particularly with the release of thermal energy associated with bond breaking. It clearly establishes the connection between heat transfer rates and product quality. The editors then sharply draw the thermal distinctions between the various categories of welding processes, and demonstrate how these distinctions are translated into simulation model uniqueness. The book discusses the incorporation of radiative heat transfer processes into the simulation model. The present short monograph concerns analytic and semi-analytic techniques for finding an approximate value of the limit load. The limit load is an essential input parameter of flaw assessment procedures. In most cases, finding the limit load involves some numerical calculations of different levels of complexity, including numerical minimization of functions of one or several arguments, the slip-line technique and the finite element method. This book shows in particular how to use singular behavior of the real velocity field in the vicinity of bi-material interfaces in kinematically admissible velocity fields to increase the accuracy of upper bound solutions. An approach to recalculate the limit load for a class of structures with defects with the use of its value for the corresponding structure with no defect is discussed. The upper bound technique is applied to evaluate the limit load of overmatched and undermatched welded joints with cracks subject to various loading conditions of practical importance in conjunction with the aforementioned special techniques. This book gathers an in-depth collection of 45 selected papers presented at the Global Conference on Global Warming 2014 in Beijing, China, covering a broad variety of topics from the main principles of thermodynamics and their role in design, analysis, and the improvements in performance of energy systems to the potential impact of global warming on human health and wellbeing. Given energy production's role in contributing to global warming and climate change, this work provides solutions to global warming from the point of view of energy. Incorporating multi-disciplinary expertise and approaches, it provides a platform for the analysis of new developments in the area of global warming and climate change, as well as potential energy solutions including renewable energy, energy efficiency, energy storage, hydrogen production, CO₂ capture and environmental impact assessment. The research and analysis presented herein will benefit international scientists, researchers, engineers, policymakers and all others with an interest in global warming and its potential solutions. Oxides: Advances

in Research and Application: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Oxides. The editors have built Oxides: Advances in Research and Application: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Oxides in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Oxides: Advances in Research and Application: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>. This book provides a systematic and unified approach to the analysis, identification and optimal control of continuous-time dynamical systems via orthogonal polynomials such as Legendre, Laguerre, Hermite, Tchebycheff, Jacobi, Gegenbauer, and via orthogonal functions such as sine-cosine, block-pulse, and Walsh. This is the first book devoted to the application of orthogonal polynomials in systems and control, establishing the superiority of orthogonal polynomials to other orthogonal functions. Contents: Orthogonal Functions in Systems and Control: A Historical Perspective Least Squares Approximation of Signals Signal Processing in Continuous Time Domain Analysis of Time-Delay Systems Identification of Lumped Parameter Systems Identification of Distributed Parameter Systems Identification of Linear Time-Varying and Nonlinear Distributed Parameter Systems Optimal Control of Linear Systems Readership: Applied mathematicians and control systems engineers. keywords: Analysis; System Identification; Optimal Control; Time-Delay Systems; Lumped Parameter Systems; Distributed Parameter Systems; Block-Pulse Functions; Fourier Series; Orthogonal Polynomials Algebraic equations / Analogue simulation/ Analytical methods in process control / Chemical reactor simulations / Digital simulation / Dynamic processes, modelling and simulation / Dynamic programming / Extension of the principles Numerical integration methods / Optimisation minimum values of functions / Pontryagin's maximum principle / Process control simulations / The simulation of distillation processes Successive improvement techniques. Networking capabilities have been significantly enhanced in recent years. With emerging advancements in technology, wireless communication has increased exponentially. Routing Protocols and Architectural Solutions for Optimal Wireless Networks and Security is a comprehensive resource on the latest technological advancements in designing secure wireless networks and secure transmission of data, voice and video over wireless networks and other innovations. Featuring comprehensive coverage across a range of relevant topics such as network planning, radio resource allocation, and broadband wireless networks, this publication is an ideal reference source for network designers, industries, researchers, educators, and governments who are involved in designing and implementing security and wireless networks and applications. The global environment has significantly changed due to a number of factors such as industrial pollution, expansion of agricultural land way beyond the fringe forest zones, destruction of virgin forests, loss of quality agricultural lands due to soil erosion, loss of global wildlife and biodiversity, climate change, global warming, devastating forest fires, floods, draughts, melting of glaciers to mention a few. Human or anthropogenic impacts are in turn devastating the planet with our attention being shifted only to the shining aspect of our civilizations. The most alarming fact about this hidden factor is that they are all directly or indirectly impacted by human activities in some way or other. The present work, Environment at Crossroads deals with various environmental problems like climate change, global warming, food security, bioremediation of waste, oil spills, and problems of heavy metal toxicity, control strategies like use of gene therapy, conservation of mangroves, revival of river Vishwamitri and role of plant and animals in biodiversity conservation is discussed. This book provides high-quality research results and proposes future priorities for more sustainable development and energy security. It covers a broad range of topics on atmospheric changes, climate change impacts, climate change modeling and simulations, energy and environment policies, energy resources and conversion technologies, renewables, emission reduction and abatement, waste management, ecosystems and biodiversity, and sustainable development. Gathering selected papers from the 7th Global Conference on Global Warming (GCGW2018), held in Izmir, Turkey on June 24-28, 2018, it: Offers comprehensive coverage of the development of systems taking into account climate change,

renewables, waste management, chemical aspects, energy and environmental issues, along with recent developments and cutting-edge information Highlights recent advances in the area of energy and environment, and the debate on and shaping of future directions and priorities for a better environment, sustainable development and energy security Provides a number of practical applications and case studies Is written in an easy-to-follow style, moving from the basics to advanced systems. Given its scope, the book offers a valuable resource for readers in academia and industry alike, and can be used at the graduate level or as a reference text for professors, researchers and engineers. Provides communication technologies, intelligent technologies, and quality educational pedagogy for advancing distance education for both teaching and learning. Proceedings of a conference dealing with ocean engineering in Arctic conditions, including offshore structures, underwater pipelines and construction in permafrost. The authors (both teach at the U. of Pittsburgh) have written a textbook of problems (presented with basic solution principles and methods, and their solution) that will be useful for undergraduate engineering students as well as practicing engineers. The problems are in three groups: complex variab This monograph covers different aspects related to utilization of alternative fuels in internal combustion (IC) engines with a focus on biodiesel, dimethyl ether, alcohols, biogas, etc. The focal point of this book is to present engine combustion, performance and emission characteristics of IC engines fueled by these alternative fuels. A section of this book also covers the potential strategies of utilization of these alternative fuels in an energy efficient manner to reduce the harmful pollutants emitted from IC engines. It presents the comparative analysis of different alternative fuels in a variety of engines to show the appropriate alternative fuel for specific types of engines. This book will prove useful for both researchers as well as energy experts and policy makers. Since its origination in the mid-twentieth century, the area of Artificial Intelligence (AI) has undergone a number of developments. While the early interest in AI was mainly triggered by the desire to develop artifacts that show the same intelligent behavior as humans, nowadays scientists have realized that research in AI involves a multitude of separate challenges, besides the traditional goal to replicate human intelligence. In particular, recent history has pointed out that a variety of 'intelligent' computational techniques, part of which are inspired by human intelligence, may be successfully applied to solve all kinds of practical problems. This sub-area of AI, which has its main emphasis on applications of intelligent systems to solve real-life problems, is currently known under the term Applied Intelligence. The objective of the International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems (IEA/AIE) is to promote and disseminate recent research developments in Applied Intelligence. The current book contains 30 chapters authored by participants of the 26th edition of IEA/AIE, which was held in Amsterdam, the Netherlands. The material of each chapter is self-contained and was reviewed by at least two anonymous referees, to assure a high quality. Readers can select any individual chapter based on their research interests without the need of reading other chapters. We are confident that this book provides useful reference values to researchers and students in the field of Applied Intelligence, enabling them to find opportunities and recognize challenges in the field. Developed from celebrated Harvard statistics lectures, Introduction to Probability provides essential language and tools for understanding statistics, randomness, and uncertainty. The book explores a wide variety of applications and examples, ranging from coincidences and paradoxes to Google PageRank and Markov chain Monte Carlo (MCMC). Additional application areas explored include genetics, medicine, computer science, and information theory. The authors present the material in an accessible style and motivate concepts using real-world examples. Throughout, they use stories to uncover connections between the fundamental distributions in statistics and conditioning to reduce complicated problems to manageable pieces. The book includes many intuitive explanations, diagrams, and practice problems. Each chapter ends with a section showing how to perform relevant simulations and calculations in R, a free statistical software environment. The second edition adds many new examples, exercises, and explanations, to deepen understanding of the ideas, clarify subtle concepts, and respond to feedback from many students and readers. New supplementary online resources have been developed, including animations and interactive visualizations, and the book has been updated to dovetail with these resources. Supplementary material is available on Joseph Blitzstein's website www.stat110.net. The supplements include: Solutions to selected exercises Additional practice problems Handouts including review material and sample exams Animations and interactive visualizations created in

connection with the edX online version of Stat 110. Links to lecture videos available on iTunes U and YouTube There is also a complete instructor's solutions manual available to instructors who require the book for a course. These proceedings gather contributions presented at the 5th International Conference on Applied Operational Research (ICAOR 2013) in Lisbon, Portugal, July 29-31, 2013, published in the series Lecture Notes in Management Science (LNMS). The conference covers all aspects of Operational Research and Management Science (OR/MS) with a particular emphasis on applications. This book has been edited by Martine Poux, Patrick Cognet and Christophe Gourdon from the Laboratoire de Génie Chimique/ENSIACET, Toulouse. It presents an ensemble of methods and new chemical engineering routes that can be integrated in industrial processing for safer, more flexible, economical, and ecological production processes in the context of green and sustainable engineering. Different methods for improving process performance are dealt with, including: • Eco-design and process optimization by systemic approaches • New technologies for intensification • Radical change of industrial processes via the use of new media and new routes for chemical synthesis These various methods are fully illustrated with examples and industrial cases, making this book application oriented. Setting out to bridge the gap between the theory of mathematical programming and the varied, real-world practices of industrial engineers, this work introduces developments in linear, integer, multiobjective, stochastic, network and dynamic programming. It details many relevant industrial-engineering applications.;College or university bookstores may order five or more copies at a special student price, available upon request from Marcel Dekker, Inc. "This book seeks to advance cutting-edge research in the field, with a special focus on cross-disciplinary work involving recent advances in IT, enabling structural-health experts to wield groundbreaking new models of artificial intelligence as a diagnostic tool capable of identifying future problems before they even appear"--Provided by publisher. Derived from the renowned multi-volume International Encyclopaedia of Laws, this convenient volume provides comprehensive analysis of the legislation and rules that determine civil procedure and practice in Singapore. Lawyers who handle transnational matters will appreciate the book's clear explanation of distinct terminology and application of rules. The structure follows the classical chapters of a handbook on civil procedure: beginning with the judicial organization of the courts, jurisdiction issues, a discussion of the various actions and claims, and then moving to a review of the proceedings as such. These general chapters are followed by a discussion of the incidents during proceedings, the legal aid and legal costs, and the regulation of evidence. There are chapters on seizure for security and enforcement of judgments, and a final section on alternative dispute resolution. Facts are presented in such a way that readers who are unfamiliar with specific terms and concepts in varying contexts will fully grasp their meaning and significance. Succinct, scholarly, and practical, this book will prove a valuable time-saving tool for business and legal professionals alike. Lawyers representing parties with interests in Singapore will welcome this very useful guide, and academics and researchers will appreciate its comparative value as a contribution to the study of civil procedure in the international context. While information technology continues to play a vital role in every aspect of our lives, there is a greater need for the security and protection of this information. Ensuring the trustworthiness and integrity is important in order for data to be used appropriately. Privacy Solutions and Security Frameworks in Information Protection explores the areas of concern in guaranteeing the security and privacy of data and related technologies. This reference source includes a range of topics in information security and privacy provided for a diverse readership ranging from academic and professional researchers to industry practitioners. PERIODIC STRUCTURES Mode-Matching Approach and Applications in Electromagnetic Engineering In Periodic Structures, Hwang gives readers a comprehensive understanding of the underlying physics in meta-materials made of periodic structures, providing a rigorous and firm mathematical framework for analyzing their electromagnetic properties. The book presents scattering and guiding characteristics of periodic structures using the mode-matching approach and their applications in electromagnetic engineering. Provides an analytic approach to describing the wave propagation phenomena in photonic crystals and related periodic structures Covers guided and leaky mode propagation in periodic surroundings, from fundamentals to practical device applications Demonstrates formulation of the periodic system and applications to practical electromagnetic / optical devices, even further to artificial dielectrics Introduces the evolution of periodic structures and their applications in microwave, millimeter

wave and THz Written by a high-impact author in electromagnetics and optics Contains mathematical derivations which can be applied directly to MATLAB® programs Solution Manual and MATLAB® computer codes available on Wiley Companion Website The book is primarily intended for graduate students in electronic engineering, optics, physics, and applied physics, or researchers working with periodic structures. Advanced undergraduates in EE, optics, applied physics applied math, and materials science who are interested in the underlying physics of meta-materials, will also be interested in this text. Issues in Engineering Research and Application: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Engineering Research and Application. The editors have built Issues in Engineering Research and Application: 2011 Edition on the vast information

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