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The IET 2018 Books and eBooks Catalogue lists the new and forthcoming titles available from both our IET and SciTech Publishing imprints, providing you with the opportunity to conveniently browse our range. See page 71 for information on how to order print and eBooks from the IET.

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2018 HIGHLIGHTS

**Novel Radar Techniques and Applications**  
*2 Volume Set*  
*Richard Klemm, et al., Fraunhofer Institute, Germany*  
This two volume set presents the state-of-the-art in advanced radar, with an emphasis on ongoing novel research and development and contributions from an international team of leading radar experts.  
> See page 44 for details

**Wind Power Modelling**  
*3 Volume set*  
*Editor: Paul Veers, National Renewable Energy Laboratory, USA*  
*Wind Power Modelling* is a three-volume set on wind farm power modelling; the key to efficient wind plant design and wind power growth. The set covers every aspect – from wind flow over turbine component design to grid integration.  
> See page 20 for details

**Swarm Intelligence**  
*3 Volume Set*  
*Editor: Ying Tan, Peking University, China*  
Covering principles and known approaches through to new and innovative algorithms, front-edge research methods, and their applications, this solid three-volume reference set will provide readers with a comprehensive view of the entire field of Swarm Intelligence.  
> See page 7 for details

**Iris and Periocular Biometric Recognition**  
*Editors: Christian Rathgeb & Christoph Busch, Darmstadt University, Germany & Gjøvik University College, Norway*  
This book covers iris and periocular recognition, a prominent field in biometrics recognition and identity science in the areas of security, computing and communications research and technologies.  
> See page 49 for details

**Requirements for Electrical Installations: IET Wiring Regulations 18th Edition**  
*BS 7671:2018*  
The 18th edition is a major update to this title, with changes expected to include an entirely new section, Part 8, Energy Efficiency.  
> See page 60 for details

**On-Site Guide to BS 7671:2018**  
As an essential guide to BS 7671, this incorporates the extensive changes in BS 7671:2018, making this a vital guide for keeping up to date.  
> See page 60 for details

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www.theiet.org/books
Big Data and Software Defined Networks

Editor: Javid Taheri
Karlstad University, Sweden

This book provides crucial information on state-of-the-art advancements and architectures of Big Data and Software Defined Networking (SDN), and highlights general open issues in these innovating and growing fields.

It explains how SDN can help Big Data applications run more efficiently and shows how Big Data analytics can be used to make better resource allocation decisions, and run smoother networks in Cloud data centres. A timely resource for researchers, developers and practitioners developing and implementing cloud-based solutions.

The IET Book Series on Big Data

Due Spring 2018 | Hardback | c.450pp | 978-1-78561-304-3
PBPC0150 | £100 • $160

Data as Infrastructure for Smart Cities

Authors: Larissa Romualdo Suzuki & Anthony C.W. Finkelstein
University College London, UK

The authors present a comprehensive framework of techniques for smart city data infrastructure design, a market estimated to grow substantially by 2020. Providing tools to enable processes with innovative use of technology and data, coupled with governance strategies, the book shows how to improve the quality of cross-domain city service management, and the decision making process. The framework has guided the design of several urban platforms in the European Union and the design of the City Data Strategy of the Mayor of London, UK.

The IET Book Series on Big Data

Due Summer 2018 | Hardback | c.300pp | 978-1-78561-599-3
PBPC0230 | £100 • $160

Modeling and Simulation of Complex Networks

Editor: Muaz A. Niazi
COMSATS Institute of Information Technology, Pakistan

This title covers key topics and approaches for next-generation networks and complex communication systems, and the various aspects of modeling and simulation of these networks from a complex adaptive systems perspective. It gives an overview of different modeling paradigms and approaches for the Internet of Things, wireless sensors, the cloud and big data networks. Case studies and examples of real-world complex systems are also included, making it invaluable for professionals working in next generation networks and complex communication systems.

The IET Book Series on Big Data

Due Summer 2018 | Hardback | c.500pp | 978-1-78561-355-5
PBPC0180 | £100 • $160

Parallel and Distributed Simulations for Big Data Processing

Editors: Asad W. Malik et al.
National University of Sciences and Technology, Pakistan

With contributions from world-leading researchers and scholars in the field of modelling, this handbook covers the fundamental concepts, latest advances, developments and future directions in the modelling and simulation of large-scale distributed systems. It discusses advanced topics such as large-scale simulation techniques, High Level Architecture (HLA), Runtime Infrastructure (RTI) design, process cloning, web-based simulation, data gathering and simulation validation. Ideal for those who design and implement large-scale distributed systems.

The IET Book Series on Big Data

Due Summer 2018 | Hardback | c.850pp | 978-1-78561-315-9
PBPC0170 | £125 • $195
SysML for Systems Engineering: A model-based approach
3rd Edition

Authors: Jon Holt & Simon Perry
Scarecrow Consultants, UK

Now with several new chapters, this third edition of the popular guide to SysML for systems engineering has been fully aligned with latest version (SysML 1.4) of the standard, and includes updates of the core modelling notation, standards models, benefits of MBSE, model management, model maturity and value chain modelling. The book also describes how to implement SysML and MBSE in an organisation, and how to model real projects effectively. An extensive case study makes the book invaluable for practising systems engineers.

Due Summer 2018 | Hardback | c.1000pp | 978-1-78561-554-2
PBPC0200 | £100 • $160

Foundations for Model-based Systems Engineering: From patterns to models

Authors: Jon Holt et al.
Scarecrow Consultants, UK

The practice of Model-Based Systems Engineering (MBSE) is becoming more widely adopted in industry, academia and commerce, and as the use of modelling matures in the real world, so the need increases for more guidance on how to model effectively and efficiently. This practical book describes a number of systems-level ‘patterns’ that may be applied using the systems modelling language SysML for the development of any number of different applications and as the foundations for a system model.

2016 | Hardback | 416pp | 978-1-78561-050-9
PBPC0140 | £85 • $135

Trusted Platform Modules: Why, when and how to use them

Author: Ariel Segall
Akamai Technologies, USA

Trusted computing is an emerging technology that aims to make computers safer, less prone to viruses and malware, and therefore better for end users. This practical introduction debunks the myths around Trusted Platform Modules (TPMs) and trusted computing, and focuses on the main uses for TPMs. It includes practical considerations such as when they should and should not be used, and describes the benefits they provide. Using real-world case studies and worked examples, the book explains how TPMs can be used to substantially improve platform and network security.

2016 | Hardback | 400pp | 978-1-84919-893-6
PBPC0130 | £75 • $120

IET JOURNALS

IET Computers & Digital Techniques

Editor-in-Chief: Professor Andy Tyrrell
University of York, UK

IET Computers & Digital Techniques publishes technical papers describing recent research and development work in all aspects of digital system-on-chip design and test of electronic and embedded systems, including the development of design automation tools (methodologies, algorithms and architectures).

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Swarm Intelligence
3 Volume Set

Editor: Ying Tan
Peking University, China

Covering principles and known approaches through to new and innovative algorithms, front-edge research methods, and their applications, this solid three-volume reference set will provide readers with a comprehensive view of the entire field of Swarm Intelligence, systematically and thoroughly.

Swarm Intelligence:
Volume 1: Principles, current algorithms and methods
Topics include:
- The basic principles of well-known swarm intelligence algorithms
- Efficiency improvements (from typical PSO, ACO and swarm intelligence algorithms to swarm robotics methods)

Swarm Intelligence:
Volume 2: Innovation, new algorithms and methods
Topics include:
- Front-edge research with newly proposed swarm intelligence algorithms and methods

Swarm Intelligence:
Volume 3: Applications
Topics include:
- The latest real-world applications of swarm intelligence algorithms
- Related evolutionary algorithms to show the effectiveness and validation of swarm intelligence

Essential reading for engineers, researchers, professionals and practitioners working in the fields of computer science, information technology, artificial intelligence, neural networks, computational intelligence, bioengineering, physics, mathematics, and social sciences.

Publish date: Summer 2018

Volume 1: Retail Price: £125/$200
Hardback, 700pp
ISBN: 978-1-78561-627-3
Product Code: PBCE119A

Volume 2: Retail Price: £125/$200
Hardback, c.600pp
ISBN: 978-1-78561-629-7
Product Code: PBCE119B

Volume 3: Retail Price: £125/$200
Hardback, c.850pp
ISBN: 978-1-78561-631-0
Product Code: PBCE119C

3-Volume set: Retail Price: £300/$480
Hardback, c.2150pp
ISBN: 978-1-78561-633-4
Product Code: PBCE119X

Also see page 10.
Microwave Gauging: Accurate sensing, measurement and monitoring in the industrial environment

Author: Nathan Ida
University of Akron, USA

This book deals with the sensing of sheet products for a variety of properties including dimensions, moisture, electrical attributes, and curing state, using open microwave resonators. The author introduces the ideas and tools needed, and then presents a coherent, entirely practical approach to the design of open resonator microwave sensors. Ideal for design and production engineers in the rubber, paper, fabrics and wood industries as well as academics in electromagnetics, microwave and sensing specialisations.

Due Summer 2018 | Hardback | c.300pp | 978-1-78561-140-7
PBCE1030 | £120 • $190

Ground Penetrating Radar: Improving sensing and imaging through numerical modeling

Authors: Lucas Travassos & Nathan Ida
Universidade Federal de Santa Catarina, Brazil & University of Akron, USA

This book covers modeling and simulation methods as well as the support tools available to improve imaging and sensing for Ground Penetrating Radar (GPR). After an introduction to the basic concepts, the authors present a more detailed discussion, enabling readers to identify and apply the technique that best suits their goals. It is therefore an invaluable resource for anyone working with GPR. An appendix provides the basic concepts for a general mathematical description of the variables of interest and their spatial and temporal variations.

Due Autumn 2018 | Hardback | c.400pp | 978-1-78561-493-4
PBCE1150 | £100 • $160

Modeling, Simulation and Control of Electrical Drives

Editors: M.F. Rahman & Sanjeet Kumar Dwivedi
University of New South Wales, Australia & Curtin University, Australia

This book provides insights into state-of-the-art control techniques for different types of AC machines (i.e. Induction Motors, Permanent Magnet Synchronous Motors and Permanent Magnet Brushless DC Motors). The book gives up-to-date references along with a framework of the different types of AC machines modeling and control algorithms using MATLAB®/Simulink®. Ideal for professional engineers and practitioners in AC drives, and as an advanced textbook for Masters and PhD students working in the control of electric drives.

Due Autumn 2018 | Hardback | c.350pp | 978-1-78561-587-0
PBCE1180 | £100 • $160

Frequency Weighted Model Order Reduction: Techniques and applications

Authors: Victor Sreeram et al.
University of Western Australia, Australia

This volume describes the technique of frequency weightings in model-reduction, a procedure that helps to reduce the approximation errors that are inherent in the model-reduction process. The book gives an introduction to model reduction and frequency weighted model reduction problems, as well as the mathematical methods used in various model reduction techniques. A host of other topics are also covered, making it essential reading for researchers in system control, modelling and signal processing.

Due Summer 2018 | Hardback | c.352pp | 978-1-78561-048-6
PBCE1010 | £105 • $170
**NEW**

**Motion-Induced Eddy Current Techniques for Non-Destructive Testing and Evaluation**

**Authors:** Hartmut Brauer et al.
Technische Universität Ilmenau, Germany

This title deals with non-destructive testing (NDT) and evaluation (NDE) via electromagnetic methods. Focusing on motion-induced eddy current testing techniques used for conductive materials, the book emphasises applications, including defectoscopy of metallic objects, of multi-layer structures and of composite materials, as well as sigmometry using LET. Perfect for researchers and advanced students working in non-destructive industrial sensing and testing, developers of NDT/NDE methods, material sensing engineers and material scientists.

The IET International Series on Sensors

**Due Summer 2018 | Hardback | c.400pp | 978-1-78561-215-2**
**PBCE1060 | £120 • $190**

**NEW**

**Sensors in the Age of the Internet of Things: Technologies and applications**

**Editors:** Octavian Adrian Postolache & Edward Sazonov
Instituto de Telecomunicacoes, Lisbon, Portugal & University of Alabama, Alabama, USA

This book focuses on the technologies constituting the Internet of Things from a sensor perspective, and describes connected sensors for smart cities, buildings, transportation, smart ports, energy infrastructure, smart home sensing, emergency management, personalised healthcare, precision agriculture and other applications. Starting at the level of physical sensing, it covers network architecture, Internet connectivity and communication protocols for IoT and cyber security. It concludes with methodologies for the integration and processing of sensor information with a focus on relevant sensors for IoT applications.

The IET International Series on Sensors

**Due Autumn 2018 | Hardback | c.300pp | 978-1-78561-634-1**
**PBCE1220 | £100 • $160**

**NEW**

**Sensory Systems for Robotic Applications**

**Editor:** Ravinder Dahiya
University of Glasgow, UK

With contributions from an international team of experts in robot sensing, this volume describes the hardware and software that enables robots to sense and estimate. Topics include the various type of sensors used in robotics (tactile, vision, audio etc.), the different sensing schemes (e-skin, tactile skin, e-nose etc.), as well as the range of sensing technologies, and system issues. Written for researchers working in robotics and sensors, the book will also interest graduate and advanced students in the field.

The IET International Series on Sensors

**Due Winter 2018 | Hardback | c.504pp | 978-1-84919-948-3**
**PBCE0970 | £110 • $185**

**NEW**

**Signal Processing and Machine Learning for Brain-Machine Interfaces**

**Editors:** Toshihisa Tanaka & Mahnaz Arvaneh
Tokyo University of Agriculture and Technology, Japan & University of Sheffield, UK

This book introduces signal processing and machine learning techniques for Brain Machine Interfacing/Brain Computer Interfacing (BMI/BCI), and their practical and future applications in neuroscience, medicine, and rehabilitation. This is an emerging and challenging technology in engineering, computing, machine learning, neuroscience and medicine, and so the book will interest researchers, engineers, professionals and specialists from all of these areas who need to know more about cutting edge technologies in the fields.

The IET International Series on Sensors

**Due Summer 2018 | Hardback | c.400pp | 978-1-78561-398-2**
**PBCE1140 | £100 • $160**

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Swarm Intelligence: Volume 1: Principles, current algorithms and methods

Editor: Ying Tan
Peking University, China

Covering principles and known approaches through to new research developments, analyses and applications of typical swarm intelligence methods, the aim of this three-volume book set is to provide readers with a full view of the field of swarm intelligence. In Volume 1, the authors introduce the basic principles of well-known swarm intelligence algorithms and efficient improvements (from typical PSO, ACO and swarm intelligence algorithms to swarm robotics methods).

Due Summer 2018 | Hardback | c.700pp | 978-1-78561-627-3
PBCE119A | £125 • $200

Swarm Intelligence: Volume 2: Innovation, new algorithms and methods

Editor: Ying Tan
Peking University, China

Covering principles and known approaches through to new research developments, analyses and applications of typical swarm intelligence methods, the aim of this three-volume book set is to provide readers with a full view of the field of swarm intelligence. In Volume 2, the authors present front-edge research with newly proposed swarm intelligence algorithms and methods. Each chapter comes from a leading scholar in that area, making the book an essential resource for anyone in the field.

Due Summer 2018 | Hardback | c.600pp | 978-1-78561-629-7
PBCE119B | £125 • $200

Swarm Intelligence: Volume 3: Applications

Editor: Ying Tan
Peking University, China

Covering principles and known approaches through to new research developments, analyses and applications of typical swarm intelligence methods, the aim of this three-volume book set is to provide readers with a full view of the field of swarm intelligence. In this third volume, the authors present the latest real-world applications of swarm intelligence algorithms and related evolutionary algorithms to show the effectiveness and validation of swarm intelligence, and encourage more researchers and practitioners to use them in ongoing and future projects.

Due Summer 2018 | Hardback | c.850pp | 978-1-78561-631-0
PBCE119C | £125 • $200

Theory, Design and Implementation of Embedded Robust Control with MATLAB®

Authors: Petko Hristov Petkov et al.
University of Sofia, Bulgaria

This book presents the theoretical and practical aspects of robust control design and implementation using MATLAB® and Simulink®. Combining knowledge from Control System Design and Computer Engineering, it describes the whole design process cycle from uncertainty plant modelling to the embedding of high-order robust controllers in 32-bit DSP and FPGA. It also shows how robust controllers can be implemented in modern digital devices with higher closed-loop performance. Perfect for anyone interested in the design of robust controllers using MATLAB®.

Due Summer 2018 | Hardback | c.300pp | 978-1-78561-330-2
PBCE1130 | £100 • $160
NEW

**Wearable Exoskeleton Systems: Design, control and applications**

*Editors: Shaoping Bai et al.*

*Aalborg University, Denmark*

This book reports the recent advances and technology breakthroughs in exoskeleton developments in the fields of robotics and mechanical design. Topics covered include mechanism design and control involving close human-robot interaction scenarios; human motion intention detection and support; comfort and ergonomics; and safety regulations for various wearable robot applications. The book will be of interest to engineers and researchers in academia as well as manufacturing companies interested in developing new markets in wearable exoskeleton robotics.

**Due Spring 2018** | **Hardback** | c.450pp | 978-1-78561-302-9

PBCE1080 | £100 • $160

NEW

**Control of Mechatronic Systems**

*Authors: Levent Güvenç et al.*

*Ohio State University, USA*

This comprehensive book will introduce advanced students, with only a basic background in control theory, to an array of techniques they can easily implement and use to meet the required performance specifications for their mechatronic applications. Most of the design approaches presented in the book are coded in MATLAB®, compiled by the authors together in a GUI (Graphical User Interface) under the name COMES (Control of Mechatronic Systems toolbox), available in the user contributed material part of the Mathworks MATLAB® website for free download and use with this book.

**2017** | **Hardback** | 216pp | 978-1-78561-144-5

PBCE1040 | £85 • $135

NEW

**Flexible Robot Manipulators: Modelling, simulation and control**

*2nd Edition*

*Authors: M. O. Tokhi & A. K. M. Azad*

*University of Sheffield, UK & Northern Illinois University, USA*

This book provides an account of the progress being made in the field of modelling and control of lightweight flexible manipulator systems. It covers the main issues in system simulation and modelling, classical and advanced control and soft computing control. For each section it gives an overview of the problem as well as a review of the current thinking. It also looks at algorithm development and evaluation, software development for computer implementation of the algorithm and verification and assessment of the results. References are included for further reading.

**2017** | **Hardback** | 536pp | 978-1-84919-583-6

PBCE0860 | £120 • $190

NEW

**RFID Protocol Design and Optimization for the Internet of Things**

*Authors: Alex X. Liu et al.*

*Michigan State University, USA*

RFID systems are a very pervasive and low cost technology used to automatically identify and track tags attached to objects, which contain electronically stored information. RFIDs are used in countless applications such as object tracking, 3D positioning, indoor localization, supply chain management, automotive, inventory control, anti-theft, anti-counterfeit, and access control. In this book, the authors aim to demystify complicated RFID protocols and explains in depth the principles, techniques, and practices in designing and optimizing them.

The IET International Series on Sensors

**2017** | **Hardback** | c.280pp | 978-1-78561-332-6

PBCE1120 | £100 • $160

How to order: +44 (0)1438 767328 sales@theiet.org
The Inverted Pendulum in Control and Robotics: From theory to new innovations

Editors: Olfa Boubaker & Rafael Iriarte
University of Carthage, Tunisia & National Autonomous University of Mexico, Mexico

The inverted pendulum is a classic problem in dynamics and control theory and is widely used as a benchmark for testing control algorithms. This book provides an overall picture of historical and current developments in nonlinear control theory, based on the simple structure and rich nonlinear model of the inverted pendulum model, and also discusses key applications using different experimental models of this system.

2017 | Hardback | 420pp | 978-1-78561-320-3
PBCE1110 | £100 • $160

Cyber-Physical System Design with Sensor Networking Technologies

Editors: Sherali Zeadally & Nafaâ Jabeur
University of Kentucky, USA & German University of Technology, Oman

This is the first book in this new area and it uniquely focuses on sensor networks in cyber-physical systems. The book describes how wireless sensor networking technologies can help in establishing and maintaining seamless communications between the physical and cyber systems—acquiring data, pushing data from the physical system to the cyber system, and routing decisions to appliances.

2016 | Hardback | 388pp | 978-1-84919-824-0
PBCE0960 | £85 • $140

Mechatronic Hands: Prosthetic and robotic design

Author: Paul H. Chappell
University of Southampton, UK

Gathering the accumulated knowledge on the topic gained at Southampton University over several decades, this book describes the technical design, concepts and characteristics of the main components that go into constructing an artificial hand, whether it is a simple design that does not have a natural appearance or a more complicated design where there are multiple movements of the fingers and thumb. This book is a must-read for students and lecturers in robotics, prosthetics and mechatronics as well as practitioners involved in the design and manufacture of prosthetics.

2016 | Hardback | 192pp | 978-1-78561-154-4
PBCE1050 | £105 • $170

Organic Sensors: Materials and applications

Editors: Eduardo Garcia-Breijo et al.
Polytechnic University of Valencia, Spain

This book features contributions from an international panel of leading researchers in organic electronics and their applications as sensors. It reviews the state-of-the-art in the use of organic electronic materials such as organic semiconductors, conducting polymers, chemically functionalised materials, and composite materials as physical, chemical and biomedical sensors in a variety of application settings. This book is cross-disciplinary in its approach and combines electronic engineering, materials science, chemistry, physics and healthcare technology.

The IET International Book Series on Sensors

2016 | Hardback | 312pp | 978-1-84919-985-8
PBCE1000 | £105 • $170
Practical Robotics and Mechatronics: Marine, space and medical applications

Author: Ikuo Yamamoto
Nagasaki University, Japan

This book provides an essential introduction on how to successfully create practical robotics and mechatronics. It is based on the author’s 30 years of experience in robotics development at Mitsubishi Heavy Industries, Ltd., JAMSTEC, and Nagasaki University, and contains many examples of real-world robots from new underwater vehicles, ships, robotic fish and unmanned aviation robotics, to space robotics, and medical robotics.

2016 | Hardback | 168pp | 978-1-84919-968-1
PBCE0990 | £95 • $150

Recent Trends in Sliding Mode Control

Editors: Leonid Fridman et al.
UNAM, Mexico

This book describes recent advances in the theory, properties, methods and applications of sliding mode control (SMC), including a discussion about the advantages and disadvantages of different SMC algorithms; a new Lyapunov-based approach for design of such controllers; gain adaptation for arbitrary order sliding mode control; new methods for design of arbitrary order sliding mode surfaces; and new applications in air breathing hypersonic vehicles, electropneumatic actuators, wind-energy conversion systems, and control of electrical machines with saturation.

2016 | Hardback | 440pp | 978-1-78561-076-9
PBCE1020 | £120 • $190

Solved Problems in Dynamical Systems and Control

Authors: Duarte Valério et al.
University of Lisbon, Portugal

This book presents a collection of exercises on dynamical systems, modelling and control. Each topic covered includes a summary of the theoretical background and exercises with solved problems on fractional calculus and simple tools for nonlinear systems. Topics covered include: mathematical models; PID controller synthesis; controller synthesis by pole placement; fractional order systems and controllers and many others. This book is essential reading for advanced students with courses in modelling and control in engineering, applied mathematics, biomathematics and physics.

2016 | Hardback | 448pp | 978-1-78561-174-2
PBCE1070 | £50 • $80

Analysis and Design of Reset Control Systems

Authors: Yuqian Guo et al.
Central South University, China

This book provides a comprehensive introduction to the theory of reset control. It draws on the authors’ own research and that of others, to explore several new ideas on reset control systems including robust stability, frequency domain analysis, reset control systems with discrete-time reset actions and optimal reset design. It also emphasises applications of reset control systems to high precision positioning systems such as hard disk drive servo systems. This is essential reading for post-graduates, researchers and practitioners working in control theory.

2015 | Hardback | 200pp | 978-1-84919-703-8
PBCE0940 | £90 • $149

How to order: +44 (0)1438 767328 sales@theiet.org
Control-oriented Modelling and Identification: Theory and practice

Editor: Marco Lovera
Polytechnic University of Milan, Italy

This comprehensive collection covers the state-of-the-art in control-oriented modelling and identification techniques. With contributions from leading researchers in the subject, it covers the main methods and tools available to develop advanced mathematical models suitable for control system design, including an overview of the problems that can arise during the design process. It also takes a practical look at a variety of applications of advanced modelling and identification techniques.

2015 | Hardback | 408pp | 978-1-84919-614-7
PBCE0800 | £79 • $126

Robust and Adaptive Model Predictive Control of Nonlinear Systems

Authors: Martin Guay et al.
Queen’s University, Canada

This book offers a novel approach to adaptive control and provides a sound theoretical background to designing robust adaptive control systems with guaranteed transient performance. It focuses on the more typical role of adaptation as a means of coping with uncertainties in the system model. Topics covered include: estimation in adaptive control; performance improvement in adaptive control; and robust adaptive model predictive control for systems with exogeneous disturbances. This is essential reading for academics and advanced students working in control theory and applications.

2015 | Hardback | 272pp | 978-1-84919-552-2
PBCE0830 | £79 • $126

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Advanced Numerical Methods for Time-Dependent Electromagnetic Applications

Authors: N. V. Kantartzis et al.
University of Thessaloniki, Greece

With contributions from leading names in the area, this book expands on several aspects of computational electromagnetics and advanced numerical techniques with cutting-edge applications, and proposes guidelines for the optimised design of several contemporary structures. As well as standard techniques, the authors cover many other time-domain schemes, including ADI, polynomial chaos, stochastic methods, enhanced curvilinear implementations and novel GPU/CUDA realisations. For researchers in electromagnetics and related areas.

Due Summer 2018 | Hardback | c.450pp | 978-1-78561-396-8
SBEW5320 | £110 • $175

Advances in Mathematical Methods for Electromagnetics

Editors: Kazuya Kobayashi & Paul Denis Smith
Chuo University, Japan & Macquarie University, Australia

This title covers recent progress in advanced analytical and associated numerical methods applied to problems arising in all areas of electromagnetics. It focuses on applying advanced or novel mathematical techniques to produce analytical solutions or effective analytical-numerical methods for computational electromagnetics addressing more general problems. Each chapter outlines its topic; discusses its scientific context and importance; describes approaches and results; and ends by describing which techniques work best for different problems.

Due Autumn 2018 | Hardback | c.700pp | 978-1-78561-384-5
SBEW5280 | £120 • $195

Developments in Antenna Analysis and Synthesis

Editor: Raj Mittra
University of Central Florida, USA

This volume addresses practical issues which antenna design engineers face every day and discusses the concepts and tools which will help them design better antennas. It covers recent advances in the antenna field, giving a compilation of the latest advances and designs. Topics include antenna pattern synthesis; reconfigurable and active antennas; MIMO antennas; reflectarray antennas; 3-D printed antennas and many more.

Due Autumn 2018 | Hardback | c.500pp | 978-1-78561-374-6
SBEW5310 | £110 • $175

Leaky Waves in Electromagnetics

Authors: Paolo Burghignoli et al.
Università “La Sapienza” di Roma, Italy

This is the first book to provide a unified treatment of the theory and the variety of applications of leaky waves. Topics covered include, the theoretical basis of leaky waves in uniform and periodic structures; applications in radiation and antennas; scattering; metal and dielectric waveguides; planar structures and complex media. This is a vital resource for academic and research lab engineers in electromagnetics theory, antennas, applied physics and related systems applications.

Due Spring 2018 | Hardback | c.368pp | 978-1-61353-213-3
SBEW5220 | £60 • $95
NEW

Light Filaments: Structures, challenges and applications

Editors: Jean-Claude Diels et al.
University of New Mexico, USA

This edited volume starts with tutorials about the science of filamentation before presenting in-depth chapters on the latest research, technologies and applications. It covers a wide range of light filaments considering various media of propagation, with structured or single filaments, and filaments of different colours, as well as combined filaments. It also includes a wide range of applications from strong field ionisation and molecular physics to laser development and beam shaping, THz, lasing in air and supercontinuum generation.

Due Summer 2018 | Hardback | c.450pp | 978-1-78561-240-4
SBEW5270 | £120 • $190

NEW

Adjoint Sensitivity Analysis of High Frequency Structures with MATLAB®

Author: Mohamed Bakr
McMaster University, Canada

This unique reference is the first to cover the theory of adjoint sensitivity analysis and uses the popular FDTD (finite-difference time-domain) method to show how wideband sensitivities can be efficiently estimated for different types of materials and structures. It includes a variety of MATLAB® examples to help readers absorb the content more easily. Topics covered include a review of FDTD and an introduction to adjoint sensitivity analysis, second-order sensitivity analysis, time-domain responses, and applications to nonlinear and anisotropic materials.

The ACES Series on Computational Electromagnetics and Engineering
2017 | Hardback | 280pp | 978-1-61353-231-7
SBEW5250 | £95 • $150

NEW

Slotted Waveguide Array Antennas

Authors: Sembiam Rengarajan & Lars Josefsson
California State University, USA & Lars Microwave, Sweden

This is the first comprehensive treatment of slotted waveguide array antennas from an engineering perspective. It provides readers with a thorough foundation in applicable theories as well as hands-on instruction for practical analysis and design of important types of waveguide slot arrays. Slotted Waveguide Array Antennas goes beyond some of the commonly discussed topics and ventures into areas that include: higher order mode coupling and edge effects; performance optimisation in terms of bandwidth and pattern performance and manufacturing tolerances.

Due Summer 2018 | Hardback | c.400pp | 978-1-61353-189-1
SBEW5170 | £75 • $125

NEW

Scattering of Electromagnetic Waves by Obstacles

Author: Gerhard Kristensson
Lund University, Sweden

The main purpose of Scattering of Electromagnetic Waves by Obstacles is to give a theoretical treatment of the scattering phenomena, and to illustrate numerical computations of some canonical scattering problems for different geometries and materials. The scattering theory is also important in the theory of passive antennas, and this book gives several examples on this topic.

Mario Boella Series on Electromagnetism in Information & Communication
2016 | Hardback | 760pp | 978-1-61353-221-8
SBEW5240 | £95 • $195

How to order: +44 (0)1438 767328 sales@theiet.org
Higher-order Techniques in Computational Electromagnetics

Authors: Roberto D. Graglia & Andrew F. Peterson
Polytechnic University of Turin, Italy & Georgia Institute of Technology, USA

Higher-order Techniques in Computational Electromagnetics takes a different approach to computational electromagnetics and looks at it from the viewpoint of vector fields and vector currents. It gives a more detailed treatment of vector basis function than is currently available in other books. It also describes the approximation of vector quantities by vector basis functions, explores the error in that representation and considers various other aspects of the vector approximation problem.

Radio Frequency Interference Pocket Guide

Authors: Kenneth Wyatt & Michael Gruber
ARRL Lab, USA

This handy pocket guide to essential radio frequency interference (RFI) is a valuable, pocket-sized reference for radio amateurs and others in the radio communication fields. Designed as a practical, quick reference, the Radio Frequency Interference Pocket Guide collates all the key facts and useful reference materials in one handy place to help the reader to understand basic EM theory, along with specific remediation steps in reducing or eliminating sources of radio interference. Topics covered include: EMC/RFI Fundamentals, EMC design, FCC rules, locating RFI and resolving RFI.

The Finite-Difference Time-Domain Method for Electromagnetics with MATLAB® simulations

2nd Edition

Authors: Atef Z. Elsherbeni & Veysel Demir
Colorado School of Mines, USA & Northern Illinois University, USA

This is one of the best books on computational electromagnetics for graduate students and practising engineering professionals in industry and government. This latest edition has been expanded to include four entirely new chapters on advanced topics in the mainstream of FDTD practice. In addition to advanced techniques it also includes applications and examples, and some ‘tricks and traps’ of using MATLAB® to achieve them. This second edition has been comprehensively updated and expanded to provide a must-have reference for someone who is performing FDTD research.

IET Microwaves, Antennas & Propagation

Editor-in-Chief: Professor Stavros Iezekiel
University of Cyprus, Cyprus

IET Microwaves, Antennas & Propagation comprehensively covers microwave and RF circuits, microwave and millimetre wave amplifiers, oscillators, switches, mixers and other components. This journal is essential reading for researchers, professionals and graduates, in the fields of antennas and propagation, and RF/microwave systems.

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Wind Power Modelling

3 Volume Set

Editor: Paul Veers
National Renewable Energy Laboratory, USA

Wind Power Modelling is a three-volume set on wind farm power modelling; the key to efficient wind plant design and wind power growth. The set covers every aspect – from wind flow over turbine component design to grid integration.

Wind Power Modelling: Atmosphere and wind plant flow

Topics include:
- Meso-scale modelling of the atmosphere
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- Atmospheric turbulence modelling and simulation
- Modelling of wakes and wake interactions

Wind Power Modelling: Turbines and systems

Topics include:
- Electrical generation, collector systems and grid interaction
- Storage technologies
- Grid modelling
- Financial structures modelling

Wind Power Modelling: Power plants and grid integration

Topics include:
- Structural dynamics
- Blade and rotor design and analysis
- Drive train analysis
- Controller design
- Offshore turbines and foundations

Wind Power Modelling 3 Volume Set addresses the entire breadth of the wind farm power modelling.

With chapters from eminent international experts, the set is written for researchers in academia and industry involved with all facets of wind power modelling.

Publish date: Summer 2018

Atmosphere and wind plant flow:
Retail Price: £100/$160
Hardback, 250pp
ISBN: 978-1-78561-521-4
Product Code: PBPO125A

Turbines and systems:
Retail Price: £100/$160
Hardback, c.250pp
ISBN: 978-1-78561-523-8
Product Code: PBPO125B

Power plants and grid integration:
Retail Price: £100/$160
Hardback, c.250pp
Product Code: PBPO125C

3-Volume set:
Retail Price: £250/$400
Hardback, c.750pp
ISBN: 978-1-78561-528-3
Product Code: PBPO125X

Also see page 27.

www.theiet.org/books
Applications of Fault Diagnosis for Inverter Power Drives
Editor: Antonio Ginart
Sonnen Inc, USA

This is a comprehensive, application-oriented book on inverter power drive diagnostics. It focuses on early and embedded diagnosis, prognosis, and intrinsic reliability of inverter power drives and their applications. It covers a wide range of application areas, including motors, electric vehicles and renewable power generation. A valuable resource for researchers and practitioners in power electronics as well as system designers in aerospace, hybrid and electrical cars and solar and wind engineering design.

Due Autumn 2018 | Hardback | c.300pp | 978-1-78561-410-1
PBPO1200 | £100 • $160

Characterization of Wide Bandgap Power Semiconductor Devices
Authors: Fei (Fred) Wang et al.
The University of Tennessee, Knoxville, USA

Based on the authors’ years of extensive experience, this is an authoritative overview of Wide Bandgap (WBG) device characterization. It provides essential tools to assist researchers, advanced students and practicing engineers in performing both static and dynamic characterization of WBG devices, particularly those based on using silicon carbide (SiC) and gallium nitride (GaN) power semiconductors. The book presents practical considerations for real applications, and includes examples of applying the described methodology.

Due Summer 2018 | Hardback | c.300pp | 978-1-78561-491-0
PBPO1280 | £100 • $160

Bifacial Photovoltaics: Technology, applications and economics
Editors: Radovan Kopecek & Joris Libal
University of Konstanz & ISC Konstanz, Germany

This title focuses on bifacial photovoltaics, a topic for which there is a distinct lack of available, structured information and thus meets an increasing need. The book provides an overview of the history, status and future of bifacial PV technology with a focus on crystalline silicon technology, covering the areas of cells, modules, and systems. In addition, topics like energy yield simulations and bankability are addressed.

Due Summer 2018 | Hardback | c.300pp | 978-1-78561-274-9
PBPO1070 | £100 • $160

DC Distribution Systems and Microgrids
Editors: Tomislav Dragičević et al.
Aalborg University, Denmark

This volume from an international, world-class team is an up-to-date account of control and architectural design of DC distribution systems and microgrids. Ideal for engineers, academics and research students, it covers DC architecture and control, protection, microgrid standards, microgrid-based residential buildings and electric-vehicle charging technology. Practical details are given for real-world systems. It covers coordinated control design for intelligent real-time control of DC distribution systems, and explains stabilisation concepts.

Due Spring 2018 | Hardback | c.400pp | 978-1-78561-382-1
PBPO1150 | £100 • $160
Design of High-Efficiency Integrated AC-DC Converters

Author: Ke-Horng Chen
National Chiao Tung University, Taiwan

Of interest to researchers, students and designers working in power electronics, this book describes the advantages, challenges, underlying theory and applications of high-efficiency AC-DC converters that are built into circuits. This an increasingly popular design approach in power electronics, due to its potential to reduce environmental impact and improve converter thermal management. Applications covered include PSR battery chargers, high switching frequency AC-DC converters with WBG devices, and LED lighting designs.

Due Winter 2018 | Hardback | c.744pp | 978-1-84919-975-9
PBPO0830 | £105 • $175

Diagnosis and Fault Tolerance of Electrical Machines and Power Electronics

Editor: Antonio J. Marques Cardoso
University of Beira Interior, Portugal

Up-to-date and system-oriented, this is a comprehensive, unified guide to possible faults in electromechatronic systems. It encompasses techniques for fault analysis, diagnostics, condition monitoring methods, reconfiguration, remedial operating strategies and fault tolerance in electrical machines, power electronics and key types of drives. It also covers remnant life estimation. A vital resource for researchers and professionals specialising in the design, development and application of electrical machines and power electronics.

Due Autumn 2018 | Hardback | c.300pp | 978-1-78561-531-3
PBPO1260 | £100 • $160

Energy Storage at Different Voltage Levels: Technology, integration, and market aspects

Editors: Ahmed Faheem Zobaa et al.
Brunel University, UK

This comprehensive work addresses current and future roles of energy storage, prospects and challenges in the generation, transmission, distribution and customer levels of the grid. An international team of experts disclose scenarios for future storage technologies and electric vehicles. They demonstrate the risks and mitigation solutions for integration problems while illustrating the importance of energy storage in building sustainable modern power system grids. Economic and management aspects are also addressed using case studies.

Due Spring 2018 | Hardback | c.400pp | 978-1-78561-349-4
PBPO1110 | £100 • $160
High Voltage Power Network Construction

Author: Keith Harker
Consultant

This book is an up-to-date and comprehensive guide for engineers and researchers in high-voltage network construction. The book is structured around three parts: the specification and implementation of a technical solution; the execution of quality management system procedural arrangements; and assurance that all duty holders have the requisite competencies. The book discusses financial aspects; engineering contracts; project management; and health, safety and environmental practice. Interfaces with thermal and renewable power generation are also covered.

Due Spring 2018 | Hardback | c.800pp | 978-1-78561-423-1
PBPO1100 | £110 • $175

Metaheuristic Optimization in Power Engineering

Author: Jordan Radosavljević
University of Pristina, Serbia

This comprehensive reference demonstrates the application of selected metaheuristic optimization methods to solving problems in power engineering, and gives an overview of metaheuristic methodology. The first part of this book gives a brief description of selected metaheuristic optimization methods, while the second part covers applications of the methods to power system problems. Each chapter contains a comprehensive review of recent literature. Ideal for researchers in power system analysis and power system optimization.

Due Spring 2018 | Hardback | c.250pp | 978-1-78561-546-7
PBPO1310 | £100 • $160

Industrial Power Systems with Distributed and Embedded Generation

Author: Radian Belu
University of Alaska, USA

This book explores supporting technologies that can turn conventional passive electricity delivery networks into the active networks of the future. The focus is on industrial power systems, integrating new, dispersed sources with legacy systems of central generation, as well as allowing new technologies to operate effectively in isolated systems. The book includes systematic coverage of all related aspects and enabling technologies, from an introduction on the basics of power systems to microgrid operation, control and protection.

Due Summer 2018 | Hardback | c.400pp | 978-1-78561-152-0
PBPO0960 | £110 • $175

Modelling and Simulation of Complex Power Systems

Editors: Antonello Monti & Andrea Benigni
Aachen University, Germany & University of South Carolina, USA

This essential tool for research on modern power systems presents the main concepts of modelling and simulation of power systems and their use for simulation-based design. Written in a systematic, didactic style, and employing examples and case studies, the book explains the key techniques and methods used by software packages. Simulation solvers implemented in C++, MATLAB® and Python are used to explain the structure and development of commercial simulation tools. Ideal for researchers and advanced students involved with power system research.

Due Spring 2018 | Hardback | c.400pp | 978-1-78561-404-0
PBPO1180 | £100 • $160

How to order: +44 (0)1438 767328 sales@theiet.org
Modelling and Simulation of HVDC Transmission

Editors: Minxiao Han & Aniruddha Gole
Electric Power University, China & University of Manitoba, Canada

This book covers the development, modelling and simulation for high-voltage DC (HVDC) transmission systems. The development of HVDC technologies is introduced briefly before the role of modelling and simulation in the research and development of HVDC systems is discussed. The title covers the electromagnetic transient model, electromechanical transient model and the dynamic average model, with the electromagnetic transient model being emphasised. This book is a great resource for engineers, researchers and advanced students majoring in electric engineering.

Due Autumn 2018 | Hardback | c.300pp | 978-1-78561-380-7
PBPO1160 | £100 • $160

Modelling and Simulation of Small Scale Hydro Generation Systems

Editors: René Wamkeue & Innocent Kamwa
Université du Québec, Canada

This book provides engineers, researchers and advanced students with the mathematical modelling, control and simulation tools needed for the successful design, long-term management and maintenance of a small scale hydro-power plant (HPP). It also covers the hybrid operation with other small scale renewable power plants as well as the use of a storage system. The book features case studies and test-based design, and all system components are modelled using the well-known state space form technique.

Due Summer 2018 | Hardback | c.400pp | 978-1-78561-529-0
PBPO1220 | £100 • $160

Modern Control of Power Electronics Systems

Authors: Pericle Zanchetta et al.
University of Nottingham, UK

This book deals with control and modulation of power converters for electrical drives, distributed generation and active power filtering, giving the theoretical background and hints for practical implementation. It covers an unusually wide range of power electronics applications; includes novel kinds of power converters, like multi-level converters and matrix converters and their specific pulse-width modulation techniques; and covers predictive, repetitive and AI-based control. Essential for academic and industrial researchers in power electronics.

Due Spring 2018 | Hardback | c.368pp | 978-1-84919-785-4
PBPO0710 | £80 • $140

Performance, Modelling and Reliability of Photovoltaic Systems

Authors: George E. Georghiou et al.
The University of Cyprus, Cyprus

This guide provides a comprehensive range of topics for monitoring, modelling and assessing the performance of photovoltaic plants, and enabling effective asset management. Using real-world data, the book emphasises practical usability, systematically covering the knowledge needed to perform these tasks, from the basics all the way though to the evaluation of key performance indicators. Source code used to perform data analysis is also included. This book is ideal for anyone working with photovoltaic systems or plants.

Due Autumn 2018 | Hardback | c.300pp | 978-1-78561-256-5
PBPO1030 | £100 • $160

www.theiet.org/books
**NEW**

**Power Electronics Packaging Reliability**

*Editor: C. Mark Johnson*

The University of Nottingham, UK

In this title, world-leading experts with close industry connections provide up-to-date, comprehensive coverage of the rapidly developing, and increasingly important topic of device degradation in power electronics modules. Building up the material systematically, the book describes the technologies involved in power electronic device manufacturing, with an emphasis on characterising key wear-out mechanisms and technologies. A must-read for all engineers involved with electronics for reliable power systems.

Due Spring 2018 | Hardback | c.400pp | 978-1-78561-252-7
PBPO0990 | £120 • $190

**NEW**

**Power Market Transformation: Reducing emissions and empowering consumers**

*Author: Barrie Murray*

Electricity Market Services Ltd., UK

This book provides an analysis of the changes in the electricity market and quantifies their impact. It reviews strategic decisions in the management of changes in the sector and aims to identify the best way to meet the triple objectives of security, affordability and sustainability with low emissions. Economic issues are explained for the benefit of readers without economics backgrounds, making this ideal for engineers, academics, the power and utilities industries, and readers who want a better understanding of their sector’s market.

Due Spring 2018 | Hardback | c.350pp | 978-1-78561-481-1
PBPO1240 | £100 • $160

**NEW**

**Power Line Communication Systems for Smart Grids**

*Editors: Ivan Roberto Santana Casella & Alagan Anpalagan*

Universidade Federal do ABC, Brazil & Ryerson University, Canada

This up-to-date reference for researchers and graduate students explains the principles for the use of narrowband and broadband power line communication technologies in smart grids. The book also describes how to use these technologies to improve energy monitoring, control and management, particularly for intermittent renewable energies. Starting with a structured overview of key principles, the authors use a didactic approach to fundamental topics, before covering more complex and advanced aspects, through to the state of the art.

Due Autumn 2018 | Hardback | c.480pp | 978-1-78561-550-4
PBPO1320 | £100 • $160

**NEW**

**Power Systems Electromagnetic Transients Simulation: Power quality with renewable energy and electric vehicle integration**

*2nd Edition*

*Author: Neville R. Watson*

University of Canterbury, New Zealand

This new edition of the classic on electromagnetic transient (EMT) simulation gives an up-to-date overview of the area. Thoroughly revised, with entirely new chapters, it covers new topics including: simulation of very large networks; modelling of power electronic devices; integration of renewable energy sources; and real-time simulation of complex systems. Extensive appendices with additional explanations and modelling code samples are also included. Ideal for academics, postgraduates and professionals working in power system transients.

Due Autumn 2018 | Hardback | c.450pp | 978-1-78561-499-6
PBPO1230 | £110 • $175

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NEW

Power-plant Control and Instrumentation
2nd Edition

Authors: David M. Lindsley et al.
Kingston University, UK

This thoroughly revised and updated new edition of a classic book describes the systems and equipment used for measuring and controlling boilers and heat-recovery steam-generators employed in land and marine power plant and in process industries. This new edition features 50% new or updated content, including biomass firing, plant automation and increased flexibility. It continues to serve as a vital practitioner’s guide to the design, installation, operation and maintenance of these systems, as well as an essential resource for researchers.

Due Spring 2018 | Hardback | c.330pp | 978-1-78561-419-4
PBP01190 | £100 • $160

NEW

Surface Passivation of Industrial Crystalline Silicon Solar Cells

Editor: Joachim John
IMEC, Belgium

This timely, comprehensive work on solar cell surface passivation collects and conveys the scientific and technological progress made to implement dielectric passivation layers into the solar cell manufacturing process for c-Si solar cells. With a focus on industrial manufacturing, it describes the pathway from material research to full production implementation of dielectric layers for silicon solar cell passivation, and comprehensively covers all promising techniques. Ideal reading for researchers in photovoltaics R&D and manufacturing.

Due Summer 2018 | Hardback | c.350pp | 978-1-78561-246-6
PBP01080 | £110 • $180

NEW

Structural Control and Fault Detection of Wind Turbine Systems

Editor: Hamid Reza Karimi
Politecnico di Milano, Italy

Edited by an internationally renowned expert, this is an integrated, theoretically thorough treatment of structural control and monitoring of wind turbines, covering all aspects of wind turbine systems of different sizes. It provides a systematic and comprehensive treatment of the design, construction and monitoring of wind turbine systems and covers integrated modelling, safety, control and supervision infrastructure. Ideal for researchers and engineers in mechatronics, control and mechanical engineering, particularly in wind energy.

Due Spring 2018 | Hardback | c.300pp | 978-1-78561-394-4
PBP01170 | £100 • $160

NEW

Wind and Solar Based Energy Systems for Communities

Editors: Rupp Carriveau & David S-K. Ting
University of Windsor, Canada

The editors bring together topics on the emerging area of community energy technology, covering key areas from generation through to considerations for the entire system, with an emphasis on the popular energy sources of wind power and solar power. For solar power, it discusses community photovoltaics, solar thermal, and desalination. The book also covers storage, Power-to-Gas, microgrids, energy conservation and financing. The work is therefore invaluable for researchers and engineers involved with community-level energy systems.

Due Summer 2018 | Hardback | c.300pp | 978-1-78561-544-3
PBP01300 | £100 • $160
**NEW**

**Wind Power Modelling: Atmosphere and wind plant flow**

Editor: Paul Veers  
National Renewable Energy Laboratory, USA

*Atmosphere and Wind Plant Flow* is the first book in a comprehensive three-volume set on wind farm power modelling; the key to efficient wind plant design and wind power growth. The set covers every aspect – from wind flow over turbine component design to grid integration. With chapters from eminent international experts, the set is written for researchers in academia and industry involved with all facets of wind power modelling. Covering atmospheric aspects and flow, this volume will also be of interest to atmospheric scientists and meteorologists.

Due Summer 2018 | Hardback | c.250pp | 978-1-78561-521-4  
PBP0125A | £100 • $160

**NEW**

**Wind Power Modelling: Turbines and systems**

Editor: Paul Veers  
National Renewable Energy Laboratory, USA

*Turbines and Systems* is the second book in a comprehensive three-volume set on wind farm power modelling; the key to efficient wind plant design and wind power growth. The set covers every aspect – from wind flow over turbine component design to grid integration. With chapters from eminent international experts, the set is written for researchers in academia and industry involved with all facets of wind power modelling. Covering aerodynamics, design and analysis, this volume will particularly interest practitioners at wind turbine manufacturers.

Due Summer 2018 | Hardback | c.250pp | 978-1-78561-523-8  
PBP0125B | £100 • $160

**NEW**

**Wind Power Modelling: Power plants and grid integration**

Editor: Paul Veers  
National Renewable Energy Laboratory, USA

*Power Plants and Grid Integration* is the third book in a comprehensive three-volume set on wind farm power modelling; the key to efficient wind plant design and wind power growth. The set covers every aspect – from wind flow over turbine component design to grid integration. With chapters from eminent international experts, the set is written for researchers in academia and industry involved with all facets of wind power modelling. Covering generation, storage technologies and grid models, this volume will be of particular interest to practitioners in the utilities sector.

Due Summer 2018 | Hardback | c.250pp | 978-1-78561-525-2  
PBP0125C | £100 • $160

**NEW**

**Wireless Power Transfer: Theory, technology, and applications**

Editor: Naoki Shinohara  
Kyoto University, Japan

The comprehensive book written for engineering academics and research students covers the very latest in theory and technology for Wireless Power Transfer (WPT), including both coupling and radiative WPT. The technology is already seeing widespread use, e.g. for charging phones, and systems for charging electric vehicles are already under development. Edited by a highly respected authority with an extensive research background in the field, the title discusses theory, technologies, and current and future applications.

Due Spring 2018 | Hardback | c.250pp | 978-1-78561-346-3  
PBP01120 | £100 • $160
Clean Energy Microgrids
Editors: Shin’ya Obara & Jorge Morel
Kitami Institute of Technology, Japan

Microgrids – connecting entities smaller than cities, such as smaller villages or university campuses – are gaining importance. This book describes the latest technology in microgrids and economic, environmental and policy aspects of their implementation, including microgrids for cold regions, and future trends. Topics covered include an overview of clean energy systems; storage systems for microgrids; microgrid reliability and electricity quality and communication network security and privacy. International case studies are included.

Cogeneration: Technologies, optimisation and implementation
Editor: Christos A. Frangopoulos
National Technical University of Athens, Greece

This book provides an integrated treatment of cogeneration – the simultaneous production of two or more useful forms of energy from the same primary energy source – including a tour of the available technologies and their features, how these systems can be analysed and optimised (with the formal application of mathematical optimisation at three levels - synthesis, design specifications and operation), and implementation issues such as economic, financial, environmental, and legal/regulation aspects. It includes case studies of cogeneration projects implemented in various sectors.

Communication, Control and Security Challenges for the Smart Grid
Editors: S. M. Muyeen & Saifur Rahman
The Petroleum Institute, UAE & VT Advanced Research Institute, USA

This book focuses specifically on security and control aspects of the smart grid. It covers various related topics including smart grid architecture; communications and networking features; measuring and sensing devices; and smart transmission and distribution. Particular emphasis is placed on security, reliability, and stability features. Different control aspects of smart grid are also covered. Each chapter includes examples, case studies, simulations and experimental results, making this a practical and essential resource for professional researchers and advanced students alike.

Fault Diagnosis of Induction Motors
Authors: Jawad Faiz et al.
University of Tehran, Iran

This book is a comprehensive, structural approach to fault diagnosis strategy, which will allow readers to select the right diagnosis strategy. The most important previously published works are reviewed, and potentials and limits of each approach are deeply discussed. The different fault types, signal processing techniques, and loss characterisation are also addressed in the book. This is essential reading for work with induction motors for transportation and energy.
Fuzzy Logic Control in Energy Systems with MATLAB®

Author: İsmail Hakki Altas
Karadeniz Technical University, Turkey

This book is about fuzzy logic control and its applications in managing, controlling and operating electrical energy systems. It aims to convey an understanding of design approaches to fuzzy logic controllers in MATLAB® and MATLAB/Simulink® environments. This book will enable readers to develop their own fuzzy processor library and fuzzy logic toolbox for the particular problems they study. This is an essential text for researchers and practising engineers working in power engineering and advanced students in the topic.

2017 | Hardback | 530pp | 978-1-78561-107-0
PBPO0910 | £120 • $190

Hydrogen Production, Separation and Purification for Energy

Editors: Angelo Basile et al.
ITM-CNR, Italy

Hydrogen production is set to play an increasing role in a modern, clean energy system. It can be produced from clean energy, such as excess solar or wind energy, serving as a storage medium to help mitigate the intermittency of renewables. However, the ways to produce hydrogen to sufficient purity standards need to be developed further and made more efficient and cost effective. This book describes and discusses the current techniques and challenges for producing hydrogen. Researchers, advanced students and practising engineers will find this book of interest.

2017 | Hardback | 488pp | 978-1-78561-100-1
PBPO0890 | £105 • $165

Introduction to the Smart Grid: Concepts, technologies and evolution

Author: Salman K. Salman
The Robert Gordon University, UK

The concept, evolution and technologies of the Smart Grid are discussed and explained in this comprehensive introduction to the subject. It identifies and discusses the tools required to ensure the interoperability among various digitally-based components of the Smart Grid. Additionally it covers the input of user groups and collaborative efforts within the power industry towards developments of interoperability standards. This book highlights and discusses the necessary tools, drivers and key technologies related to the Smart Grid with examples from ongoing projects.

2017 | Hardback | 304pp | 978-1-78561-119-3
PBPO0940 | £100 • $160

Large Scale Grid Integration of Renewable Energy Sources

Editor: Antonio Moreno-Munoz
University of Córdoba, Spain

This work presents comprehensive coverage of the means to integrate renewable power, namely wind and solar power. It looks at new approaches to meet the challenges, such as increasing interconnection capacity among geographical areas, hybridisation of different distributed energy resources and building up Demand Response capabilities. This book presents an overview of the steps on the way toward 100% clean power, covering approaches like micro-storage and demand response, prosumers and energy communities and including distribution systems and microgrids.

2017 | Hardback | 336pp | 978-1-78561-162-9
PBPO0980 | £100 • $160
Hydropower helps stabilise fluctuations between demand and supply; with the increase in shares of wind and photovoltaic energy, this role will become more important. This book presents a systematic approach to mathematical modeling of different configurations of hydropower plants, their simulation studies, and performance of controlled systems. It offers a focused critical insight into new trends for hydropower operation and control and addresses the fundamentals and latest concepts, providing the most appropriate solutions for cost-effective and reliable operation.

2017 | Hardback | 280pp | 978-1-78561-195-7
PBPO1000 | £120 • $190

This book highlights the recent developments in power systems that have led to new challenges in the power quality domain, such as large-scale renewable energy-based generation technologies. It also looks at the challenge of the advance of nonlinear loads, including the associated harmonic distortion and low voltage quality with additional transmission and distribution loss concerns. It highlights the problems, causes and effects, and presents the recent facilities of power conditioners that can effectively solve the problem.

2017 | Hardback | 440pp | 978-1-78561-123-0
PBPO0920 | £120 • $190

The use of advanced technologies such as Phasor Measurement Units (PMUs) have made it possible to transform the power grid to an intelligent Smart Grid with real-time control and monitoring of the system. This book explores the application of PMUs in power systems, covering topics such as PMUs for improving power system performance; wide area measurement based power network protection; PMUs applications for load estimation and stability; state estimation in the presence of synchronized measurements; and PMUs based wide-area security assessment.

2017 | Hardback | 368pp | 978-1-78561-011-0
PBPO0970 | £110 • $175
How to order: +44 (0)1438 767328 sales@theiet.org

**Wave and Tidal Generation Devices: Reliability and availability**

*Author: Peter Tavner*  
Durham University, UK

There are many wave and tidal devices under development but very few are actually in revenue-earning production. However, the engineering problems are gradually being solved and there is an appetite to invest in these technologies for harsher environments. *Wave and Tidal Generation Devices* combines the lessons from the wind industry to show engineers, students and researchers the main reliability and availability issues facing the growing ocean energy industry. This is essential reading for wave and tidal engineers and researchers and advanced students of renewable energy. It will also be invaluable to those working with wave and tidal devices.

**Advances in Power System Modelling, Control and Stability Analysis**

*Editor: Federico Milano*  
University College Dublin, Ireland

This book captures new methodologies and technologies changing the way modern electric power systems are modelled, simulated and operated. Part 1 covers power system modelling and applications of telegrapher equations, power flow analysis, discrete Fourier transformation and stochastic differential equations. Part 2 focuses on power system operation and control, optimal power flow, real-time control and state estimation techniques. Part 3 describes advances in the stability analysis of power systems and covers voltage stability, transient stability, time delays, and limit cycles.

**Cogeneration and District Energy Systems: Modelling, analysis and optimization**

*Author: Marc A. Rosen*  
University of Ontario, Canada

District energy systems can be particularly beneficial when integrated with combined heat and power (CHP) technologies. This important book covers district energy and CHP technologies, as well as the systems that combine them. It focuses on modelling, analysis and optimization of cogeneration-based district energy systems. This comprehensive overview provides an essential resource for engineers and researchers in a broad area including mechanical engineering, chemical engineering, energy engineering, environmental engineering, process engineering and industrial engineering.

**Control Circuits in Power Electronics: Practical issues in design and implementation**

*Editor: Miguel Castilla*  
Technical University of Catalonia, Spain

Control circuits are a key element in the operation and performance of power electronics converters. This practical guide describes practical issues related to the design and implementation of these control circuits, and is divided into three parts – analogue control circuits, digital control circuits, and new trends in control circuits. Each chapter focuses on the presentation of the state-of-the-art control solutions adopted for that application, including circuit technology, design techniques, and implementation issues.
Cyber-Physical-Social Systems and Constructs in Electric Power Engineering

Editors: Siddharth Suryanarayanan et al.
Colorado State University, USA

Cyber-physical-social systems (CPSS) integrate computing, physical assets and human networks. This book describes state-of-the-art CPSS in electric power systems, including detailed approaches on social constructs which are a critical aspect of the end-user realm, and is divided into the three application areas of the electric grid. This book will be invaluable to academics and research-led professional engineers engaged in cyber-physical social system applications for power engineering.

2016 | Hardback | c.360pp | 978-1-84919-936-0
PBPO0810 | £110 • $175

Methane and Hydrogen for Energy Storage

Editors: David S-K. Ting & Rupp Carriveau
University of Windsor, Canada

Methane and hydrogen are important energy carriers which are relatively clean compared to coal and oil, and are poised to play an important role in replacing these in a modern, low-emission energy system. This book explores some of leading advances in methane and hydrogen storage as well as the interesting link between these two important elements in our evolving energy system mosaic.

2016 | Hardback | 176pp | 978-1-78561-193-3
PBPO1010 | £90 • $145

Periodic Control of Power Electronic Converters

Authors: Frede Blaabjerg et al.
Aalborg University, Denmark

Advanced power electronic converters convert, control and condition electricity. Power converters require control strategies for periodic signal compensation to assure good power quality and stable power system operation. This comprehensive text presents the most recent internal model principle based periodic control technology, which offers the perfect periodic control solution for power electronic conversion. It also provides analysis and synthesis methods for periodic control systems, and practical examples to demonstrate the validity of proposed technology for power converters.

2016 | Hardback | 264pp | 978-1-84919-932-2
PBPO0820 | £90 • $145

Power Distribution Automation

Editor: Biswarup Das
Indian Institute of Technology, India

Utilities around the world are under increasing pressure to provide reliable and good quality power supply to their retail customers, and to reduce their operational costs. This comprehensive book provides a detailed description of all the major components of a distribution automation system, including communication infrastructure and analysis tools, and includes extensive international case studies showing how the technology has been implemented in real-world situations.

2016 | Hardback | 352pp | 978-1-84919-828-8
PBPO0750 | £90 • $145
Smarter Energy: From smart metering to the smart grid
Editors: Hongjian Sun et al.
University of Durham, UK
This book presents cutting-edge perspectives and research results in smart energy. These span multiple disciplines including a variety of smart grid technologies and applications such as smart metering, energy management systems, demand side management, demand response, renewable energy integration, energy storage management, communication systems, and Internet of Things technologies. With contributions from an international team of leading experts, this is essential reading for researchers in academia and industry.
2016 | Hardback | 512pp | 978-1-78561-104-9
PBPO0880 | £120 • $190

Wide Area Monitoring, Protection and Control Systems: The enabler for smarter grids
Editors: Alfredo Vaccaro & Ahmed Faheem Zobaa
University of Sannio, Italy & Brunel University, UK
This book is designed to give electrical and electronic engineers the knowledge and skills necessary to deploy synchronised measurement technology (SMT) in Wide Area Monitoring, Protection And Control (WAMPAC) applications. It focuses on technological breakthroughs and roadmaps in implementing synchronised measurement technology in WAMPAC applications, which aim to provide significant reliability and financial benefits in the planning, operation and maintenance of smarter power networks at both the distribution and transmission level.
2016 | Hardback | 200pp | 978-1-84919-830-1
PBPO0730 | £85 • $135

Numerical Analysis of Power System Transients and Dynamics
Editor: Akihiro Ametani
The Polytechnique Montréal, Canada
The transient analysis of electrical networks has become very important for both HVAC and HVDC systems, due to significant changes introduced through the connection of renewable energy sources. This book describes the three major power system transient and dynamics simulation tools based on a circuit-theory approach which are most widely used all over the world (EMTP-ATP, EMTP-RV and EMTDC/PSCAD), together with another powerful simulation tool called the numerical electromagnetic analysis method.
2015 | Hardback | 544pp | 978-1-84919-849-3
PBPO0780 | £90 • $145

Power Electronic Converters and Systems: Frontiers and applications
Editor: Andrzej M. Trzynadlowski
University of Nevada, USA
Power electronic systems are indispensable in adjustable speed drives, national smart power grids, electric and hybrid cars, electric locomotives and subway trains, renewable energy sources and distributed generation. With chapters written by specialists in their field, this is a comprehensive compendium of state-of-the-art knowledge related to recent advances in power electronic devices, converters and systems. It is essential reading for practising engineers and graduate students, specialising in the development and application of power electronic converters and systems.
2015 | Hardback | 638pp | 978-1-84919-826-4
PBPO0740 | £120 • $190

How to order: +44 (0)1438 767328 sales@theiet.org
Power System Stability: Modelling, analysis and control

Authors: Om P. Malik & Abdelhay A. Sallam
University of Calgary, Canada & Port-Said University, Egypt

This title gives a comprehensive view of power system stability, covering both physical and mathematical perspectives. It features a range of topics including modelling, computation of load flow in the transmission grid, stability analysis under both steady-state and disturbed conditions, and appropriate controls to enhance stability. It also includes the development and physical real-time implementation of analytical and artificial intelligence based adaptive power system stabilisers to improve power system dynamic stability.

2015 | Hardback | 472pp | 978-1-84919-944-5
PBPO0760 | £105 • $175

Reliability of Power Electronic Converter Systems

Editors: Henry Shu-hung Chung et al.
City University of Hong Kong, HK

The main aims of power electronic converter systems (PECs) are to control, convert, and condition electrical power flow, from one form to another, through the use of solid-state electronics. This book outlines R&D into the scientific modelling, experimentation and remedial measures for advancing the reliability, availability, system robustness, and maintainability of PECs at different levels of complexity. Drawing on the experience of international experts, it covers a variety of applications from low- and high-power motor drives to automotive applications.

2015 | Hardback | 504pp | 978-1-84919-901-8
PBPO0800 | £120 • $190

Vehicle-to-Grid: Linking electric vehicles to the smart grid

Editors: Junwei Lu & Jahangir Hossain
Griffith University, Australia

The idea of the smart grid is well-established, but the concept of using electric vehicles (EVs) to support smart grids is still new. EVs are an increasingly important energy store for smart grids in cities, but the batteries of EVs also need to be charged and ready for their users. This book is an integrated treatment of Vehicle-to-Grid (V2G) technology, ranging from power generation, through monitoring and storage in stationary and electric vehicle batteries, to control techniques. It will interest researchers and advanced students as well as policymakers and planners.

2015 | Hardback | 272pp | 978-1-84919-853-4
PBPO0790 | £80 • $125

Wide-Area Monitoring of Interconnected Power Systems

Author: Arturo Román Messina
National Polytechnic Institute, Mexico

This is the first comprehensive, systematic account of advanced health monitoring and control systems, and near real-time power system analysis and security monitoring. It deals with the development and application of new analytical techniques, based on advanced signal processing methods and multi-scale, multi-temporal analysis tools, and the analysis, monitoring and control of wide-area phenomena in large interconnected power systems. It is suitable for advanced undergraduates, graduate students, researchers and utility engineers alike.

2015 | Hardback | 256pp | 978-1-84919-853-0
PBPO0770 | £90 • $145
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**High Voltage**

Editors-in-Chief: Masoud Farzaneh and Zhicheng Guan
Université du Québec à Chicoutimi, Canada and Tsinghua University, PR China

High Voltage aims to attract original research papers and review articles. The scope encompasses high-voltage power engineering and high voltage applications, including experimental, computational (simulation and modelling) and theoretical studies. It is a fully open access journal co-published with CEPRI (the China Electric Power Research Institute) and supported by Tsinghua University.

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Biomedical Signal Processing: Respiratory signals
Editor: Zahra M. K. Moussavi
University of Manitoba, Canada

This book explains how the mathematical tool of signal processing can be used to obtain the most meaningful analysis of biological signal outputs from the respiratory system. No other book covers this topic in such depth. Most chapters are co-authored by a biomedical engineer and expert from the medical community, making it accessible to both engineers and medical professionals in the field. Topics include spectral analysis of sounds, non-linear analysis of sounds, swallowing sound analysis, lung sounds and application to diagnoses.

Due Summer 2018 | Hardback | c.350pp | 978-1-78561-370-8
PBHE0160 | £100 • $160

EEG Signal Processing: Feature extraction, selection and classification methods
Editor: Wai Yie LEONG
Taylor’s University, Malaysia

This book focuses on the feature extraction methods used in Electroencephalographic (EEG) signal processing. It presents state-of-the-art aspects of EEG interpretation and the value of EEG; gives practical tips on interpretation and covers specific areas where EEG is most useful; and discusses how to report findings. It provides explanations of the EEG phenomena, gives a comprehensive review of EEG tracings and emphasises strategies, case studies and clinical practice. This book is ideal for readers in medical signal processing, biomedical engineering, bioinformatics and related fields.

Due Summer 2018 | Hardback | c.350pp | 978-1-78561-370-8
PBHE0160 | £100 • $160

Engineering High Quality Medical Software: Regulations, standards, methodologies and tools for certification
Author: Antonio Coronato
National Research Council of Italy, Italy

This one-stop reference focuses on high-confidence medical software in the growing field of e-health, telecare services and health technology. It covers the development of methodologies and engineering tasks together with standards and regulations for medical software. Key topics covered include configuration, design, verification and validation, risk management, testing and maintenance. This book is written for research-focused engineers, scientists and practitioners who focus on healthcare software and e-health platforms and technologies.

The IET Book Series on e-Health Technologies

Due Winter 2018 | Hardback | c.420pp | 978-1-78561-248-0
PBHE0120 | £100 • $160

Handbook of Speckle Filtering and Tracking in Cardiovascular Ultrasound Imaging and Video
Editors: Christos P. Loizou et al.
Cyprus University of Technology, Cyprus

This is the first book to combine speckle imaging and video filtering and tracking, and their applications. It provides different levels of material to researchers interested in developing imaging and video systems with better quality by limiting the corruption of speckle noise in their systems. Supporting sample imaging and video datasets will also be made available on the web, as well as sample source codes of the algorithms presented in this book via a MATLAB® toolbox available to download from the editors’ website.

Due Spring 2018 | Hardback | c.500pp | 978-1-78561-290-9
PBHE0130 | £100 • $160
**Integrative Modeling and Simulation Architecture for Value-based Learning Healthcare Systems**

**Editors:** Bernard P. Zeigler et al.
University of Arizona, USA

This book presents an innovative, unique and holistic approach to modeling and simulation approaches in healthcare management from leaders in computer modeling and simulation. From system architecture to modeling methodology, this book shows how to improve patient health and costs of care via the design and implementation of an efficient infrastructure. The framework, algorithms and methods are evaluated in real community environments. Researchers and professionals in health informatics, technology and policy will find this book invaluable.

*The IET Book Series on e-Health Technologies*

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- **PBHE0150** | **£100 • $160**

**NEW**

**Enhanced Living Environments: From models to technologies**

**Editors:** Ciprian Dobre et al.
University Politehnica of Bucharest, Romania

This book offers a coherent and realistic image of architectures, techniques, protocols, and cloud-based solutions related to Ambient Assisted Living (AAL) and Enhanced Living Environments (ELE). It presents state-of-the-art technological solutions and supporting systems such as resource and data management, fault tolerance, security, monitoring and control. The book editors are part of The Enhanced Living Environments (ELE) project, which promotes the provision of infrastructures and services for autonomous living via the seamless integration of ICT within homes and residences.

*The IET Book Series on e-Health Technologies*

- **2017** | **Hardback** | **c.355pp** | **978-1-78561-211-4**
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**NEW**

**Semiconductor Lasers and Diode-based Light Sources for Biophotonics**

**Editors:** Peter E. Andersen & Paul Michael Petersen
Technical University of Denmark, Denmark

From a team of international experts in the field, this reference takes readers from the fundamentals to the technologies and applications of bio-optics and biophotonics. It covers recent advances in semiconductor materials, visible and NIR lasers, LEDs, blue lasers, quantum cascade lasers, SDLs and their photochemical applications, near-IR imaging, Raman spectroscopy, and optical coherence tomography. Ideal for researchers and practitioners in medical optics, medical imaging, biophotonics, applied optics, and semiconductor and laser science.

*The IET Book Series on e-Health Technologies*

- **Due Summer 2018** | **Hardback** | **c.600pp** | **978-1-78561-272-5**
- **PBHE0070** | **£120 • $190**

**NEW**

**Human Monitoring, Smart Health and Assisted Living: Techniques and technologies**

**Editors:** Sauro Longhi et al.
Università Politecnica delle Marche, Italy

This book explores the use of techniques and technologies within ICT for the improvement of human quality of life - encompassing patient monitoring, data analysis and assistive services. Also discussed are the future challenges to develop effective and efficient healthcare and assistive systems for our current and future society. The book offers an interdisciplinary approach to the study of human monitoring, smart health and assisted living, under a unifying point of view to improve Quality of Life Technology (QoLT).

*The IET Book Series on e-Health Technologies*

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Portable Biosensors and Point-of-Care Systems

Editor: Spyridon E. Kintzios
Agricultural University of Athens, Greece

With views from international experts providing a variety of perspectives, this book describes the principles, design and applications of a new generation of analytical and diagnostic biomedical devices, characterised by their very small size, ease of use, multi-analytical capabilities and speed to provide handheld and mobile point-of-care (POC) diagnostics. It covers topics such as the history, development, latest research and applications of portable biosensors, ranging from the support of primary healthcare to food and environmental safety screening.

2017 | Hardback | 384pp | 978-1-84919-962-9
PBHE0030 | £125 • $200

Soft Robots for Healthcare Applications: Design, modelling and control

Authors: Shane Xie et al.
The University of Auckland, New Zealand

This book presents a systematic investigation of the design, modelling and control of soft robots actuated by PMAs. It includes a thorough review of the research in the field, and new insights into emerging technologies and developments for use in soft robots for healthcare. It also demonstrates applications of mechatronics to provide better clinical rehabilitation services. This book will provide biomedical engineering and robotics professionals and students with the fundamental mechatronics engineering knowledge to analyse and design new soft devices.

2017 | Hardback | 240pp | 978-1-78561-311-1
PBHE0140 | £90 • $145

Active and Assisted Living: Technologies and applications

Editors: Francisco Florez-Revuelta & Alexandros Andre Chaaraoui
Kingston University, UK & University of Alicante, Spain

This is a broad introductory handbook, for academic and industry researchers, covering the major technologies and applications in Ambient Assisted Living (AAL). With contributions from around the world, topics covered include smart homes, environmental sensors and data fusion, wearable sensors, devices and smart clothes, standards and interoperability, computer vision for AAL, reasoning systems, assistive and service robotics, support for activities of daily living, mental health and cognitive stimulation, privacy and ethical issues.

2016 | Hardback | 496pp | 978-1-84919-987-2
PBHE0060 | £110 • $170

Biomedical Nanomaterials: From design to implementation

Editors: Thomas J. Webster & Hıyal Yazıcı
Northeastern University, USA & Istanbul Kultur University, Turkey

Nanomaterials are finding numerous uses in medicine including fighting cancer. Biomedical Nanomaterials brings together the engineering applications and challenges of using nanostructured surfaces and nanomaterials in healthcare in a single source. It is an invaluable resource and essential reading for researchers in industry and academia working at the interfaces of healthcare, engineering and nanotechnology. Topics covered include biomimetic coating, surface modifications and treatments, 3D biomaterials, nanobiomaterials, and bioactivity of nanomaterials.

2016 | Hardback | 352pp | 978-1-84919-964-3
PBHE0040 | £105 • $170
Machine Learning for Healthcare Technologies

Editor: David A. Clifton
University of Oxford, UK

This book brings together chapters on the state-of-the-art in machine learning (ML) as it applies to the development of patient-centred technologies, with a special emphasis on “big data” and mobile data. With contributions from international experts from prestigious institutions, it describes cutting edge research and makes accessible, for the first time, the latest in Bayesian non-parametrics for healthcare. This is one of the key frontiers in ML, and its application to healthcare will serve as a useful tutorial guide for both ML-focussed and biomedical engineers.

Nanobiosensors for Personalized and Onsite Biomedical Diagnosis

Editor: Pranjal Chandra
Indian Institute of Technology, Guwahati, India

This book focuses mainly on the emerging nanobiosensor technologies which are geared towards onsite clinical applications and those which can be used as a personalized diagnostic device. Written by an international team of researchers who are developing these technologies, Nanobiosensors for Personalized and Onsite Biomedical Diagnosis covers the latest advances in the field of biosensors and biosensing applications. This important book includes an assessment of some current and emerging technologies for detecting protein biomarkers and other potential cancer biomarkers.

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Design of Terahertz CMOS Integrated Circuits for High-Speed Wireless Communication

Authors: Minoru Fujishima & Shuhei Amakawa
Hiroshima University, Japan

The book is the first to describe recent research on terahertz CMOS design for high-speed wireless communication in the post-5G world. The topics covered include fundamental technologies for terahertz CMOS design; theory and practical examples of building blocks; transceiver architectures; considerations for 300GHz-band communications; and future prospects. It is written by leading names in the field, this is a vital resource for researchers and professional circuit designers working in RFIC and CMOS design for telecommunications.

Due Summer 2018 | Hardback | c.250pp | 978-1-78561-387-6
PBCS0350 | £90 • $145

Industrial Practices in System-on-Chip Design Verification, Validation and Testing

Editor: C. P. Ravikumar
Texas Instruments, India

This practical book provides a guide to industry best practice on various aspects of SoC (System-on-Chip) design verification, validation and testing. Industrial Practices in System-on-Chip Design Verification, Validation and Testing is edited by a highly respected name in the field, with wide experience from both academia and industry. The book also suggests ways to reduce cycle time and so accelerate the process of commercialising new SoC designs. This makes it ideal for professionals in research, design, development and testing of SoC technology. Academics and research students in the area will also find it invaluable.

Due Summer 2018 | Hardback | c.250pp | 978-1-78561-611-2
PBCS0410 | £90 • $145

Photonic Integrated Circuits: Integration platforms, building blocks and design rules

Authors: Martijn Heck et al.
Aarhus University, Denmark

This book provides an engineering approach to photonic integration technologies from fundamental concepts to integration strategies, combining different components in a single chip and assembly issues. It covers all three main platforms: PLC/silica/doped glass, silicon-on-insulator and indium phosphide. Selected real-world examples provide engineers with a feel for the technology’s potential. It is ideal for photonics researchers in industry and academia as well as postgraduate students in electrical engineering, photonics and telecommunications.

Due Summer 2018 | Hardback | c.344pp | 978-1-78561-074-5
PBCS0310 | £110 • $175

System Design with Memristor Technologies

Authors: Lauren Guckert & Earl E. Swartzlander
The University of Texas, Austin, USA

This book from two internationally acknowledged experts in the field covers recent developments in memristor fabrication, modelling, and applications, and explores research in the design and implementation of arithmetic units using memristors. The book’s practical approach helps bridge the gap between laboratory-scale memristor development and potential applications in future computing. To make the material easier to understand and use, details of each design, simulation result and analysis are presented in terms of complexity, delay and power.

Due Spring 2018 | Hardback | c.300pp | 978-1-78561-561-0
PBCS0380 | £100 • $160
High Frequency MOSFET Gate Drivers: Technologies and applications

Authors: Zhi-Liang Zhang & Yan-Fei Liu
Nanjing University of Aeronautics and Astronautics, China & Queen’s University at Kingston, Ontario, Canada

This first book in this important class of power electronics devices describes advanced high frequency power MOSFET gate driver technologies, which serve a critical role between control and power devices. Topics covered include the state-of-the-art of power MOSFET drive techniques; switching loss modelling and optimal design methods; Current Source Drivers (CSDs) and their applications; and Resonant Gate Drivers and their applications. This is essential reading for researchers and advanced students in power electronics and electronic devices.

High Speed Data Converters

Author: Ahmed M.A. Ali
Analog Devices, Inc. USA

Written by a leading analogue-to-digital converter (ADC) designer, this book describes high speed Nyquist ADCs including architecture design, design methodology, circuit design techniques, problems, and trade offs. Topics covered include an introduction to high-speed data conversion; performance metrics; data converter architectures; sampling; comparators; amplifiers; pipelined A/D converters; time-interleaved converters; digitally assisted converters; and evolution and trends.

Nano-CMOS and Post-CMOS Electronics: Circuits and design

Editors: Saraju P. Mohanty & Ashok Srivastava
University of North Texas, USA & Louisiana State University, USA

A companion to Devices and Modelling, this volume outlines circuit and system level design approaches and issues for nano-CMOS and post-CMOS devices. Topics covered include self-healing analog/RF circuits; FinFET SRAM circuits; low leakage variability aware CMOS logic circuits; thermal effects in MWCNT VLSI interconnects; an accurate PVT-aware statistical logic library for nano-CMOS integrated circuits; SPICEless RTL design optimisation of nano-electronic digital integrated circuits; power-delay trade-off driven optimal scheduling of CDFGs during high level synthesis and 3D NoC – a promising alternative for tomorrow’s nano-system design and DNA computing.
Nano-Scaled Semiconductor Devices: Physics, modelling, characterisation, and societal impact

Editor: Edmundo A. Gutiérrez-D.
INAOE, Mexico

The rapid evolution of integrated circuit technology has brought with it many new materials and processing steps at the nano-scale, which boost the electrical performance of devices and result in faster and more functionally-complex electronics. However, working at this reduced scale can bring second order effects that degrade efficiency and reliability. *Nano-Scaled Semiconductor Devices* describes methods for the characterisation, modelling, and simulation prediction of these second order effects in order to optimise performance and energy efficiency and identify new uses of nano-scaled semiconductor devices.

Optical MEMS for Chemical Analysis and Biomedicine

Editor: Hongrui Jiang
University of Wisconsin-Madison, USA

Optical MEMS are micro-electromechanical systems merged with micro-optics. They allow sensing or manipulating optical signals on a very small scale, using integrated mechanical, optical and electrical systems, and hold great promise in biomedical and other applications. This book describes the current state of optical MEMS in chemical and biomedical analysis, bringing together topics representing the most exciting progress made and current trends in the field in recent years.

Oscillator Circuits: Frontiers in design, analysis and applications

Editor: Yoshifumi Nishio
Tokushima University, Japan

This book is a comprehensive volume on the most recent research on oscillator circuit design, analysis and applications. It highlights developments in the analysis of synchronisation and wave phenomena; new analytical and design methods and their application; and novel engineering applications of oscillator circuits. Covering various oscillatory circuits and their synchronisation, this is essential reading for researchers, students and designers working in circuit theory, analysis, design and applications.

Heat Management in Integrated Circuits: On-chip and system-level monitoring and cooling

Author: Seda Ogrenci-Memik
Northwestern University, USA

This essential overview covers devices and circuits used to convert temperature to a digital measurement, heat to electricity, and actively biased circuits that reverse thermal gradients on chips for cooling. The scope includes fundamental operating principles, which touch upon the physics of materials, as well as the circuit and system design aspects that enable successful functioning of these devices as an on-chip system. Finally, it discusses the use of these devices and systems for thermal management of high performance computing systems.
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**IET Nanodielectrics**

**Editors-in-Chief: George Chen and Zhi-Min Dang**  
University of Southampton, UK and Tsinghua University, China

**New open access journal, IET Nanodielectrics**

The IET is pleased to announce the launch of a new, fully Gold Open Access journal, *IET Nanodielectrics* aims to attract original research papers and surveys relating to the effects of nanoscale structure on the electrical polarization of insulating materials.

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“A must have for all radar researchers”

Novel Radar Techniques and Applications
2 Volume Set

Editors: Richard Klemm, Ulrich Nickel, Christoph Gierull, Pierfrancesco Lombardo, Hugh Griffiths and Wolfgang Koch

Novel Radar Techniques and Applications presents the state-of-the-art in advanced radar, with an emphasis on ongoing novel research and development and contributions from an international team of leading radar experts.

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Topics include:
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- Imaging radar
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Novel Radar Techniques and Applications
Volume 2: Waveform Diversity and Cognitive Radar, and Target Tracking and Data Fusion
Topics include:
- Waveform diversity and cognitive radar
- Target tracking and data fusion

Publish date: Autumn 2017

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- Retail price: £130/$195
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- Product Code: SBRA512A

Volume 2:
- Retail price: £130/$195
- Hardback, c.528pp
- Product Code: SBRA512B

2-Volume set:
- Retail price: £250/$395
- Hardback, c.1456pp
- ISBN: 978-1-61353-229-4
- Product Code: SBRA512X

Find out more

www.theiet.org/books-nov2volset

Also see page 46.
NEW

Ethical Decision-Making for Highly-Automated Military and Civilian Systems: A systems engineering approach

Author: Anthony Gillespie
University College London, UK

Written for researchers and students of systems modelling in academia, industry and the military/defence sector, this is the first book on the emerging topic of ethical engineering for autonomous systems. It presents proven system engineering techniques, showing how generic engineering requirements can be derived from ethical/legal considerations and then turned into systems requirements. The book then shows how these requirements can be used as a basis for system procurement, engineering design and system testing.

Due Autumn 2018  |  Hardback  |  c.300pp  |  978-1-78561-372-2
SBRA5170  |  £100 • $160

NEW

Photonics for Radar Networks and Electronic Warfare Systems

Editors: Antonella Bogoni & Francesco Laghezza
National Inter-university Consortium for Telecommunications, Italy

This is the first book to describe the potential for microwave photonics in radar and electronic warfare systems. It covers basic concepts and functions (RF transport in optical fibre, photonics-based RF signal generation/upconversion and analogue-to-digital conversion/downconversion, optical beam forming and optical RF filtering). It compares performance with conventional systems, describes their impact on digital signal processing, and explores integration issues. This book is essential reading for designers and researchers of radar and electronic warfare systems.

Due Summer 2018  |  Hardback  |  c.250pp  |  978-1-78561-376-0
SBRA5160  |  £90 • $145

NEW

Radar and Communication Spectrum Sharing

Editors: Shannon D. Blunt & Erik S. Perrins
University of Kansas, USA

With contributions from a team of international experts, this is a broad survey of the latest work on spectrum sharing from a radar perspective. It examines many different avenues of current research and considers the electromagnetic, systems engineering and signal processing components of the problem. The book has an emphasis on identifying the technology gaps for practical realisation and regulatory and measurement compliance. Essential for researchers and engineers in radar, communications and other areas impacted by spectrum sharing.

Due Summer 2018  |  Hardback  |  c.700pp  |  978-1-78561-357-9
SBRA5150  |  £120 • $195

NEW

Tactical Persistent Surveillance Radar with Applications

Author: David Lynch, Jr.
DL Sciences, Inc., Henderson, Nevada, USA

With case studies and software to help the reader, this comprehensive account of radar technologies in tactical surveillance comes from a pioneer of the field. It covers passive detection, radar detection, antenna monopulse, active electronic scanned antennas (AESA), moving target tracking (MTT), motion compensation, tactical target spectral characteristics, moving target detection (MTI), space time adaptive processing (STAP), synthetic aperture radar (SAR) imaging and details several technologies only recently released into the public domain.

Due Spring 2018  |  Hardback  |  c.464pp  |  978-1-78561-650-1
SBRA5240  |  £110 • $160

How to order:  +44 (0)1438 767328  sales@theiet.org
The Impact of Cognition on Radar Technology
Editors: Alfonso Farina et al.
Consultant
This book tackles the application of cognitive concepts to phased array radar systems for improved surveillance. It balances practical aspects with a rigorous mathematical approach and features many numerical study cases. The book also examines discoveries outside the radar community, such as breakthroughs in neuroscience. A list of common symbols, extensive cross-referencing and comprehensive references significantly enhance the book, making it invaluable as a reference for practitioners, academics and students in the area.

2017 | Hardback | c.312pp | 978-1-78561-580-1
SBRA5200 | £100 • $160

Novel Radar Techniques and Applications
Volume 1: Real aperture array radar, imaging radar, and passive and multistatic radar
Editors: Richard Klemm, et al.
Fraunhofer Institute, Germany

Novel Radar Techniques and Applications presents the state-of-the-art in advanced radar, with an emphasis on ongoing novel research and development and contributions from an international team of leading radar experts. Each section gives an overview of the latest research and perspectives of the future, and includes a number of chapters dedicated to specific techniques in conjunction with existing operational, experimental or conceptual applications. Volume 1 covers: Real aperture array radar and imaging radar (SAR, ISAR).

2017 | Hardback | c.928pp | 978-1-61353-225-6
SBRA512A | £130 • $195

Novel Radar Techniques and Applications
Volume 2: Waveform diversity and cognitive radar, and target tracking and data fusion
Editors: Richard Klemm, et al.
Fraunhofer Institute, Germany

Novel Radar Techniques and Applications presents the state-of-the-art in advanced radar, with an emphasis on ongoing novel research and development and contributions from an international team of leading radar experts. Each section gives an overview of the latest research and perspectives of the future, and includes a number of chapters dedicated to specific techniques in conjunction with existing operational, experimental or conceptual applications. Volume 2 covers: Passive and multistatic radar; waveform diversity and cognitive radar; and target tracking and data fusion.

2017 | Hardback | c.528pp | 978-1-61353-226-3
SBRA512B | £130 • $195
Digital Techniques for Wideband Receivers
3rd Edition
Authors: James Tsui & Chi-Hao Cheng
Wright-Patterson AFB, USA & Miami University, USA

Digital Techniques for Wideband Receivers is widely recognised as the definitive design guide on digital processing work with today’s complex receiver systems. This third edition brings readers up-to-date with the latest information on wideband electronic warfare receivers, and includes new chapters on the detection of FM and BPSK radar signals, analog-to-information, time-reversal filter and monobit receivers with improved instantaneous dynamic range. As well as theory, the book offers practical solutions to real digital receiver problems.

Modern Radar Detection Theory
Editors: Antonio De Maio & Maria Sabrina Greco
University of Naples Federico II, Italy & University of Pisa, Italy

Written by top researchers and recognised leaders in the field, this is the first book to provide a comprehensive understanding of the current research trends in modern radar detection. Updating readers with the latest radar signal processing algorithms now capable with high-speed computer chips and sophisticated programs, Modern Radar Detection Theory also includes examples and applications from real systems. This is essential reading for radar systems design engineers within aerospace companies, military radar engineers, and aerospace consultants.

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IET Radar, Sonar & Navigation

Editor-in-Chief: Professor Hugh Griffiths
University College London, UK

IET Radar, Sonar & Navigation covers the theory and practice of systems involving the processing of signals for radar, radiolocation, radionavigation and surveillance purposes. Examples of the fields of application include: radar, sonar, electronic warfare, avionic and navigation systems.

www.ietdl.org/IET-RSN

How to order: +44 (0)1438 767328 sales@theiet.org
NEW

Authentication Technologies for Cloud Technology, IoT, and Big Data
Editors: Yasser M. Alginahi & Muhammad N. Kabir
Taibah University, Saudi Arabia & University Pahang Malaysia, Malaysia

This book covers state-of-art global research on authentication technologies for security and privacy in information systems, including applications, research challenges and future research directions. Topics include information security, data authentication algorithms, cryptography, digital watermarking, biometric authentication and data authentication. Essential for scientists, engineers and professionals involved in all aspects of authentication and information technology and systems security.

Due Autumn 2018 | Hardback | c.500pp | 978-1-78561-556-6
PBSE0090 | £110 • $175

NEW

Information Security: Foundations, technologies and applications
Editors: Ali Ismail Awad & Michael Fairhurst
Luleå University of Technology, Sweden & University of Kent, UK

This book outlines key emerging trends in computational methods for information security. It will provide coverage of computing paradigms and technologies such as cryptography and cryptanalysis; biometrics-based identification and recognition; watermarking and stenography; software security assurance; physical and logical accesses; and cloud-based systems, with applications to surveillance, e-health, e-government, e-business, financial services, computer forensics, privacy and trust, cybersecurity and defence.

Due Spring 2018 | Hardback | c.456pp | 978-1-84919-974-2
PBSE0010 | £115 • $185

NEW

Nature-Inspired Cyber Security and Resiliency: Fundamentals, techniques and applications
Editors: El-Sayed M. El-Alf et al.
King Fahd University of Petroleum and Minerals, Saudi Arabia

This is a timely review of the fundamentals, the latest developments and the diverse applications of nature-inspired algorithms in cyber security and resiliency. Based on concepts from natural processes, phenomena and organisms, it presents novel methodologies to cope with cyber security challenges. Coverage includes intrusion and malware detection, intelligent threat detection and traffic analysis, evolutionary and self-healing security systems, nature-inspired data protection, cooperative and self-configurable cyber defence, and more.

Due Autumn 2018 | Hardback | c.400pp | 978-1-78561-638-9
PBSE0100 | £100 • $160

NEW

Hand-Based Biometrics: Methods and technology
Editor: Martin Drahanský
Brno University of Technology, Czech Republic

This book describes the complete biometrics of the hand, drawing on the latest research of its identifiable characteristics into one unique volume. It includes material on inner and outer hand physiology and diseases; fingerprint recognition and processing; palmprint recognition using 3D features; synthetic fingerprints; palmvein biometrics; finger veins recognition; 3D hand shape recognition; and anti-spoofing methods. Essential reading for researchers, engineers, practitioners, academics, product managers and government agencies in the security, biometrics and image processing fields.

The IET Book Series on Advances in Biometrics

Due Autumn 2018 | Hardback | c.400pp | 978-1-78561-556-6
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NEW

Information Security: Foundations, technologies and applications
Editors: Ali Ismail Awad & Michael Fairhurst
Luleå University of Technology, Sweden & University of Kent, UK

This book outlines key emerging trends in computational methods for information security. It will provide coverage of computing paradigms and technologies such as cryptography and cryptanalysis; biometrics-based identification and recognition; watermarking and stenography; software security assurance; physical and logical accesses; and cloud-based systems, with applications to surveillance, e-health, e-government, e-business, financial services, computer forensics, privacy and trust, cybersecurity and defence.

Due Spring 2018 | Hardback | c.456pp | 978-1-84919-974-2
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Nature-Inspired Cyber Security and Resiliency: Fundamentals, techniques and applications
Editors: El-Sayed M. El-Alf et al.
King Fahd University of Petroleum and Minerals, Saudi Arabia

This is a timely review of the fundamentals, the latest developments and the diverse applications of nature-inspired algorithms in cyber security and resiliency. Based on concepts from natural processes, phenomena and organisms, it presents novel methodologies to cope with cyber security challenges. Coverage includes intrusion and malware detection, intelligent threat detection and traffic analysis, evolutionary and self-healing security systems, nature-inspired data protection, cooperative and self-configurable cyber defence, and more.

Due Autumn 2018 | Hardback | c.400pp | 978-1-78561-638-9
PBSE0100 | £100 • $160

NEW

Hand-Based Biometrics: Methods and technology
Editor: Martin Drahanský
Brno University of Technology, Czech Republic

This book describes the complete biometrics of the hand, drawing on the latest research of its identifiable characteristics into one unique volume. It includes material on inner and outer hand physiology and diseases; fingerprint recognition and processing; palmprint recognition using 3D features; synthetic fingerprints; palmvein biometrics; finger veins recognition; 3D hand shape recognition; and anti-spoofing methods. Essential reading for researchers, engineers, practitioners, academics, product managers and government agencies in the security, biometrics and image processing fields.

The IET Book Series on Advances in Biometrics

Due Autumn 2018 | Hardback | c.400pp | 978-1-78561-556-6
PBSE0090 | £110 • $175

NEW
Data Security in Cloud Computing

Editors: Vimal Kumar et al.
University of Waikato, New Zealand

This edited book covers a wide range of issues on data security in cloud computing. Many organisations have already embraced the idea of a centralised cloud, due to its benefits of economy, reliability and scalability. These benefits, however, are traded with the loss of control, since data is stored, computed upon and accessed on the cloud, which gives rise to a number of challenging data security issues. This one-stop reference is organised into six sections, covering all major aspects of securing data in cloud computing and data security challenges in emerging technologies such as the Internet of Things (IoT) and Bring Your Own Device (BYOD) technologies.

Due Autumn 2018 | Hardback | c.500pp | 978-1-78561-203-9
PBSE0060 | £115 • $185

Iris and Periocular Biometric Recognition

Editors: Christian Rathgeb & Christoph Busch
Darmstadt University, Germany & Gjøvik University College, Norway

This book covers iris and periocular recognition, a prominent field in Biometrics Recognition and Identity Science in the areas of security, computing and communications research and technologies. Selected topics cover a wide spectrum of current research focusing on periocular recognition to augment the biometric performance of the iris in unconstrained environments, paving the way for multi-spectral biometric recognition on mobile devices. This text is divided into three parts to cover the most recent research and future directions as well as security related topics.

The IET Book Series on Advances in Biometrics

2017 | Hardback | 496pp | 978-1-78561-095-0
PBSE0030 | £110 • $175
**User-Centric Privacy and Security in Biometrics**

**Editor:** Claus Vielhauer  
Brandenburg University, Germany

Biometrics is a growing field of influence and significance in the security, communications, networking and computing fields. This book covers the major and critical system security challenges, developments, techniques and applications for biometric systems (confidentiality, authenticity, integrity, privacy, reliability, convenience, usability). It includes state-of-the-art contributions from international experts in the field which survey and evaluate how biometric techniques can enhance and increase the reliability of security strategies in a variety of applications.

**Engineering Secure Internet of Things Systems**

**Editors:** Benjamin Aziz et al.  
University of Portsmouth, UK

The Internet of Things (IoT) – the emerging global interconnection of billions of ‘smart’ devices – collects increasing amounts of private and sensitive data about our lives, and requires increasing degrees of reliability and trustworthiness in terms of the levels of assurance provided with respect to confidentiality, integrity and availability. This book examines these important security considerations for the IoT.

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**Other IET Books related to Security:**

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**Age Factors in Biometric Processing**

**Editor:** Professor Michael Fairhurst  
University of Kent, UK

As biometric-based identification and identity authentication becomes increasingly widespread in their deployment, it becomes important to consider issues relating to reliability, usability and inclusion. This book provides an overview of this topic for the rapidly expanding community of stakeholders in biometrics-based identification solutions in academia, industry and government.

**IET Biometrics**

**Editor-in-Chief:** Professor Michael Fairhurst  
University of Kent, UK

*IET Biometrics* includes papers that increase our understanding of biometric systems, signal future developments and applications for biometrics, and/or promote greater practical uptake for relevant technologies.

[www.theiet.org/iet-bmt](http://www.theiet.org/iet-bmt)
Digital Television Systems: Fundamentals & broadcast systems

Editors: Stefan Mozar & Konstantin Glasman
University of New South Wales, Australia & St Petersburg University of Film and Television, Russia

From a team of editors with substantial teaching experience and strong industry backgrounds, this is the first book in a multi-volume reference on digital television systems. This initial volume conveys everything from the fundamentals of Digital Television Systems through to broadcast systems, including error correction and compression of signals, cable and satellite transmission. Other volumes already under contract include Digital Television Reception and Transmission & Studios. This book is perfect for engineers working in broadcast media.

Due Winter 2018 | Hardback | c.350pp | 978-1-78561-250-3
PBTE0750 | £100 • $160

Network Design, Modelling and Performance Evaluation

Author: Quoc-Tuan Vien
Middlesex University, UK

This book introduces a methodological approach to network design that enables readers to evaluate a network situation and identify the most important aspects to be monitored and analysed. It shows how to go from the analysis of initial network requirements to the network architecture design, modelling, simulation and evaluation. Practice exercises are given for selected chapters, and case studies take the reader through the whole network design process. Ideal for practitioners and researchers working in all aspects of network services.

Due Autumn 2018 | Hardback | c.500pp | 978-1-78561-336-4
PBTE0770 | £110 • $175

Next Generation Integrated Satellite and Terrestrial Communication

Editors: Shree Krishna Sharma et al.
University of Western Ontario, Canada

This title covers state-of-the-art research, challenges and future perspectives in the field of satellite communications. It starts with integrated/hybrid satellite-terrestrial networks, and covers applications in areas such as transport, energy, health, environment, manufacturing, food production and disaster support. It then focuses on emerging technologies for next-generation systems and covers a selection of hot topics. It is ideal for telecommunications engineers and researchers who require a structured guide to the latest advances in the area.

Due Summer 2018 | Hardback | c.500pp | 978-1-78561-427-9
PBTE0790 | £110 • $175

Resilience in Wireless Networks

Author: Prashant Krishnamurthy
University of Pittsburgh, USA

The book presents a unified view of current research on resilience in wireless networks. The first title to cover network resilience at the advanced level, it covers both network infrastructure and ad hoc topologies, and illustrates the latest issues, challenges, and solution approaches. It provides practical examples of real-life attacks and diagnostic tools to improve future network resilience, making it an ideal reference for researchers and professionals in IT security and resilience.

Due Summer 2018 | Hardback | c.288pp | 978-1-84919-790-8
PBTE0620 | £85 • $140
Mobile data traffic is expected to exceed traffic from wired devices by 2018. This emerging future will be empowered by revolutionary 5G radio network technologies with a focus on application-driven connectivity, transparently deployed over various technologies, infrastructures, users and devices to give a vision of ‘the internet of everything’. This book presents a roadmap of 5G, presenting advanced radio technologies, innovative resource management approaches and novel architectures.

Cloud computing, a key trend in networking, shows that availability and fault tolerance issues can directly impact on millions of end-users. Now diffused among end-users devices in mobile and wired networks, the cloud is becoming the “fog”. This book elaborates on a new paradigm by presenting frameworks and schemes that use end-user or near-user edge devices to carry out storage, communication, computation and control in the network. Topics covered include network storage, the Internet of Things and heterogeneous 5G mobile services.

This book provides an introduction to advanced wireless transmission technologies in current and future wireless communication systems. It will help students and engineers with basic communication knowledge to quickly understand the principles and trade-offs involved in these digital wireless transmission technologies, start performing academic research in the field, and carry out product development. The material is presented without assuming an extensive background knowledge of digital communications. It also includes carefully designed problem-solving examples.
Flexible and effective service provisioning for supporting diverse applications is a key requirement for the next generation Internet. However, the current Internet lacks sufficient capability for meeting this requirement. Network-as-a-Service (NaaS) offers a promising approach to separating network architecture and infrastructure to make this possible and has been widely adopted in Cloud computing. This book provides a comprehensive survey of NaaS technologies, trends, applications and future directions for network service provisioning.

2017 | Hardback | 440pp | 978-1-78561-176-6
PBTE0730 | £100 • $160

With nearly 20% new material, this is the thoroughly revised, updated and expanded new edition of the classic text on transceiver and system design for digital communications. Most of the chapters have been updated with new material, and there are now several new chapters. Topics covered include cognitive systems; radar communication; volume search, acquisition and track; optimal waveform CP-PSK; AGC design methods; jammers; GPS; interferometry; error correction and detection; and transceiver design and RF components.

2017 | Hardback | c.568pp | 978-1-78561-495-8
PBTE0800 | £120 • $190

This book provides readers with comprehensive insights into the theory, models and techniques of Physical Layer Security and its applications in 5G and other emerging wireless networks. It covers recent advances in wireless communication and PHY security for 5G networks and beyond, including IoT, cognitive radio networks, massive MIMO, device-to-device communications, mm-wave communications, and energy harvesting communications. The potential of Physical Layer Security with a view to designing more secure communications in advanced networks of the future is also explored.

2017 | Hardback | c.529pp | 978-1-78561-235-0
PBTE0760 | £90 • $145

This fully revised, updated and expanded second edition incorporates updates on key and new areas of technology, which have developed since the original book was published in 2006. It provides a comprehensive explanation of how various systems and technologies link together to construct networks and provide services. This book complements Understanding Telecommunications Business (2015).

2017 | Hardback | 416pp | 978-1-78561-164-3
PBTE0710 | £50 • $80

How to order: +44 (0)1438 767328 sales@theiet.org
Advanced Relay Technologies in Next Generation Wireless Communications

Editors: Ioannis Krikidis & Gan Zheng
University of Cyprus, Cyprus & University of Essex, UK

Advanced Relay Technologies in Next Generation Wireless Communications describes the use of the highly successful cooperative networks/relaying approach in new and emerging telecommunications technologies such as full-duplex radio, massive multiple-input multiple-output (MIMO), network coding and spatial modulation, and new application areas including visible light communications (VLC), wireless power transfer, and 5G.

2016 | Hardback | 536pp | 978-1-78561-003-5
PBTE0680 | £105 • $170

Advances in Body-Centric Wireless Communication: Applications and state-of-the-art

Editors: Qammer H. Abbasi et al.
Queen Mary University, UK

This book brings together contributions from a multidisciplinary team of researchers in the field of wireless and mobile communications, signal processing and medical measurements to present the underlying theory, implementation challenges and applications of this exciting new technology that has applications in healthcare, surveillance, communication and emergency services.

2016 | Hardback | 456pp | 978-1-84919-989-6
PBTE0650 | £95 • $150

Cognitive Radio Engineering

Authors: Charles W. Bostian et al.
Virginia Tech, USA

This book is both a text and a reference book about cognitive radio architecture and implementation. Intended for readers who want to design and build working cognitive radios, it provides a practical approach that differs from many existing titles that postulate and analyse or simulate ideal cognitive radios without considering how to build working prototypes. Written by acknowledged experts in the field who have built working cognitive radio systems, this book is essential reading for communications engineers working in academia or industry.

2016 | Hardback | 264pp | 978-1-61353-211-9
SBTE5020 | £75 • $120

Managing the Internet of Things: Architectures, theories and applications

Editors: Jun Huang & Kun Hua
Chongqing University, China & Lawrence Technological University, USA

The Internet of Things (IoT) refers to the evolution of the internet as the interconnection not just of computers, but also uniquely identifiable, pervasive embedded devices. Research has estimated there will be nearly 30 billion devices on the IoT by 2020. The implementation and deployment of the IoT brings with it management challenges around seamless integration, heterogeneity, scalability, mobility, security, and many other issues. This book explores these challenges and possible solutions.

2016 | Hardback | 224pp | 978-1-78561-028-8
PBTE0670 | £95 • $145
Understanding Telecommunications Business

Authors: Andy Valdar & Ian Morfett
University College London, UK & Lister Hospital, UK

This companion volume to the book Understanding Telecommunications Networks, 2nd Edition, is of interest to undergraduate and graduate students studying engineering, computing and telecommunications, and practitioners in industry. Topics covered include: introduction to the telecommunications business; regulation; business strategy; corporate finance and governance; network strategy and planning; customers and marketing; product management; network economics; network and service operations and company dynamics.

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IET Communications

Editor-in-Chief: Professor Xuemin (Sherman) Shen
University of Waterloo, Canada

IET Communications covers the fundamental and generic research into technologies to harness signals for better performing communication systems using various wired and/or wireless media. This journal is particularly interested in research papers reporting novel solutions to the dominating problems of noise, interference, timing and errors for the reduction of systems deficiencies such as the wastage of spectra, energy and bandwidth.

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NEW

Automated Road Vehicle Longitudinal Control: Modelling, control design, implementation and field testing

Author: Xiao-Yun Lu
University of California, Berkeley, USA

Using the world-leading approach of California Partners for Advanced Transportation Technology (PATH), this book explains the concepts of road vehicle longitudinal control and clarifies common misconceptions. It conveys lessons learned and experiences gained from commercial truck traffic, including results of the latest field tests. An essential read for researchers and engineers involved with automated vehicle control, and a valuable resource for professionals in road transportation, vehicle and highway automation and wireless communication.

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Computational Traffic Flow Modelling and Control

Author: Apostolos Kotsialos
Durham University, UK

In this book, the author conveys a key way to address increased urban road congestion, with traffic flow modelling, using microscopic and macroscopic approaches. Using code samples in C, the book guides readers through examples and modelling problems, and explains how to use the traffic simulators that are freely available. The book also looks ahead, to potential future issues, making it a book that professional engineers and researchers, computer scientists and applied mathematicians in intelligent transport systems will use for years to come.

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NEW

EMC and Functional Safety of Automotive Electronics

Author: Kai Borgeest
Aschaffenburg University of Applied Sciences, Germany

This systematic treatment of electromagnetic compatibility (EMC) for the automotive sector introduces automotive experts to EMC and EMC experts to automotive electronics. The book enables readers to avoid expensive EMC problems, to test for EMC compliance of cars and their components, and to fix existing EMC issues. It also deals with the legal frameworks around the topic. In addition, the book explicitly covers electric vehicle technology and infrastructure. Ideal for researchers, advanced students and engineers in automotive electronics.

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NEW

Autonomous Decentralized Systems and their Applications in Transport and Infrastructure

Editors: Kinji Mori & Takashi Kuniofuji
Waseda University, Japan & East Japan Railway Company, Japan

With many authors from industry, this is a comprehensive work on Autonomous Decentralized Systems (ADS) technology in transportation. It describes the chain of technologies, applications and businesses needed to create a consistent concept for achieving sustainable, intelligent transport. Coming from the inventor of ADS in Japan, the book describes ADS applications in intelligent railway transport using the example of the Japanese railway transport system. Ideal for researchers involved with railway transportation systems.

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NEW
Road Pricing: Technologies, economics and acceptability

Editor: John Walker

Delivering the current state of research on road pricing, this book informs engineers and planners how to prepare for, model and implement such schemes. It explains which technologies to use, as well as the economics and acceptability of road pricing, and includes several case studies from various countries. Written by international authors from academia, industry and government, this is an essential guide to the topic for researchers and advanced students working in transportation.

Due Winter 2018 | Hardback | c.648pp | 978-1-78561-205-3
PBTR0080 | £120 • $190

Low Carbon Mobility for Future Cities: Principles and applications

Editor: Hussein Dia
Swinburne University of Technology, Australia

Taking the global view of the interactions between land use and transport this book brings together leading experts in the areas of urban planning, transport planning and strategy, traffic management and transport technology to present a cohesive work on the policy principles and practical applications to drive urban mobility services in tomorrow’s smart cities. Containing practical policy instruments and proven use cases, this book combines academic rigor with practical tools to benefit practitioners and city leaders.

2017 | Hardback | 376pp | 978-1-78561-197-1
PBTR0060 | £105 • $170

Sliding Mode Control of Vehicle Dynamics

Editor: Antonella Ferrara
University of Pavia, Italy

This book is a comprehensive work on vehicle dynamics control through sliding mode control. This edited volume covers the control of longitudinal, lateral and vertical dynamics of four-wheeled vehicles, both of conventional (i.e. combustion driven) type as well as fully-electric. In addition, one chapter is devoted to motorcycles, and one to the roll-over control in heavy vehicles. The topic is important not only for general safety of vehicular traffic, but also for future automated driving. This book is a must-read for both researchers and industry engineers in this field.

2017 | Hardback | 312pp | 978-1-78561-209-1
PBTR0050 | £100 • $160

Energy Systems for Electric and Hybrid Vehicles

Editor: K.T. Chau
The University of Hong Kong, HK

The book provides thorough coverage of energy systems for electric and hybrid vehicles with a focus on the three main energy system technologies – energy sources, battery charging and vehicle-to-grid systems. Energy sources include electrochemical energy sources, electromechanical energy storage, hybrid energy sources, on-board solar energy harvesting, on-board thermoelectric energy recovery, and battery management.

2016 | Hardback | 520pp | 978-1-78561-008-0
PBTR0020 | £110 • $175
Evaluation of Intelligent Road Transport Systems: Methods and results

Editor: Meng Lu
IBEC, Belgium

Intelligent Transport Systems (ITS) use information and communications technologies (ICT) to deliver transport improvements instead of extending physical infrastructure, thereby saving money and reducing environmental impact. This book provides a unique overview of ICT-based intelligent road transport systems with an emphasis on evaluation methods and recent evaluation results of ITS development and deployment. Case studies from various countries and methodology are also used to derive lessons.

Clean Mobility and Intelligent Transport Systems

Editors: Michele Fiorini & Jia-Chin Lin
Selex ES, Italy & National Central University, Taiwan

This book provides an important overview of current topics in intelligent transport systems and clean mobility. Edited by two experts in the field, this book covers the full spectrum of transport from land to sea and aircraft, and includes some research from the economic and human sciences. Clean Mobility and Intelligent Transport Systems covers topics such as ICT for intelligent public transport systems; ITS and freight transport; steel and the green cars initiative; cooperative collision warning for vehicles; electronic toll collection systems; multisensor maritime surveillance; and aeronautical air-ground communications.

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BS 7671 (the IET Wiring Regulations) sets the standards for electrical installation in the UK and many other countries. The IET co-publishes BS 7671 with the British Standards Institution (BSI) and is the authority on electrical installation.

2018 sees the publication of the 18th Edition IET Wiring Regulations (BS 7671:2018). This is expected to come into effect on 1st January 2019, although industry needs to start preparing for this from its point of publication (expected July 2018).

Vast changes are anticipated to BS 7671 and all guidance publications will be updated in line with the new edition. The IET publishes the only guidance to be peer-reviewed and approved by industry.
Guidance Note 3: Inspection & Testing 8th Edition
- a fundamental guidance book for all those involved with the testing and inspection of electrical installations
- also contains essential guidance for those studying for inspection and testing qualifications
- fully updated to BS 7671:2018

Guidance Note 4: Protection Against Fire 8th Edition
- a vital guide to an important safety aspect of working with electricity
- aimed at everyone involved with fire safety in electrical installations, including consulting engineers, electrical installers, inspectors and technicians
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Guidance Note 5: Protection Against Electric Shock 8th Edition
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- provides clear guidance on how to apply the safety requirements of BS 7671 concerning electric shock
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Guidance Note 6: Protection Against Overcurrent 8th Edition
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Guidance Note 7: Special Locations 6th Edition
- provides a comprehensive guide to the various special locations and installations for which additional measures are required to comply with BS 7671
- designed for anyone working in special locations where guidance may vary, including consulting engineers, electricians, electrical installers, inspectors and technicians
- fully updated to BS 7671:2018

Guidance Note 8: Earthing and Bonding 4th Edition
- includes information from BS 7430 Code of Practice for Earthing
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- fully updated to BS 7671:2018
Guidance Note 9: Energy Efficiency
1st Edition
- The publication of this title is dependent on the proposed new Part 8 being added to BS 7671:2018. If Part 8 is not included, this book will not be published
- Key guidance for those planning energy efficient electrical installations

Electrician’s Guide to the Building Regulations
5th Edition
- Includes the latest guidance on third-party certification schemes
- Covers relevant parts of the Building Regulations, including Fire Safety, Ventilation and Conservation of Energy
- Fully updated to BS 7671:2018

Electrical Installation Design Guide
4th Edition
- Provides step-by-step guidance on the design of electrical installations
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Electrician’s Guide to Fire Detection and Alarm Systems
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- Advice on managing the requirements of both BS 7671 and BS 5839 for electrical installations
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Guide to Electrical Installations in Medical Locations
- For designers, installers and maintainers of electrical installations in medical locations
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Guide to Consumer Units

- clarifies requirements for Regulation 421.1.201
- includes case studies showing how aspects of an installation can be approached and dealt with
- provides guidance to electricians, installers, specifiers, duty holders, housing associations, LABC and landlords

Amendment 3 to BS 7671:2008 is expected to remain in effect until January 2019.
These titles are still available and will remain so until that time.

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- using diagrams and examples, provides students with guidance to navigate their way through the information available in BS 7671 while studying electrical courses
- provides the information that students will need throughout their studies and into their careers, including information about the various Acts and Regulations that may have implications on electrical installations

Student’s Guide to Calculations
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