Rechargeable Sensor Networks Technology Theory And Application Introduce Energy Harvesting To Sensor Networks

Green Internet of Things (IoT): Energy Efficiency Perspective Beyond-CMOS Nanodevices

Ultra Low Power Transceiver for Wireless Body Area Networks

Technology and Applications of Autonomous Underwater Vehicles


Computer Aided Systems Theory -- EUROCAST 2011

Green, Energy-Efficient and Sustainable Networks

Proceedings of Data Analytics and Management

Advances in Computing and Communications, Part III

Wireless Sensor Networks

Intelligent Systems in Cybernetics and Automation Control Theory

Smart City 360° Wireless Rechargeable Sensor Networks

Algorithmic Aspects in Information and Management

Machine-to-Machine Communications

Scientific and Technical Aerospace Reports

Mobile Web and Intelligent Information Systems

Encyclopedia of Renewable and Sustainable Materials

Wireless Sensor Networks 2019

Effective Surveillance for Homeland Security

Ultra-Wideband and 60 GHz Communications for Biomedical Applications

Control of Energy Storage

Handbook of Research on Recent Developments in Electrical and Mechanical Engineering

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

Sensor Networks in Structural Health Monitoring: From Theory to Practice

Distributed Computing and Internet Technology

Mobile Wireless Middleware, Operating Systems and Applications

Rechargeable Sensor Networks: Technology, Theory, and Application

Energy Harvesting Communications

Wireless Information and Power Transfer: A New Paradigm for Green Communications

Green, Pervasive, and Cloud Computing

AETA 2019 -
This book reports on cutting-edge modeling techniques, methodologies and tools used to understand, design and engineer nanoscale communication systems, such as molecular communication systems. Moreover, it includes introductory materials for those who are new to the field. The book’s interdisciplinary approach, which merges perspectives in computer science, the biological sciences and nanotechnology, will appeal to graduate students and researchers in these three areas. The book is organized into five parts, the first of which describes the fundamentals of molecular communication, including basic concepts, models and designs. In turn, the second part examines specific types of molecular communication found in biological systems, such as neuronal communication in the brain. The book continues by exploring further types of nanoscale communication, such as fluorescence resonance energy transfer and electromagnetic-based nanoscale communication, in the third part, and by describing nanomaterials and structures for practical applications in the fourth. Lastly, the book presents nanomedical applications such as targeted drug delivery and biomolecular sensing.

The oceans are a hostile environment, and gathering information on deep-sea life and the seafloor is incredibly difficult. Autonomous underwater vehicles are robot submarines that are revolutionizing the way in which researchers and industry obtain data. Advances in technology
have resulted in capable vehicles that have made new discoveries on how th

Provides a systematic overview of a hot research area, examining the principles and theories of energy harvesting communications. This book provides a detailed and advanced level introduction to the fundamentals of energy harvesting techniques and their use in state-of-the-art communications systems. It fills the gap in the market by covering both basic techniques in energy harvesting and advanced topics in wireless communications. More importantly, it discusses the application of energy harvesting in communications systems to give readers at different levels a full understanding of these most recent advances in communications technologies. The first half of Energy Harvesting Communications: Principles and Theories focuses on the challenges brought by energy harvesting in communications. The second part of the book looks at different communications applications enhanced by energy harvesting. It offers in-depth chapters that: discuss different energy sources harvested for communications; examine the energy harvesters used for widely used sources; study the physical layer and upper layer of the energy harvesting communications device; and investigate wireless powered communications, energy harvesting cognitive radios, and energy harvesting relaying as applications. Methodically examines the state-of-the-art of energy harvesting techniques. Provides comprehensive coverage from basic energy harvesting sources and devices to the end users of these sources and devices. Looks at the fundamental principles of energy harvesting communications, and biomedical application and intra-body communications. Written in a linear order so that beginners can learn the subject and experienced users can attain a broader view. Written by a renowned expert in the field, Energy Harvesting Communications: Principles and Theories is an excellent resource for students, researchers, and others interested in the subject.
This book constitutes the refereed proceedings of the 16th International Conference on Mobile Web and Intelligent Information Systems, MobiWIS 2019, held in Istanbul, Turkey, in August 2019. The 23 full papers presented together with 3 short papers were carefully reviewed and selected from 74 submissions. The papers of the MobiWIS 2019 deal with areas such as: mobile apps and services; web and mobile applications; security and privacy; wireless networks and cloud computing; intelligent mobile applications; and mobile web and practical applications.

Encyclopedia of Renewable and Sustainable Materials provides a comprehensive overview, covering research and development on all aspects of renewable, recyclable and sustainable materials. The use of renewable and sustainable materials in building construction, the automotive sector, energy, textiles and others can create markets for agricultural products and additional revenue streams for farmers, as well as significantly reduce carbon dioxide (CO2) emissions, manufacturing energy requirements, manufacturing costs and waste. This book provides researchers, students and professionals in materials science and engineering with tactics and information as they face increasingly complex challenges around the development, selection and use of construction and manufacturing materials. Covers a broad range of topics not available elsewhere in one resource Arranged thematically for ease of navigation Discusses key features on processing, use, application and the environmental benefits of renewable and sustainable materials Contains a special focus on sustainability that will lead to the reduction of carbon emissions and enhance protection of the natural environment with regard to sustainable materials

Provides a variety of practical optimization techniques and modeling tips for solving
challenging wireless networking problems. Case studies show how the techniques can be applied in practice, homework exercises are given at the end of each chapter, and PowerPoint slides are available online, together with a solutions manual for instructors.

Information technology is the enabling foundation for all of human activity at the beginning of the 21st century, and advances in this area are crucial to all of us. These advances are taking place all over the world and can only be followed and perceived when researchers from all over the world assemble, and exchange their ideas in conferences such as the one presented in this proceedings volume regarding the 26th International Symposium on Computer and Information Systems, held at the Royal Society in London on 26th to 28th September 2011. Computer and Information Sciences II contains novel advances in the state of the art covering applied research in electrical and computer engineering and computer science, across the broad area of information technology. It provides access to the main innovative activities in research across the world, and points to the results obtained recently by some of the most active teams in both Europe and Asia.

This book constitutes the refereed proceedings of the 8th International Conference on Grid and Pervasive Computing, GPC 2016, held in Seoul, Korea, in May 2016. The 20 revised papers were carefully reviewed and selected from 94 submissions. The conference contains various aspects including green computing, cloud computing, virtualisation, data and storage, and network security.

Effective Surveillance for Homeland Security: Balancing Technology and Social Issues provides
a comprehensive survey of state-of-the-art methods and tools for the surveillance and protection of citizens and critical infrastructures against natural and deliberate threats. Focusing on current technological challenges involving multi-disciplinary problem analysis and systems engineering approaches, it provides an overview of the most relevant aspects of surveillance systems in the framework of homeland security. Addressing both advanced surveillance technologies and the related socio-ethical issues, the book consists of 21 chapters written by international experts from the various sectors of homeland security. Part I, Surveillance and Society, focuses on the societal dimension of surveillance—stressing the importance of societal acceptability as a precondition to any surveillance system. Part II, Physical and Cyber Surveillance, presents advanced technologies for surveillance. It considers developing technologies that are part of a framework whose aim is to move from a simple collection and storage of information toward proactive systems that are able to fuse several information sources to detect relevant events in their early incipient phase. Part III, Technologies for Homeland Security, considers relevant applications of surveillance systems in the framework of homeland security. It presents real-world case studies of how innovative technologies can be used to effectively improve the security of sensitive areas without violating the rights of the people involved. Examining cutting-edge research topics, the book provides you with a comprehensive understanding of the technological, legislative, organizational, and management issues related to surveillance. With a specific focus on privacy, it presents innovative solutions to many of the issues that remain in the quest to balance security with the preservation of privacy that society demands.

This book presents real-world problems and pioneering research that reflect novel approaches to cybernetics, algorithms and software engineering in the context of intelligent systems. It
gathers the peer-reviewed proceedings of the 2nd Computational Methods in Systems and Software 2018 (CoMeSySo 2018), a conference that broke down traditional barriers by being held online. The goal of the event was to provide an international forum for discussing the latest high-quality research results.

The Second Edition of the bestselling Measurement, Instrumentation, and Sensors Handbook brings together all aspects of the design and implementation of measurement, instrumentation, and sensors. Reflecting the current state of the art, it describes the use of instruments and techniques for performing practical measurements in engineering, physics, chemistry, and the life sciences and discusses processing systems, automatic data acquisition, reduction and analysis, operation characteristics, accuracy, errors, calibrations, and the incorporation of standards for control purposes. Organized according to measurement problem, the Spatial, Mechanical, Thermal, and Radiation Measurement volume of the Second Edition: Contains contributions from field experts, new chapters, and updates to all 96 existing chapters Covers instrumentation and measurement concepts, spatial and mechanical variables, displacement, acoustics, flow and spot velocity, radiation, wireless sensors and instrumentation, and control and human factors A concise and useful reference for engineers, scientists, academic faculty, students, designers, managers, and industry professionals involved in instrumentation and measurement research and development, Measurement, Instrumentation, and Sensors Handbook, Second Edition: Spatial, Mechanical, Thermal, and Radiation Measurement provides readers with a greater understanding of advanced applications.

This book investigates the design of devices, systems, and circuits for medical applications using the two recently established frequency bands: ultra-wideband (3.1-10.6 GHz) and 60 GHz
ISM band. These two bands provide the largest bandwidths available for communication technologies and present many attractive opportunities for medical applications. The applications of these bands in healthcare are wireless body area network (WBAN), medical imaging, biomedical sensing, wearable and implantable devices, fast medical device connectivity, video data transmission, and vital signs monitoring. The recent technological advances and developments proposed or used in medicine based on these two bands are covered. The book introduces possible solutions and design techniques to efficiently implement these systems in medical environment. All individual chapters are written by leading experts in their fields. Contributions by authors are on various applications of ultra-wideband and the 60 GHz ISM band including circuit implementation, UWB and 60 GHz signal transmission around and in-body, antenna design solution, hardware implementation of body sensors, UWB transceiver design, 60 GHz transceiver design, UWB radar for contactless respiratory monitoring, and ultra-wideband based medical Imaging. The book will be a key resource for medical professionals, bio-medical engineers, and graduate and senior undergraduate students in computer, electrical, electronic and biomedical engineering disciplines.

Two large international conferences on Advances in Engineering Sciences were held in London, UK, 29 June - 1 July, 2016, under the World Congress on Engineering (WCE 2016), and San Francisco, USA, 19-21 October, 2016, under the World Congress on Engineering and Computer Science (WCECS 2016) respectively. This volume contains 42 revised and extended research articles written by prominent researchers participating in the conferences. Topics covered include electrical engineering, manufacturing engineering, industrial engineering, computer science, engineering mathematics and industrial applications. The book offers state-of-the-art advances in engineering sciences and also serves as an excellent reference work for
researchers and graduate students working with/on engineering sciences.

"This book focuses on wireless sensor networks and their operation, covering topics including routing, energy efficiency and management"--

This book is a printed edition of the Special Issue "Control of Energy Storage" that was published in Energies

This volume is the third part of a four-volume set (CCIS 190, CCIS 191, CCIS 192, CCIS 193), which constitutes the refereed proceedings of the First International Conference on Computing and Communications, ACC 2011, held in Kochi, India, in July 2011. The 70 revised full papers presented in this volume were carefully reviewed and selected from a large number of submissions. The papers are organized in topical sections on security, trust and privacy; sensor networks; signal and image processing; soft computing techniques; system software; vehicular communications networks.

This book includes original unpublished contributions presented at the International Conference on Data Analytics and Management (ICDAM 2021), held at Jan Wyzykowski University, Poland, during June 2021. The book covers the topics in data analytics, data management, big data, computational intelligence, and communication networks. The book presents innovative work by leading academics, researchers, and experts from industry which is useful for young researchers and students.

Wireless Body Area Networks (WBANs) are expected to promote new applications for the
ambulatory health monitoring of chronic patients and elderly population, aiming to improve their quality of life and independence. These networks are composed by wireless sensor nodes (WSNs) used for measuring physiological variables (e.g., glucose level in blood or body temperature) or controlling therapeutic devices (e.g., implanted insulin pumps). These nodes should exhibit a high degree of energy autonomy in order to extend their battery lifetime or even make the node supply to rely on harvesting techniques. Typically, the power budget of WSNs is dominated by the wireless link and, hence, many efforts have been directed during the last years toward the implementation of power efficient transceivers. Because of the short range (typically no more than a few meters) and low data rate (typically in between 10 kb/s and 1 Mb/s), simple communication protocols can be employed. One of these protocols, specifically tailored for WBAN applications, is the Bluetooth low energy (BLE) standard. This book describes the challenges and solutions for the design of ultra-low power transceivers for WBANs applications and presents the implementation details of a BLE transceiver prototype. Coverage includes not only the main concepts and architectures for achieving low power consumption, but also the details of the circuit design and its implementation in a standard CMOS technology.

Technological advancements continue to enhance the field of engineering and have led to progress in branches that include electrical and mechanical engineering. These technologies have allowed for more sophisticated circuits and components while also advancing renewable energy initiatives. With increased growth in these fields, there is a need for a collection of research that details the variety of works being studied in our globalized world. The Handbook of Research on Recent Developments in Electrical and Mechanical Engineering is a pivotal reference source that discusses the latest advancements in these engineering fields. Featuring research on topics such as materials manufacturing, microwave photons, and wireless power
transfer, this book is ideally designed for graduate students, researchers, engineers, manufacturing managers, and academicians seeking coverage on the works and experiences achieved in electrical and mechanical engineering.

This book constitutes the proceedings of the 15th International Conference on Distributed Computing and Internet Technology, ICDCIT 2019, held in Bhubaneswar, India, in January 2019. The 18 full papers and 14 short papers presented together with 5 invited papers were carefully reviewed and selected from 115 submissions. The papers present research in three areas: distributed computing, Internet technologies, and societal applications.

This book constitutes the refereed conference proceedings of the 9th International Conference on Mobile Wireless Middleware, Operating Systems and Applications, MOBILWARE 2020, held in Hohhot, China, in July 2020. Due to COVID-19 pandemic the conference was held virtually. The 21 revised full papers were reviewed and selected from 69 submissions and are organized in tracks on MobilWare; Big data, data mining and artificial intelligence workshop; Blockchain and internet of things workshop.

With the number of machine-to-machine (M2M)–enabled devices projected to reach 20 to 50 billion by 2020, there is a critical need to understand the demands imposed by such systems. Machine-to-Machine Communications: Architectures, Technology, Standards, and Applications offers rigorous treatment of the many facets of M2M communication, including its integration with current technology. Presenting the work of a different group of international experts in each chapter, the book begins by supplying an overview of M2M technology. It considers proposed standards, cutting-edge applications, architectures, and traffic modeling and includes
case studies that highlight the differences between traditional and M2M communications technology. Details a practical scheme for the forward error correction code design. Investigates the effectiveness of the IEEE 802.15.4 low data rate wireless personal area network standard for use in M2M communications. Identifies algorithms that will ensure functionality, performance, reliability, and security of M2M systems. Illustrates the relationship between M2M systems and the smart power grid. Presents techniques to ensure integration with and adaptation of existing communication systems to carry M2M traffic. Providing authoritative insights into the technologies that enable M2M communications, the book discusses the challenges posed by the use of M2M communications in the smart grid from the aspect of security and proposes an efficient intrusion detection system to deal with a number of possible attacks. After reading this book, you will develop the understanding required to solve problems related to the design, deployment, and operation of M2M communications networks and systems.

The book Green, Energy-Efficient and Sustainable Networks provides insights and solutions for a range of problems in the field of obtaining greener, energy-efficient, and sustainable networks. The book contains the outcomes of the Special Issue on “Green, Energy-Efficient and Sustainable Networks” of the Sensors journal. Seventeen high-quality papers published in the Special Issue have been collected and reproduced in this book, demonstrating significant achievements in the field. Among the published papers, one paper is an editorial and one is a review, while the remaining 15 works are research articles. The published papers are self-contained peer-reviewed scientific works that are authored by more than 75 different contributors with both academic and industry backgrounds. The editorial paper gives an introduction to the problem of information and communication technology (ICT) energy consumption and greenhouse gas emissions, presenting the state of the art and future trends in
terms of improving the energy-efficiency of wireless networks and data centers, as the major energy consumers in the ICT sector. In addition, the published articles aim to improve energy efficiency in the fields of software-defined networking, Internet of things, machine learning, authentication, energy harvesting, wireless relay systems, routing metrics, wireless sensor networks, device-to-device communications, heterogeneous wireless networks, and image sensing. The last paper is a review that gives a detailed overview of energy-efficiency improvements and methods for the implementation of fifth-generation networks and beyond. This book can serve as a source of information in industrial, teaching, and/or research and development activities. The book is a valuable source of information, since it presents recent advances in different fields related to greening and improving the energy-efficiency and sustainability of those ICTs particularly addressed in this book.

The intense development of novel data-driven and hybrid methods for structural health monitoring (SHM) has been demonstrated by field deployments on large-scale systems, including transport, wind energy, and building infrastructure. The actionability of SHM as an essential resource for life-cycle and resilience management is heavily dependent on the advent of low-cost and easily deployable sensors Nonetheless, in optimizing these deployments, a number of open issues remain with respect to the sensing side. These are associated with the type, configuration, and eventual processing of the information acquired from these sensors to deliver continuous behavioral signatures of the monitored structures. This book discusses the latest advances in the field of sensor networks for SHM. The focus lies both in active research on the theoretical foundations of optimally deploying and operating sensor networks and in those technological developments that might designate the next generation of sensing solutions targeted for SHM. The included contributions span the complete SHM information
chain, from sensor design to configuration, data interpretation, and triggering of reactive action. The featured papers published in this Special Issue offer an overview of the state of the art and further proceed to introduce novel methods and tools. Particular attention is given to the treatment of uncertainty, which inherently describes the sensed information and the behavior of monitored systems.

This book provides a comprehensive yet easy coverage of ad hoc and sensor networks and fills the gap of existing literature in this growing field. It emphasizes that there is a major interdependence among various layers of the network protocol stack. Contrary to wired or even one-hop cellular networks, the lack of a fixed infrastructure, the inherent mobility, the wireless channel, and the underlying routing mechanism by ad hoc and sensor networks introduce a number of technological challenges that are difficult to address within the boundaries of a single protocol layer. All existing textbooks on the subject often focus on a specific aspect of the technology, and fail to provide critical insights on cross-layer interdependencies. To fully understand these intriguing networks, one need to grasp specific solutions individually, and also the many interdependencies and cross-layer interactions.

The harvesting of energy from ambient energy sources to power electronic devices has been recognized as a promising solution to the issue of powering the ever-growing number of mobile devices around us. Key technologies in the rapidly growing field of energy harvesting focus on developing solutions to capture ambient energy surrounding the mobile devices and convert it into usable electrical energy for the purpose of recharging said devices. Achieving a sustainable network lifetime via battery-aware designs brings forth a new frontier for energy optimization techniques. These techniques had, in their early stages, resulted in the
development of low-power hardware designs. Today, they have evolved into power-aware
designs and even battery-aware designs. This book covers recent results in the field of
rechargeable sensor networks, including technologies and protocol designs to enable
harvesting energy from alternative energy sources such as vibrations, temperature variations,
wind, solar, and biochemical energy and passive human power. Contents:

Wind Energy Harvesting for Recharging Wireless Sensor Nodes: Brief Review and a Case Study (Yen Kheng Tan, Dibin Zhu and Steve Beeby)

Rechargeable Sensor Networks with Magnetic Resonant Coupling (Liguang Xie, Yi Shi, Y Thomas Hou, Wenjing Lou, Hanif D Sherali and Huaibei Zhou)


Energy-Harvesting Technique and Management for Wireless Sensor Networks (Jianhui Zhang and Xiangyang Li)

Information Capacity of an AWGN Channel Powered by an Energy-Harvesting Source (R Rajesh, P K Deekshith and Vinod Sharma)

Energy Harvesting in Wireless Sensor Networks (Nathalie Mitton and Riaan Wolhuter)

Topology Control for Wireless Sensor Networks and Ad Hoc Networks (Sunil Jardosh)

An Evolutionary Game Approach for Rechargeable Sensor Networks (Majed Haddad, Eitan Altman, Dieter Fiems and Julien Gaillard)

Marine Sediment Energy Harvesting for Sustainable Underwater Sensor Networks (Baikun Li, Lei Wang and Jun-Hong Cui)

Wireless Rechargeable Sensor Networks in the Smart Grid (Melike Erol-Kantarci and Hussein T Mouftah)

Energy-Harvesting Methods for Medical Devices (Pedro Dinis Gaspar, Virginie Felizardo and Nuno M Garcia)

Readership: Graduates, researchers, and professionals studying/dealing with networking, computer
engineering, parallel computing, and electrical & electronic engineering.

Keywords: Rechargeable Sensor; Energy Harvesting Technology; Renewable Sensor Networks

Key Features: This book provides comprehensive coverage from hardware design, protocol design, to applications. This book provides very recent results. And this book has
prominent contributorsWith the increasing deterioration of global warming, energy harvesting technologies as a green source of energy are of great interest to research community. For wireless networks especially wireless sensor networks, the introduction of energy harvesting technologies can address the challenge of energy constraint and obtain perpetual network operation. Although there are lots of existing publications on energy harvesting, most of them are journal and conference papers, which concentrate on specific research problems and do not provide a comprehensive overview and prerequisite preliminaries to understand the energy harvesting technologies. To the best of our knowledge, there are only a few books which are concerned with energy harvesting technologies. One main drawback of these books are that they all elaborate on the hardware design of energy harvesting devices but neglect the impact of hardware design on the performance of overall networks which is also of great significance in practice. For example, the energy management subsystem should be designed to fulfill all the tasks without running out of energy, which is dependent on the available energy of each node and all the tasks of the whole networks. Hence, the algorithm and protocol optimization are as important as hardware design. But this was not elaborated in existing publications and motivates this book

Communication, Management and Information Technology contains the contributions presented at the International Conference on Communication, Management and Information Technology (ICCMIT 2016, Cosenza, Italy, 26-29 April 2016, organized by the Universal Society of Applied Research (USAR). The book aims at researchers, scientists, engineers, and scholar students interested or involved in Computer Science and Systems, Communication, and Management.

This book constitutes the refereed proceedings of the 14th China Conference on Wireless
Sensor Networks, CWSN 2020 held in Dunhuang, China, in September 2020. The 20 full papers were carefully reviewed and selected from 85 submissions. The papers are organized in topical sections on wireless sensor network theory and technology, basic theory and application of internet of things, internet of things security and privacy protection, and perception and positioning.

This volume constitutes the proceedings of the 14th International Conference on Algorithmic Aspects in Information and Management, AAIM 2020, held in Jinhua, China in August 2020. The 39 full papers and 17 short papers presented were carefully reviewed and selected from 76 submissions. The papers deal with emerging important algorithmic problems with a focus on the fundamental background, theoretical technology development, and real-world applications associated with information and management analysis, modeling and data mining. Special considerations are given to algorithmic research that was motivated by real-world applications.

Wireless sensor networks, due to their various applications in many fields and limited power consumption, have attracted much attention recently. Most previous methods have focused on providing energy-saving strategies to elevate the lifetime of sensor networks. Another aggressive but different approach is to wirelessly recharge sensor nodes to increase the lifetime of the sensor networks. This book collects articles that address state-of-the-art technologies and new developments for wireless rechargeable sensor networks (WRSNs), including the latest hot topics such as charger deployment, charger scheduling, wireless energy transfer, mobile charger design, energy-harvesting technique, and energy provisioning. We believe that the accepted articles present the most up-to-date progress in algorithms and theory for robust wireless sensor networks with respect to different networking problems.
Energy efficiency issues for green internet of things (IoT) are investigated in this book, from the perspectives of device-to-device (D2D) communications, machine-to-machine (M2M) communications, and air-ground networks. Specifically, critical green IoT techniques from D2D communications in the cellular network to M2M communications in industrial IoT (IIoT), (from single physical-layer optimization to cross-layer optimization, and from single-layer ground networks to stereoscopic air-ground networks) are discussed in both theoretical problem formulation and simulation result analysis in this book. Internet of Things (IoT) offers a platform that enables sensors and devices to connect seamlessly in an intelligent environment, thus providing intelligence services including monitoring systems, industrial automation, and ultimately smart cities. However, the huge potentials of IoT are constrained by high energy consumption, limited battery capacity, and the slow progress of battery technology. The high energy consumption of IoT device causes communication interruption, information loss, and short network lifetime. Moreover, once deployed, the batteries inside IoT devices cannot be replaced in time. Therefore, energy efficient resource allocation is urgent to be investigated to improve the energy efficiency of IoT, facilitate green IoT, and extend the network lifetime. This book provides readers with a comprehensive overview of the state-of-the-art key technologies, frameworks, related optimization algorithms, and corresponding integrated designs on green IoT. It also presents an easy-to-understand style in a professional manner, making the book suitable for a wider range of readers from students to professionals interested in the green IoT.

This SpringerBrief provides a concise guide to applying wireless energy transfer techniques in traditional battery-powered sensor networks. It examines the benefits and challenges of wireless power including efficiency and reliability. The authors build a wireless rechargeable sensor networks from scratch and aim to provide perpetual network operation. Chapters cover a
A wide range of topics from the collection of energy information and recharge scheduling to joint design with typical sensing applications such as data gathering. Problems are approached using a natural combination of probability theory, optimization, algorithm and protocol designs. All proposed mechanisms are evaluated by extensive simulations. Wireless Rechargeable Sensor Networks targets professionals and researchers working in networks, wireless communications, energy technology and information technology. Advanced-level students studying electrical engineering and computer science will also find this material useful as a study guide.

This book offers a comprehensive review of the state-of-the-art in innovative Beyond-CMOS nanodevices for developing novel functionalities, logic and memories dedicated to researchers, engineers and students. It particularly focuses on the interest of nanostructures and nanodevices (nanowires, small slope switches, 2D layers, nanostructured materials, etc.) for advanced More than Moore (RF-nanosensors-energy harvesters, on-chip electronic cooling, etc.) and Beyond-CMOS logic and memories applications.

This book presents the latest findings in the areas of data management and smart computing, big data management, artificial intelligence and data analytics, along with advances in network technologies. It addresses state-of-the-art topics and discusses challenges and solutions for future development. Gathering original, unpublished contributions by scientists from around the globe, the book is mainly intended for a professional audience of researchers and practitioners in academia and industry.

This book presents breakthroughs in the design of Wireless Energy Harvesting (WEH) networks.
It bridges the gap between WEH through radio waves communications and power transfer, which have largely been designed separately. The authors present an overview of the RF-EHNs including system architecture and RF energy harvesting techniques and existing applications. They also cover the idea of WEH in novel discoveries of information, the theoretical bounds in WEH, wireless sensor networks, usage of modern channel coding together with WEH, energy efficient resource allocation mechanisms, distributed self-organized energy efficient designs, delay-energy trade-off, specific protocols for energy efficient communication designs, D2D communication and energy efficiency, cooperative wireless networks, and cognitive networks.

This volume constitutes the thoroughly refereed post-conference proceedings of the First EAI International Summit, Smart City 360°, held in Bratislava, Slovakia and Toronto, ON, Canada, in October 2015. The 77 carefully reviewed papers include eight conferences: The Bratislava program covered the Conference on Sustainable Solutions beyond Mobility of Goods (SustainableMoG 2015), the MOBIDANUBE conference which strengthens research in the field of mobility opportunities and within Danube strategy, and the conference on Social Innovation and Community Aspects of Smart Cities (SmartCityCom 2015). In parallel the SmartCity360 Toronto included five conferences addressing urban mobility (SUMS), sustainable cities (S2CT), smart grids (SGSC), wearable devices for health and wellbeing (SWIT Health), and big data (BigDASC).

The two-volume proceedings, LNCS 6927 and LNCS 6928, constitute the papers presented at the 13th International Conference on Computer Aided Systems Theory, EUROCAST 2011, held in February 2011 in Las Palmas de Gran Canaria, Spain. The total of 160 papers presented were carefully reviewed and selected for inclusion in the books. The contributions are organized in
topical sections on concepts and formal tools; software applications; computation and simulation in modelling biological systems; intelligent information processing; heurist problem solving; computer aided systems optimization; model-based system design, simulation, and verification; computer vision and image processing; modelling and control of mechatronic systems; biomimetic software systems; computer-based methods for clinical and academic medicine; modeling and design of complex digital systems; mobile and autonomous transportation systems; traffic behaviour, modelling and optimization; mobile computing platforms and technologies; and engineering systems applications.

This proceedings book features selected papers on 12 themes, including telecommunication, power systems, digital signal processing, robotics, control systems, renewable energy, power electronics, soft computing and more. Covering topics such as optoelectronic oscillator at S-band and C-band for 5G telecommunications, neural networks identification of eleven types of faults in high voltage transmission lines, cyber-attack mitigation on smart low voltage distribution grids, optimum load of a piezoelectric-based energy harvester, the papers present interesting ideas and state-of-the-art overviews.

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