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Closing date: February 2017
R. Bansal, University of Praetoria, Pretoria (Ed)

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N. Enteria, Building Research Institute, Tsukuba, Japan; H. Awbi, University of Reading, Reading, UK; H. Yoshino, Tohoku University, Sendai, Japan (Eds)

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J. Liu, Nanyang Technological University
Division of Physics & Applied Physics, Singapore

Graphene-based Composites for Electrochemical Energy Storage

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R. P. Y. Mehairjan, Rotterdam

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Gas Allocation Optimization Methods in Artificial Gas Lift

This Brief offers a comprehensive study covering the different aspects of gas allocation optimization in petroleum engineering. It contains different methods of defining the fitness function, dealing with constraints and selecting the optimizer; in each chapter a detailed literature review is included which covers older and important studies as well as recent publications. This book will be of use for production engineers and students interested in gas lift optimization. 

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P. Morone, Unitelma Sapienza, Rome; F. Papendiek, Leibniz Centre for Agriculture, Müncheberg, Germany; V. E. Tartiu, University of Graz, Graz, Austria (Eds)

Food Waste Reduction and Valorisation

This book adds a new dimension to the sustainability assessment of food waste reduction and valorisation: policy analysis. Featuring a transdisciplinary analysis by key experts in the field, it identifies the drivers of change in food-waste reduction and valorisation technologies by looking, for example, at the regulatory framework and at policy actions undertaken by local and global actors. The book explores the development of regulations and policies for food-waste prevention, management, and valorisation at a global as well as European Union level. [...] 

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M. Schönenmann, Technische Universität Braunschweig, Braunschweig, Germany

Multiscale Simulation Approach for Battery Production Systems

Addressing the challenge of improving battery quality while reducing high costs and environmental impacts of the production, this book presents a multiscale simulation approach for battery production systems along with a software environment and an application procedure. Battery systems are among the most important technologies of the 21st century since they are enablers for the market success of electric vehicles and stationary energy storage solutions. However, the performance of batteries so far has limited possible applications. [...]
J. Zhang. Hiroshima University, Higashi-Hiroshima (Ed)

Life-Oriented Behavioral Research for Urban Policy

This book presents a life-oriented approach, which is an interdisciplinary methodology proposed for cross-sectoral urban policy decisions such as transport, health, and energy policies. Improving people’s quality of life (QOL) is one of the common goals of various urban policies on the one hand, while QOL is closely linked with a variety of life choices on the other. [...] 

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A World with Robots

This book contains the Proceedings of the International Conference on Robot Ethics, held in Lisbon on October 23 and 24, 2015. The conference provided a multidisciplinary forum for discussing central and evolving issues concerning safety and ethics that have arisen in various contexts where robotic technologies are being applied. [...] 

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A. Abraham. Machine Intelligence Research Labs (MIR Labs), Auburn, WA, USA; R. Falcon, Larus Technologies and School of Electrical Engineering and Computer Science, University of Ottawa 800 King Edward Ave, Ottawa, Ontario, Canada K1N 6N5, Ottawa, ON, Canada; M. Koeppen, Kyushu Institute of Technology Graduate School of Creative Informatics, Fukuoka, Japan (Eds)

Computational Intelligence in Wireless Sensor Networks

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G. A. Anastassiou. University of Memphis, Memphis, TN, USA

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H. Arastoopour. Illinois Institute of Technology, Chicago, IL, USA; D. Gidaspow. Illinois Institute of Technology, Chicago, IL, USA; E. Abbasi. Honeywell UOP, Des Plaines, IL, USA

Computational Transport Phenomena of Fluid-Particle Systems

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V. Badescu. Politechnic University of Bucharest, Bucharest

Optimal Control in Thermal Engineering

This book is the first major work covering applications in thermal engineering and offering a comprehensive introduction to optimal control theory, which has applications in mechanical engineering, particularly aircraft and missile trajectory optimization. The book is organized in three parts: The first part includes a brief presentation of function optimization and variational calculus, while the second part presents a summary of the optimal control theory. Lastly, the third part describes several applications of optimal control theory in solving various thermal engineering problems. [...] Due March 2017
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I. S. Aronson. Argonne National Laboratory, Argonne, IL, USA; A. Pikovsky. University of Potsdam, Potsdam, Germany; N. F. Rulkov. ; L. Tsimring. University of California San Diego, La Jolla, CA, USA (Eds)

Advances in Dynamics, Patterns, Cognition

This book focuses on recent progress in complexity research based on the fundamental nonlinear dynamical and statistical theory of oscillations, waves, chaos, and structures far from equilibrium. Celebrating seminal contributions to the field by Prof. M. I. Rabinovich of the University of California at San Diego, this volume brings together perspectives on both the fundamental aspects of complexity studies, as well as in applications in different fields ranging from granular patterns to understanding of the cognitive brain and mind dynamics. [...] Due April 2017
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D. Bairaktarova. Virginia Tech, Blacksburg, VA, USA; M. Eodice. University of Oklahoma, Norman, OK, USA (Eds)

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K. Bengler, Technische Universität München, Garching, Germany; J. Drüke, Volkswagen Aktiengesellschaft, Wolfsburg, Germany; S. Hoffmann, TU München, München, Germany; D. Manstetten, Robert Bosch GmbH, Stuttgart, Germany; A. Neukum, Würzburger Institut für Verkehrswissenschaften, Veitshöchheim, Germany (Eds)
This book explores recursive architectures in designing progressive hyperspectral imaging algorithms. In particular, it makes progressive imaging algorithms recursive by introducing the concept of Kalman filtering in algorithm design so that hyperspectral imagery can be processed not only progressively sample by sample or band by band but also recursively via recursive equations. This book can be considered a companion book of the author’s book, *Real-Time Progressive Hyperspectral Image Processing*, published by Springer in 2016.

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€ (D) 160,49 | € (A) 164,99 | *CHF 165.00
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**Real-Time Recursive Hyperspectral Sample and Band Processing**

This book explores recursive architectures in designing progressive hyperspectral imaging algorithms. In particular, it makes progressive imaging algorithms recursive by introducing the concept of Kalman filtering in algorithm design so that hyperspectral imagery can be processed not only progressively sample by sample or band by band but also recursively via recursive equations. This book can be considered a companion book of the author’s books, *Real-Time Progressive Hyperspectral Image Processing*, published by Springer in 2016.

Due January 2017
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2017. XXIII, 690 p. 293 illus., 233 illus. in color. Hardcover
€ (D) 213,99 | € (A) 219,99 | *CHF 220.00
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**Optical Character Recognition Systems for Different Languages with Soft Computing**

The book offers a comprehensive survey of soft-computing models for optical character recognition systems. The various techniques, including fuzzy and rough sets, artificial neural networks and genetic algorithms, are tested using real texts written in different languages, such as English, French, German, Latin, Hindi and Gujarati, which have been extracted by publicly available datasets. [...]  

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**Artificial Intelligence and Evolutionary Technologies: Business Models Evolution and New Investment Opportunities**

Artificial Intelligence is a huge breakthrough technology that is changing our world. It requires some degrees of technical skills to be developed and understood, so in this book we are going to first of all define AI and categorize it with a non-technical language. We will explain how we reached this phase and what historically happened to artificial intelligence in the last century. Recent advancements in machine learning, neuroscience, and artificial intelligence technology will be addressed, and new business models introduced for and by artificial intelligence research will be analyzed. [...]  

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**Recent Progress in Flow Control for Practical Flows**

This book explores the outcomes on flow control research activities carried out within the framework of two EU-funded projects focused on training-through-research of Marie Sklodowska-Curie doctoral students. The main goal of the projects described in this monograph is to assess the potential of the passive- and active-flow control methods for reduction of fuel consumption by a helicopter. The research scope encompasses the fields of structural dynamics, fluid flow dynamics, and actuators with control. [...]  

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**Space Operations 2016**

This book includes a selection of 30 reviewed and enhanced manuscripts published during the 14th SpaceOps Conference held in May 2016 in Daejeon, South Korea. The selection was driven by their quality and relevance to the space operations community. The papers represent a cross-section of three main subject areas: Mission Management – management tasks for designing, preparing and operating a particular mission. [...]  

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**Exponential Technologies: Artificial Intelligence and New Investment Opportunities**

This book compares the performance of various evolutionary computation (EC) techniques when they are faced with complex optimization problems extracted from different engineering domains. Particularly focusing on recently developed algorithms, it is designed so that each chapter can be read independently. [...]  

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**Engineering**  
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The book offers a comprehensive survey of soft-computing models for optical character recognition systems. The various techniques, including fuzzy and rough sets, artificial neural networks and genetic algorithms, are tested using real texts written in different languages, such as English, French, German, Latin, Hindi and Gujarati, which have been extracted by publicly available datasets. [...]  

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L. Guan, Nokia Bell Labs, Dublin

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P. Gardoni, Univ Illinois Urbana-Champaign, Civil Envtl Engg, 3118 Newmark Civil Eng Lab, Urbana, IL (Ed)

**Risk and Reliability Analysis: Theory and Applications**

This book presents a unique collection of contributions from some of the foremost scholars in the field of risk and reliability analysis. Combining the most advanced analysis techniques with practical applications, it is one of the most comprehensive and up-to-date books available on risk-based engineering. All the fundamental concepts needed to conduct risk and reliability assessments are covered in detail, providing readers with a sound understanding of the field and making the book a powerful tool for students and researchers alike. [...] Due March 2017

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The Role of SDN in Broadband Networks

This thesis focuses on the design and use of software defined networking (SDN) in residential Internet service providers (ISPs), as well as innovative operational models that can be incorporated in broadband ecosystems. Though SDN addresses the challenges for bundled best-effort service provided by broadband operators for users, it does not distinguish between the different types of applications (video streaming, web-browsing, and large file transfers), nor does it cater to the varying needs of different household devices (entertainment tablets, work laptops, or connected appliances). [...] 

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Foundations of Elastoplasticity: Subloading Surface Model

This book is the standard text book of elastoplasticity in which the elastoplasticity theory is comprehensively described from the conventional theory for the monotonic loading to the unconventional theory for the cyclic loading behavior. Explanations of vector-tensor analysis and continuum mechanics are provided first as a foundation for elastoplasticity theory, covering various strain and stress measures and their rates with their objectivities. [...] 

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Implementing Polytope Projects for Smart Systems

This book presents a domain of extreme industrial and scientific interest: the study of smart systems and structures. It presents polytope projects as comprehensive physical and cognitive architectures that support the investigation, fabrication and implementation of smart systems and structures. These systems feature multifunctional components that can perform sensing, control, and actuation. [...] 

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Global Corporate Workplaces

This book is about the currently evolving global standardization of corporate workplace models and the challenges this poses for their implementation in a local context. In recent years, multinational corporations were increasingly engaged in the development of standardized global workplace models. For their implementation and feasibility, it is decisive as how these standards fit the diverse regional workplace cultures. [...] 

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ISBN 978-3-662-53391-8

Time Delay Systems

This volume collects contributions related to selected presentations from the 12th IFAC Workshop on Time Delay Systems, Ann Arbor, June 28-30, 2015. The included papers present novel techniques and new results of delayed dynamical systems. The topical spectrum covers control theory, numerical analysis, engineering and biological applications as well as experiments and case studies. The target audience primarily comprises research experts in the field of time delay systems, but the book may also be beneficial for graduate students alike. 

Due April 2017
Monograph
2017. VII, 339 p. 121 illus., 87 illus. in color. (Advances in Delays and Dynamics, Volume 7) Hardcover
€ (D) 160,49 | € (A) 164,99 | *CHF 165.00
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Standpipe Systems for Fire Protection

This important new manual goes beyond the published NFPA standards on installation of standpipe systems to include the rules in the International Building Code, municipal fire codes, the National Fire Code of Canada, and information on inspection, testing, and maintenance of standpipe systems. Also covered are the interactions between standpipe and sprinkler systems, since these important fire protection systems are so frequently installed together. [...]"
Free Space Optical Communication

This book provides an in-depth understanding of free space optical (FSO) communication with a particular emphasis on optical beam propagation through atmospheric turbulence. The book is structured in such a way that it provides a basic framework for the beginners and also gives a concise description from a designer’s perspective. The book provides an exposure to FSO technology, fundamental limitations, design methodologies, system trade-offs, acquisition, tracking and pointing (ATP) techniques and link-feasibility analysis. […]

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Engineering Applications of Nanotechnology

This book focuses on the use of nanotechnology in several fields of engineering. Among others, the reader will find valuable information as to how nanotechnology can aid in extending the life of component materials exposed to corrosive atmospheres, in thermal fluid energy conversion processes, anti-reflection coatings on photovoltaic cells to yield enhanced output from solar cells, in connection with friction and wear reduction in automobiles, and buoyancy suppression in free convective heat transfer. […]

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Computational Anatomy Based on Whole Body Imaging

This book deals with computational anatomy, an emerging discipline recognized in medical science as a derivative of conventional anatomy. It is also a completely new research area on the boundaries of several sciences and technologies, such as medical imaging, computer vision, and applied mathematics. […]

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2017. 458 p. 100 illus. With online files/update. Hardcover
€ (D) 160.49 | (A) 164.99 | *CHF 165.00
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Thermodynamic Inversion

This book discusses the theory, general principles, and energy source conditions allowing for the emergence of life in planetary systems. The author examines the material conditions found in natural hydrothermal sites, the appropriate analogs of prebiotic environments on early Earth. He provides an overview of current laboratory experiments in prebiotic materials chemistry and substantiation of a new direction for the experiments in the origin of life field. […]

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Genetic Algorithm Essentials

This book introduces readers to genetic algorithms (GAs) with an emphasis on making the concepts, algorithms, and applications discussed as easy to understand as possible. Further, it avoids a great deal of formalism and allows us to open the subject to a broader audience in comparison to manuscripts overloaded by notations and equations. The book is divided into three parts, the first of which provides an introduction to GAs, starting with basic concepts like evolutionary operators and continuing with an overview of strategies for tuning and controlling parameters. […]

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€ 86.99 | £ 64.99
ISBN 978-3-319-53155-8
V. Kreinovich, Department of Computer Science University of Texas at El Paso, El Paso, TX, USA (Ed)

Uncertainty Modeling

This book commemorates the 65th birthday of Dr. Boris Kovalerchuk, and reflects many of the research areas covered by his work. It focuses on data processing under uncertainty, especially fuzzy data processing, when uncertainty comes from the imprecision of expert opinions. The book includes 17 authoritative contributions by leading experts.

Due February 2017
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This book covers the most recent developments in adaptive dynamic programming and flexible and generalized uncertainty optimization. The book starts with an overview of flexible and generalized uncertainty optimization. It covers uncertainties that are both associated with lack of information and that more general than stochastic theory, where well-defined distributions are assumed. [...] Available
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Y. Li, Intel Corporation, Chandler, AZ, USA; D. Goyal, Intel Corporation, Chandler, AZ, USA (Eds)

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D. Liu, University of Science and Technology Beijing, Beijing, China; Q. Wei, Institute of Automation, Beijing, China; D. Wang, Institute of Automation, Beijing, China; X. Yang, Tianjin University, Tianjin; H. Li, IBM Research - China, Beijing, China

Adaptive Dynamic Programming with Applications in Optimal Control

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W. A. Lodwick, University of Colorado Denver, Denver, CO, USA; P. Thipwiwatpotjana, Chulalongkorn University Faculty of Science, Bangkok, Thailand

Flexible and Generalized Uncertainty Optimization

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C. Lin, University of California, Berkeley, CA, USA; A. Sangiovanni-Vincentelli, University of California, Berkeley, Berkeley, CA, USA

Security-Aware Design for Cyber-Physical Systems

Addressing the rising security issues during the design stages of cyber-physical systems, this book develops a systematic approach to address security at early design stages together with all other design constraints. Cyber-attacks become more threatening as systems are becoming more connected with the surrounding environment, infrastructures, and other systems. [...] Available
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L. Magnani, University of Pavia, Pavia, Italy; T. Bertolotti, University of Pavia, Pavia, Italy (Eds)

Springer Handbook of Model-Based Science

This handbook offers the first comprehensive reference guide to the interdisciplinary field of model-based reasoning. It highlights the role of models as mediators between theory and experimentation, and as educational devices, as well as their relevance in testing hypotheses and explanatory functions. The Springer Handbook merges philosophical, cognitive and epistemological perspectives on models with the more practical needs related to the application of this tool across various disciplines and practices. [...]  

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ISBN 978-3-319-30525-7

J. M. Margarit, Institut de Microelectronica deBarcelona Centro Nacional de Microelectronica, Barcelona

Low-Power CMOS Digital Pixel Imagers for High-Speed Uncooled PbSe IR Applications

This book describes the development of a new low-cost medium wavelength IR (MWIR) monolithic imager technology for high-speed uncooled industrial applications. It takes the baton on the latest technological advances in the field of vapor phase deposition (VPD) PbSe-based MWIR detection accomplished by the industrial partner NIT S.L., adding fundamental knowledge on the investigation of novel VLSI analog and mixed-signal design techniques at circuit and system levels for the development of the readout integrated device attached to the detector. [...]  

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The treatise supports understanding the phenomena of complexity in engineering, distinguishes complexity from other challenges and presents an overview of definitions and applied approaches. The historical background of complexity management is explained by highlighting the important epochs, their key actors and [...]  

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Micromechanics and Nanomechanics of Composite Solids

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€ 149,99 | £ 112,00
ISBN 978-3-319-52793-2
Disrupting Mobility

This book explores the opportunities and challenges of the sharing economy and innovative transportation technologies with regard to urban mobility. Written by government experts, social scientists, technologists and city planners from North America, Europe and Australia, the papers in this book address the impacts of demographic, societal and economic trends and the fundamental changes arising from the increasing automation and connectivity of vehicles, smart communication technologies, multimodal transit services, and urban design. [...] Available Monograph 2017. X, 349 p. 72 illus., 55 illus. in color. (Lecture Notes in Mobility) Hardcover € (D) 160,49 | € (A) 164,99 | *CHF 165.00 € 149,99 | £ 112,00 ISBN 978-3-319-51601-1

Compressive Sensing Based Algorithms for Electronic Defence

This book details some of the major developments in the implementation of compressive sensing in radio applications for electronic defense and warfare communication use. It provides a comprehensive background to the subject and at the same time describes some novel algorithms. It also investigates application value and performance-related parameters of compressive sensing in scenarios such as direction finding, spectrum monitoring, detection, and classification. Available Monograph 2017. X, 184 p. 106 illus., 59 illus. in color. (Signal and Communication Technology) Hardcover € (D) 93,08 | € (A) 95,69 | *CHF 96.00 € 86,99 | £ 64,99 ISBN 978-3-319-46698-9

Major Infrastructure Projects

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Computational Methods in Earthquake Engineering

This is the third book in a series on Computational Methods in Earthquake Engineering. The purpose of this volume is to bring together the scientific communities of Computational Mechanics and Structural Dynamics, offering a wide coverage of timely issues on contemporary Earthquake Engineering. This volume will facilitate the exchange of ideas in topics of mutual interest and can serve as a platform for establishing links between research groups with complementary activities. [...] Available Monograph 2017. X, 418 p. 182 illus. (Computational Methods in Applied Sciences, Volume 44) Hardcover € (D) 160,49 | € (A) 164,99 | *CHF 165.00 € 149,99 | £ 112,00 ISBN 978-3-319-47796-1

Hardware IP Security and Trust

This book provides an overview of current Intellectual Property (IP) based System-on-Chip (SoC) design methodology and highlights how security of IP can be compromised at various stages in the overall SoC design-fabrication-deployment cycle. Readers will gain a comprehensive understanding of the security vulnerabilities of different types of IPs. [...] Available Professional book 2017. XII, 353 p. 131 illus., 78 illus. in color. Hardcover € (D) 138,03 | € (A) 141,90 | *CHF 142.00 € 129,00 | £ 96,00 ISBN 978-3-319-49024-3
The Dark Side of Silicon

This book presents the state-of-the-art of one of the main concerns with microprocessors today, a phenomenon known as “dark silicon”. Readers will learn how power constraints (both leakage and dynamic power) limit the extent to which large portions of a chip can be powered up at a given time, i.e. how much actual performance and functionality the microprocessor can provide. [...] Available

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State-Space Approaches for Modelling and Control in Financial Engineering

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Intelligent Decision Support Systems for Sustainable Computing

This unique book discusses the latest research, innovative ideas, challenges and computational intelligence (CI) solutions in sustainable computing. It presents novel, in-depth fundamental research on achieving a sustainable lifestyle for society, either from a methodological or from an application perspective. [...] Due March 2017
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Speech Recognition Using Articulatory and Excitation Source Features

This book discusses the contribution of articulatory and excitation source information in discriminating sound units. The authors focus on excitation source component of speech -- and the dynamics of various articulators during speech production -- for enhancement of speech recognition (SR) performance. Speech recognition is analyzed for read, extempore, and conversation modes of speech. Five groups of articulatory features (AFs) are explored for speech recognition, in addition to conventional spectral features. [...] Available

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Studies in Musical Acoustics and Psychoacoustics

This book comprises twelve articles which cover a range of topics from musical instrument acoustics to issues in psychoacoustics and sound perception as well as neuromusicality. In addition to experimental methods and data acquisition, modeling (such as FEM or wave field synthesis) and numerical simulation plays a central role in studies addressing sound production in musical instruments as well as interaction of radiated sound with the environment. [...] Available

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A. Sangaiah, VIT University, Vellore; A. Abraham, Machine Intelligence Research Labs Sci N/w for Innova and Research Exc, Auburn, WA; P. Siarry, Université Paris-Est Créteil Val-de-Marn Faculté des Sciences et Technologie, Créteil Cedex; M. Sheng, The University of Adelaide Faculty of Engg Computer & Math sci, Adelaide, SA, Australia (Eds)

A. Schneider, Universität Hamburg, Hamburg, Germany (Ed)
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This brief presents a concise description of the existing spaceport market, the technologies being tested and developed at them, and the private companies that are making them possible. [...]  

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R. Serpieri, Universita degli Studi del Sannio di Benevento, Benevento, Italy; F. Travascio, Biomechanics Research Laboratory, Coral Gables, FL, USA

**Variational Continuum Multiphase Poroelasticity**

This book collects the theoretical derivation of a recently presented general variational macroscopic continuum theory of multiphase poroelasticity (VMTPM), together with its applications to consolidation and stress partitioning problems of interest in several applicative engineering contexts, such as in geomechanics and biomechanics. The theory is derived based on a purely-variational deduction, rooted in the least-Action principle, by considering a minimal set of kinematic descriptors. [...]  

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ISBN 978-981-10-3451-0

S. K. Shukla, School of Engineering, Edith Cowan University, Perth, WA, Australia

**Fundamentals of Fibre-Reinforced Soil Engineering**

This book is intended to serve as a one-stop reference on fibre-reinforced soils. Over the past 30-35 years, the engineering behaviour of randomly distributed/oriented fibre-reinforced soil, also called simply fibre-reinforced soil, has been investigated in detail by researchers and engineers worldwide. Waste fibres (plastic waste fibres, old tyre fibres, etc.) create disposal and environmental problems. Utilization of such fibres in construction can help resolve these concerns. [...]  

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N. Sklavos, Technological Educational Institute of Western Greece, Antirrio, Greece; R. Chaves, University of Lisbon, Lisbon, Portugal; G. Di Natale, LIRMM - CNRS / University of Montpellier, Montpellier, France; F. Regazzoni, University of Lugano, Lugano, Switzerland (Eds)

**Hardware Security and Trust**

This book provides a comprehensive introduction to hardware security, from specification to implementation. Applications discussed include embedded systems ranging from small RFID tags to satellites orbiting the earth. The authors describe a design and synthesis flow, which will transform a given circuit into a secure design incorporating counter-measures against fault attacks. [...]  

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P. M. Shankar, Drexel University, Philadelphia, PA, USA

**Fading and Shadowing in Wireless Systems**

This book offers a comprehensive overview of fading and shadowing in wireless channels. A number of statistical models including simple, hybrid, compound and cascaded ones are presented along with a detailed discussion of diversity techniques employed to mitigate the effects of fading and shadowing. The effects of co-channel interference before and after the implementation of diversity are also analyzed. [...]  

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ISBN 978-3-319-53197-7

A. Sladkowski, Silesian University of Technology, Katowice, Poland (Ed)

**Railway Transport - Systems Approach**

This book shows how the systems approach is employed by scientists in various countries to solve specific problems concerning railway transport. In particular, the book describes the experiences of scientists from Romania, Germany, the Czech Republic, the UK, Russia, Ukraine, Lithuania and Poland. For many of these countries there is a problem with the historical differences between the railways. [...]  

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ISBN 978-3-319-51501-4

E. Serpieri, Università degli Studi del Sannio di Benevento, Benevento, Italy; F. Travascio, Biomechanics Research Laboratory, Coral Gables, FL, USA
PLD Based Design with VHDL

This book covers basic fundamentals of logic design and advanced RTL design concepts using VHDL. The book is organized to describe both simple and complex RTL design scenarios using VHDL. It gives practical information on the issues in ASIC prototyping using FPGAs, design challenges and how to overcome practical issues and concerns. It describes how to write an efficient RTL code using VHDL and how to improve the design performance. The design guidelines by using VHDL are also explained with the practical examples in this book. [...] 

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Health 4.0: How Virtualization and Big Data are Revolutionizing Healthcare

This book describes how the creation of new digital services—through vertical and horizontal integration of data coming from sensors on top of existing legacy systems—that has already had a major impact on industry is now extending to healthcare. The book describes the fourth industrial revolution (i.e. Health 4.0), which is based on virtualization and service aggregation. It shows how sensors, embedded systems, and cyber-physical systems are fundamentally changing the way industrial processes work, their business models, and how we consume, while also affecting the health and care domains. [...] 

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Digital Preservation: Putting It to Work

This book addresses the process of maintaining digital objects through time to ensure continued access, an aspect that has become a crucial issue in recent years. It offers a concise yet comprehensive discussion of key concepts and requirements for long-term digital preservation, and presents a pioneering framework for digital repositories that enables the long-term archiving and metadata management for large volumes of digital resources based on a system that has already been completely designed and launched. [...] 

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Fiber-Wireless Convergence in Next-Generation Communication Networks

This book investigates new enabling technologies for Fi-Wi convergence. The editors discuss Fi-Wi technologies at the three major network levels involved in the path towards convergence: system level, network architecture level, and network management level. The main topics will be: a. At system level: Radio over Fiber (digitalized vs. analogic, standardization, E-band and beyond) and 5G wireless technologies; b. Network architecture level: NGPON, WDM-PON, BBU Hotelling, Cloud Radio Access Networks (CRANs), HetNets. c. [...] 

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Fuzzy Sets, Rough Sets, Multisets and Clustering

This book is dedicated to Prof. Sadaaki Miyamoto and presents cutting-edge papers in some of the areas in which he contributed. Bringing together contributions by leading researchers in the field, it concretely addresses clustering, multisets, rough sets and fuzzy sets, as well as their applications in areas such as decision-making. The book is divided in four parts, the first of which focuses on clustering and classification. The second part puts the spotlight on multisets, bags, fuzzy bags and other fuzzy extensions, while the third deals with rough sets. [...] 

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Modelling, Methodologies and Tools for Molecular and Nano-scale Communications

This book reports on cutting-edge modeling techniques, methodologies and tools used to understand, design and engineer nanoscale communication systems, such as molecular communication systems. Moreover, it includes introductory materials for those who are new to the field. [...] 

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Information Security Practices

This book introduces novel research targeting technical aspects of protecting information security and establishing trust in the digital space. New paradigms, and emerging threats and solutions are presented in topics such as application security and threat management; modern authentication paradigms; digital fraud detection; social engineering and insider threats; cyber threat intelligence; intrusion detection; behavioral biometrics recognition; hardware security analysis. [...] 

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Holistic Simulation of Geotechnical Installation Processes

This book provides recent developments and improvements in the modeling as well as application examples and is a complementary work to the previous Lecture Notes Vols. 77 and 80. It summarizes the fundamental work from scientists dealing with the development of constitutive models for soils, especially cyclic loading with special attention to the numerical implementation. In this volume the neo-hypoplasticity and the ISA (intergranular strain anisotropy) model in their extended version are presented. [...] 

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Contributed volume

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A Framework for Durability Design with Strain-Hardening Cement-Based Composites (SHCC)

This book captures the state of the art of the durability of fibre-reinforced strain-hardening cement-based composites (SHCC) and the durability of structures or structural elements manufactured in full or in part with this class of modern construction materials. Highlights include: - Reflection on durability performance of existing applications in patch repair, a water reservoir and highway bridges. [...] 

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Solving Fault Diagnosis Problems

This book addresses fault detection and isolation topics from a computational perspective. Unlike most existing literature, it bridges the gap between the existing well-developed theoretical results and the realm of reliable computational synthesis procedures. The model-based approach to fault detection and diagnosis has been the subject of ongoing research for the past few decades. [...] 

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Collaboration Systems

This book provides an overview of recent research developments in the automation and control of robotic systems that collaborate with humans. A measure of human collaboration being necessary for the optimal operation of any robotic system, the contributors exploit a broad selection of such systems to demonstrate the importance of the subject, particularly where the environment is prone to uncertainty or complexity. [...] 

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Y. Wang, Clemson University, Clemson, SC; F. Zhang, Georgia Institute of Technology, Atlanta, GA (Eds)
Index Modulation for 5G Wireless Communications

This book presents a thorough examination of index modulation, an emerging 5G modulation technique. It includes representative transmitter and receiver design, optimization, and performance analysis of index modulation in various domains. First, the basic spatial modulation system for the spatial domain is introduced. Then, the development of a generalized pre-coding aided quadrature spatial modulation system as well as a virtual spatial modulation system are presented. For the space-time domain, a range of differential spatial modulation systems are examined, along with the pre-coding design. [...] 

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Designing a Place Called Home

This insightful volume shares design ideas to help builders, planners and architects create mass-produced affordable housing that pushes suburban development in more sustainable, liveable directions. The author argues that improving the quality of design in our new homes and communities for greater resiliency, sustainability, and equality, we can build neighborhoods and communities where residents feel more connected to their homes and to one another. [...] 

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Radio Resource Management for Mobile Traffic Offloading in Heterogeneous Cellular Networks

This SpringerBrief offers two concrete design examples for traffic offloading. The first is an optimal resource allocation for small-cell based traffic offloading that aims at minimizing mobile users’ data cost. The second is an optimal resource allocation for device-to-device assisted traffic offloading that also minimizes the total energy consumption and cellular link usage (while providing an overview of the challenging issues). [...] 

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Wireless Power Transfer and Data Communication for Neural Implants

This book presents new circuits and systems for implantable biomedical applications targeting neural recording. The authors describe a system design adapted to conform to the requirements of an epilepsy monitoring system. Throughout the book, these requirements are reflected in terms of implant size, power consumption, and data rate. In addition to theoretical background which explains the relevant technical challenges, the authors provide practical, step-by-step solutions to these problems. [...] 

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Reliability Design of Mechanical Systems

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