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**Micro Flow Control Using Thermally Responsive Polymer Solutions** Springer Nature  
Internet of Things: Principles and Paradigms captures the state-of-the-art research in Internet of Things, its applications, architectures, and technologies. The book identifies potential future directions and technologies that facilitate insight into numerous scientific, business, and consumer applications. The Internet of Things (IoT) paradigm promises to make any electronic devices part of the Internet environment. This new paradigm opens the doors to new innovations and interactions between people and things that will enhance the quality of life and utilization of scarce resources. To help realize the full potential of IoT, the book addresses its numerous challenges and develops the conceptual and technological solutions for tackling them. These challenges include the development of scalable architecture, moving from closed systems to open systems, designing interaction protocols, autonomic management, and the privacy and ethical issues around data sensing, storage, and processing. Addresses the main concepts and features of the IoT paradigm Describes different architectures for managing IoT platforms Provides insight on trust, security, and privacy in IoT environments Describes data management techniques applied to the IoT environment Examines the key enablers and solutions to enable practical IoT systems Looks at the key developments that support next generation IoT platforms Includes input from expert contributors from both academia and industry on building and deploying IoT platforms and applications  
**Machine Learning with PyTorch and Scikit-Learn** Routledge

As future generation information technology (FGIT) becomes specialized and fr- mented, it is easy to lose sight that many topics in FGIT have common threads and, because of this, advances in one discipline may be transmitted to others. Presentation of recent results obtained in different disciplines encourages this interchange for the advancement of FGIT as a whole. Of particular interest are hybrid solutions that c- bine ideas taken from multiple disciplines in order to achieve something more signi- cant than the sum of the individual parts. Through such hybrid philosophy, a new principle can be discovered, which has the propensity to propagate throughout mul- faceted disciplines. FGIT 2009 was the first mega-conference that attempted to follow the above idea of hybridization in FGIT in a form of multiple events related to particular disciplines of IT, conducted by separate scientific committees, but coordinated in order to expose the most important contributions. It included the following international conferences: Advanced Software Engineering and Its Applications (ASEA), Bio-Science and Bio-Technology (BSBT), Control and Automation (CA), Database Theory and Application (DTA), D- aster Recovery and Business Continuity (DRBC; published independently), Future G- eration Communication and Networking (FGCN) that was combined with Advanced Communication and Networking (ACN), Grid and Distributed Computing (GDC), M- timedia, Computer Graphics and Broadcasting (MulGraB), Security Technology (SecTech), Signal Processing, Image Processing and Pattern Recognition (SIP), and- and e-Service, Science and Technology (UNESST).

**Digital Design with RTL Design, VHDL, and Verilog** Academic Press

Unlock deeper insights into Machine Learning with this vital guide to cutting-edge predictive analytics About This Book Leverage Python's most powerful open-source libraries for deep learning, data wrangling, and data visualization Learn effective strategies and best practices to improve and optimize machine learning systems and algorithms Ask – and answer – tough questions of your data with robust statistical models, built for a range of datasets Who This Book Is For If you want to find out how to use Python to start answering critical questions of your data, pick up Python Machine Learning – whether you want to get started from scratch or want to extend your data science knowledge, this is an essential and unmissable resource. What You Will Learn Explore how to use different machine learning models to ask different questions of your data Learn how to build neural networks using Keras and Theano Find out how to write clean and elegant Python code that

will optimize the strength of your algorithms Discover how to embed your machine learning model in a web application for increased accessibility Predict continuous target outcomes using regression analysis Uncover hidden patterns and structures in data with clustering Organize data using effective pre-processing techniques Get to grips with sentiment analysis to delve deeper into textual and social media data In Detail Machine learning and predictive analytics are transforming the way businesses and other organizations operate. Being able to understand trends and patterns in complex data is critical to success, becoming one of the key strategies for unlocking growth in a challenging contemporary marketplace. Python can help you deliver key insights into your data – its unique capabilities as a language let you build sophisticated algorithms and statistical models that can reveal new perspectives and answer key questions that are vital for success. Python Machine Learning gives you access to the world of predictive analytics and demonstrates why Python is one of the world's leading data science languages. If you want to ask better questions of data, or need to improve and extend the capabilities of your machine learning systems, this practical data science book is invaluable. Covering a wide range of powerful Python libraries, including scikit-learn, Theano, and Keras, and featuring guidance and tips on everything from sentiment analysis to neural networks, you'll soon be able to answer some of the most important questions facing you and your organization. Style and approach Python Machine Learning connects the fundamental theoretical principles behind machine learning to their practical application in a way that focuses you on asking and answering the right questions. It walks you through the key elements of Python and its powerful machine learning libraries, while demonstrating how to get to grips with a range of statistical models. Electric Vehicle Integration via Smart Charging Wiley

This book introduces a modern approach to embedded system design, presenting software design and hardware design in a unified manner. It covers trends and challenges, introduces the design and use of single-purpose processors ("hardware") and general-purpose processors ("software"), describes memories and buses, illustrates hardware/software tradeoffs using a digital camera example, and discusses advanced computation models, controls systems, chip technologies, and modern design tools. For courses found in EE, CS and other engineering departments. *Grid and Distributed Computing* Packt Publishing Ltd

This book provides a comprehensive introduction to the analysis of functionally graded materials and structures. Functionally graded materials (FGMs), in which the volume fractions of two or more constituent materials are designed to vary continuously as a function of position along certain direction(s), have been developed and studied over the past three decades. The major advantage of FGMs is that no distinct internal boundaries exist, and failures from interfacial stress concentrations developed in conventional components can be avoided. The gradual change of material properties can be tailored to different applications and working environments. As these materials' range of application expands, new methodologies have to be developed to characterize them, and to design and analyze structural components made of them. Despite a number of existing papers on the analysis of functionally graded materials and structures, there is no single book that is devoted entirely to the analysis of functionally graded beams, plates and shells using different methods, e.g., analytical or semi-analytical methods. Filling this gap in the literature, the book offers a valuable reference resource for senior undergraduates, graduate students, researchers, and engineers in this field. The results presented here can be used as a benchmark for checking the validity and accuracy of other numerical solutions. They can also be used directly in the design of functionally graded materials and structures.

**Intelligent Security Solutions for Cyber-Physical Systems** Plunkett Research, Ltd.

Wireless Cortical Implantable Systems examines the design for data acquisition and transmission in cortical implants. The first part of the book covers existing system level cortical implants, as well as future devices. The authors discuss the major constraints in terms of microelectronic integrations are presented. The second part of the book focuses on system-level as well as circuit and system level solutions to the development of ultra low-power and low-noise microelectronics for cortical implants. Existing solutions are presented and novel methods and solutions proposed. The third part of the book focuses on the usage of digital impulse radio ultra wide band transmission as an efficient method to transmit cortically neural recorded data at high data rate to the outside world. Original architectural and circuit and system solutions are discussed.

**Game Theory Solutions for the Internet of Things: Emerging Research and Opportunities** IGI Global

Undoubtedly, drinking water of an acceptable quality has become a scarce commodity. Water shortage is becoming a major concern all around the world due to limited freshwater resources as well as the high cost of freshwater transportation from freshwater-rich areas to arid areas. As a result, solutions such as water recycling and desalination of saline or brackish water are being introduced and emerging worldwide as alternative ways of supplying water. Desalination of seawater is known to be one of mankind's earliest forms of water treatment, and it has become one of the most sustainable alternative solutions to provide freshwater for many communities and industrial sectors. This book aims to cover the challenges and opportunities in desalination processes.

**An Efficient Solution Procedure for a MIP Incremental Implementation Model for Multimachine Systems** Elsevier

A cyber-physical system (CPS) is a computer system in which a mechanism is controlled or monitored by computer-based algorithms and involves transdisciplinary approaches, merging theories of cybernetics, mechatronics, design, and process science. This text mainly concentrates on offering a foundational theoretical underpinning, and a comprehensive and coherent review of intelligent security solutions for cyber-physical systems. Features: • Provides an overview of cyber-physical systems (CPSs) along with security concepts like attack detection methods, cyber-physical systems failures, and risk identification and management. • Showcases cyber-physical systems (CPSs) security solutions, lightweight cryptographic solutions, and CPS forensics, etc. • Emphasizes machine learning methods for behavior-based intrusion detection in cyber-physical systems (CPSs), resilient machine learning for networked CPS, fog computing industrial CPS, etc. • Elaborates classification of network abnormalities in Internet of Things-based cyber-physical systems (CPSs) using deep learning. • Includes case studies and applications in the domain of smart grid systems, industrial control systems, smart manufacturing, social network and gaming, electric power grid and energy systems, etc.

**Quantitative Data Analysis for Language Assessment Volume II** CRC Press

Microfluidics refers to devices and methods for controlling and manipulating fluid flows at length scales less than a millimeter. Miniaturization of a laboratory to a small device, usually termed as lab-on-a-chip, is an advanced technology that integrates a microfluidic system including channels, mixers, reservoirs, pumps and valves on a micro scale chip and can manipulate very small sample volumes of fluids. While several flow control concepts for microfluidic devices have been developed to date, here flow control concepts based on thermally responsive polymer solutions are presented. In particular, flow control concepts base on the thermally triggered reversible phase change of aqueous solutions of the polymer Pluronic will be discussed. Selective heating of small regions of microfluidic channels, which leads to localized gel formation in these channels and reversible channel blockage, will be used to control a membrane valve that controls flow in a separate channel. This new technology will allow generating inexpensive portable bioanalysis tools where microvalve actuation occurs simply through heaters at a constant pressure source without a need for large external pressure control systems as is currently the case. Furthermore, a concept for controlled cross-channel transport of particles and potentially cells is presented that relies on the continuous regeneration of a gel wall at the diffusive interface of two co-streaming fluids in a microfluidic channel.

**Magnetic Sensors for Biomedical Applications** Springer Nature

This book of the bestselling and widely acclaimed Python Machine Learning series is a comprehensive guide to machine and deep learning using PyTorch s simple to code framework. Purchase of the print or Kindle book includes a free eBook in PDF format. Key Features Learn applied machine learning with a solid foundation in theory Clear, intuitive explanations take you deep into the theory and practice of Python machine learning Fully updated and expanded to cover PyTorch, transformers, XGBoost, graph neural networks, and best practices Book Description Machine Learning with PyTorch and Scikit-Learn is a comprehensive

guide to machine learning and deep learning with PyTorch. It acts as both a step-by-step tutorial and a reference you'll keep coming back to as you build your machine learning systems. Packed with clear explanations, visualizations, and examples, the book covers all the essential machine learning techniques in depth. While some books teach you only to follow instructions, with this machine learning book, we teach the principles allowing you to build models and applications for yourself. Why PyTorch? PyTorch is the Pythonic way to learn machine learning, making it easier to learn and simpler to code with. This book explains the essential parts of PyTorch and how to create models using popular libraries, such as PyTorch Lightning and PyTorch Geometric. You will also learn about generative adversarial networks (GANs) for generating new data and training intelligent agents with reinforcement learning. Finally, this new edition is expanded to cover the latest trends in deep learning, including graph neural networks and large-scale transformers used for natural language processing (NLP). This PyTorch book is your companion to machine learning with Python, whether you're a Python developer new to machine learning or want to deepen your knowledge of the latest developments. What you will learn Explore frameworks, models, and techniques for machines to learn from data Use scikit-learn for machine learning and PyTorch for deep learning Train machine learning classifiers on images, text, and more Build and train neural networks, transformers, and boosting algorithms Discover best practices for evaluating and tuning models Predict continuous target outcomes using regression analysis Dig deeper into textual and social media data using sentiment analysis Who this book is for If you have a good grasp of Python basics and want to start learning about machine learning and deep learning, then this is the book for you. This is an essential resource written for developers and data scientists who want to create practical machine learning and deep learning applications using scikit-learn and PyTorch. Before you get started with this book, you'll need a good understanding of calculus, as well as linear algebra.

#### **Multiple Criteria Decision Making** Morgan Kaufmann

An eagerly anticipated, up-to-date guide to essential digital design fundamentals Offering a modern, updated approach to digital design, this much-needed book reviews basic design fundamentals before diving into specific details of design optimization. You begin with an examination of the low-levels of design, noting a clear distinction between design and gate-level minimization. The author then progresses to the key uses of digital design today, and how it is used to build high-performance alternatives to software. Offers a fresh, up-to-date approach to digital design, whereas most literature available is sorely outdated Progresses through low levels of design, making a clear distinction between design and gate-level minimization Addresses the various uses of digital design today Enables you to gain a clearer understanding of applying digital design to your life With this book by your side, you'll gain a better understanding of how to apply the material in the book to real-world scenarios.

#### **Simultaneous Potential and Circuit Solution for Two-dimensional Bounded Plasma Simulation Codes** John Wiley & Sons

"Digital Design provides a modern approach to learning the increasingly important topic of digital systems design. The text's focus on register-transfer-level design and present-day applications not only leads to a better appreciation of computers and of today's ubiquitous digital devices, but also provides for a better understanding of careers involving digital design and embedded system design. The book's key features include: An emphasis on register-transfer-level (RTL) design, the level at which most digital design is practiced today, giving readers a modern perspective of the field's applicability. Yet, coverage stays bottom-up and concrete, starting from basic transistors and gates, and moving step-by-step up to more complex components. Extensive use of basic examples to teach and illustrate new concepts, and of application examples, such as pacemakers, ultrasound machines, automobiles, and cell phones, to demonstrate the immediate relevance of the concepts. Separation of basic design from optimization, allowing development of a solid understanding of basic design, before considering the more advanced topic of optimization. Flexible organization, enabling early or late coverage of optimization methods or of HDLs, and enabling choice of VHDL, Verilog, or SystemC HDLs.

Career insights and advice from designers with varying levels of experience. A clear bottom-up description of field-programmable gate arrays (FPGAs). About the Author: Frank Vahid is a Professor of Computer Science & Engineering at the University of California, Riverside. He holds Electrical Engineering and Computer Science degrees; has worked/consulted for Hewlett Packard, AMCC, NEC, Motorola, and medical equipment makers; holds 3 U.S. patents; has received several teaching

awards; helped setup UCR's Computer Engineering program; has authored two previous textbooks; and has published over 120 papers on digital design topics (automation, architecture, and low-power).

#### **Ethics In Tech and Lack Thereof** Pearson Education India

This book brings together important new contributions covering electric vehicle smart charging (EVSC) from a multidisciplinary group of global experts, providing a comprehensive look at EVSC and its role in meeting long-term goals for decarbonization of electricity generation and transportation. This multidisciplinary reference presents practical aspects and approaches to the technology, along with evidence from its applications to real-world energy systems. Electric Vehicle Integration via Smart Charging is suitable for practitioners and industry stakeholders working on EVSC, as well as researchers and developers from different branches of engineering, energy, transportation, economic, and operation research fields.

#### **Energy Storage in Energy Markets** Springer

Big Data: Principles and Paradigms captures the state-of-the-art research on the architectural aspects, technologies, and applications of Big Data. The book identifies potential future directions and technologies that facilitate insight into numerous scientific, business, and consumer applications. To help realize Big Data's full potential, the book addresses numerous challenges, offering the conceptual and technological solutions for tackling them. These challenges include life-cycle data management, large-scale storage, flexible processing infrastructure, data modeling, scalable machine learning, data analysis algorithms, sampling techniques, and privacy and ethical issues. Covers computational platforms supporting Big Data applications Addresses key principles underlying Big Data computing Examines key developments supporting next generation Big Data platforms Explores the challenges in Big Data computing and ways to overcome them Contains expert contributors from both academia and industry

#### **Wireless Cortical Implantable Systems** Springer Nature

Quantitative Data Analysis for Language Assessment Volume II: Advanced Methods demonstrates advanced quantitative techniques for language assessment. The volume takes an interdisciplinary approach and taps into expertise from language assessment, data mining, and psychometrics. The techniques covered include Structural Equation Modeling, Data Mining, Multidimensional Psychometrics and Multilevel Data Analysis. Volume II is distinct among available books in language assessment, as it engages the readers in both theory and application of the methods and introduces relevant techniques for theory construction and validation. This book is highly recommended to graduate students and researchers who are searching for innovative and rigorous approaches and methods to achieve excellence in their dissertations and research. It is also a valuable source for academics who teach quantitative approaches in language assessment and data analysis courses.

#### **Green Nano Solution for Bioenergy Production Enhancement** John Wiley & Sons

The depletion of petroleum-derived fuel and environmental concerns have prompted many millennials to consider biofuels as alternative fuel sources. But completely replacing petroleum-derived fuels with biofuels is currently impossible in terms of production capacity and engine compatibility. Nevertheless, the marginal replacement of diesel with biofuel could delay the depletion of petroleum resources and abate the radical climate change caused by automotive pollutants. Energy security and climate change are the two major driving forces for worldwide biofuel development, and also have the potential to stimulate the agro-industry. The development of biofuels as alternative and renewable sources of energy has become critical in national efforts towards maximum self-reliance, the cornerstone of our energy security strategy. At the same time, the production of biofuels from various types of biomass such as plants, microbes, algae and fungi is now an ecologically viable and sustainable option. This book describes the biotechnological advances in biofuel production from various sources, while also providing essential information on the genetic improvement of biofuel sources at both the conventional and genomic level. These innovations and the corresponding methodologies are explained in detail.

#### **Difficulties and Solutions for the Brokers in the Digital Era** John Wiley & Sons Contributed articles.

#### **Desalination** Springer Science & Business Media

Research into social systems is challenging due to their complex nature. Traditional methods of analysis are often difficult to apply effectively as theories evolve over time. This can be due to a lack of appropriate data, or too much uncertainty. It can also be the result of problems which are not yet understood well enough in the general sense so that they can be classified, and an appropriate solution quickly identified. Simulation is one tool that deals well with these challenges, fits in well with the deductive process, and is useful for testing theory. This field is still relatively new, and much of the work is necessarily innovative, although it builds upon a rich and varied foundation. There are a number of existing modelling paradigms being applied to complex social systems research. Additionally, new methods and measures are being devised through the process of conducting research. We expect that readers will enjoy the collection of high quality research

works from new and accomplished researchers.

**Advances in Ultrasound Technology for Environmental Remediation** World Scientific  
There is an enhanced level of connectivity available in modern society through the increased usage of various technological devices. Such developments have led to the integration of smart objects into the Internet of Things (IoT), an emerging paradigm in the digital age. Game Theory Solutions for the Internet of Things: Emerging Research and Opportunities examines the latest strategies for the management of IoT systems and the application of theoretical models to enhance real-world applications and improve system efficiency. Highlighting innovative algorithms and methods, as well as coverage on cloud computing, cross-domain applications, and energy control, this book is a pivotal source of information for researchers, practitioners, graduate students, professionals, and academics interested in the game theoretic solutions for IoT applications.

#### **Advanced Nanocatalysts for Biodiesel Production** CRC Press

The high failure rate of enterprise resource planning (ERP) projects is a pressing concern for both academic researchers and industrial practitioners. The challenges of an ERP implementation are particularly high when the project involves designing and developing a system from scratch. Organizations often turn to vendors and consultants for handling such projects but, every aspect of an ERP project is opaque for both customers and vendors. Unlocking the mysteries of building a large-scale ERP system, The Adventurous and Practical Journey to a Large-Scale Enterprise Solution tells the story of implementing an applied enterprise solution. The book covers the field of enterprise resource planning by examining state-of-the-art concepts in software project management methodology, design and development integration policy, and deployment framework, including: A hybrid project management methodology using waterfall as well as a customized Scrum-based approach A novel multi-tiered software architecture featuring an enhanced flowable process engine A unique platform for coding business processes efficiently Integration to embed ERP modules in physical devices A heuristic-based framework to successfully step into the Go-live period Written to help ERP project professionals, the book charts the path that they should travel from project ideation to systems implementation. It presents a detailed, real-life case study of implementing a large-scale ERP and uses storytelling to demonstrate incorrect and correct decisions frequently made by vendors and customers. Filled with practical lessons learned, the book explains the ins and outs of adopting project methodologies. It weaves a tale that features both real-world and scholarly aspects of an ERP implementation.