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KEY=APPLICATION - GAGE THORNTON

Embedded and Networking Systems

Design, Software, and Implementation

CRC Press Embedded and Networking Systems: Design, Software, and Implementation explores issues related to the design and synthesis of high-performance embedded computer systems and networks. The emphasis is on the fundamental concepts and analytical techniques that are applicable to a range of embedded and networking applications, rather than on specific embedded architectures, software development, or system-level integration. This system point of view guides designers in dealing with the trade-offs to optimize performance, power, cost, and other system-level non-functional requirements. The book brings together contributions by researchers and experts from around the world, offering a global view of the latest research and development in embedded and networking systems. Chapters highlight the evolution and trends in the field and supply a fundamental and analytical understanding of some underlying technologies. Topics include the co-design of embedded systems, code optimization for a variety of applications, power and performance trade-offs, benchmarks for evaluating embedded systems and their components, and mobile sensor network systems. The book also looks at novel applications such as mobile sensor systems and video networks. A comprehensive review of groundbreaking technology and applications, this book is a timely resource for system designers, researchers, and students interested in the possibilities of embedded and networking systems. It gives readers a better understanding of an emerging technology evolution that is helping drive telecommunications into the next decade.

Introduction to Embedded Systems

A Cyber-Physical Systems Approach

MIT Press An introduction to the engineering principles of embedded systems, with a focus on modeling, design, and analysis of cyber-physical systems. The most visible use of computers and software is processing information for human consumption. The vast majority of computers in use, however, are much less visible. They run the engine, brakes, seatbelts, airbag, and audio system in your car. They digitally encode your voice and construct a radio signal to send it from your cell phone to a base station. They command robots on a factory floor, power generation in a power plant, processes in a chemical plant, and traffic lights in a city. These less visible computers are called embedded systems, and the software they run is called embedded software. The principal challenges in designing and analyzing embedded systems stem from their interaction with physical processes. This book takes a cyber-physical approach to embedded systems, introducing the engineering concepts underlying embedded systems as a technology and as a subject of study. The focus is on modeling, design, and analysis of cyber-physical systems, which integrate computation, networking, and physical processes. The second edition offers two new chapters, several new exercises, and other improvements. The book can be used as a textbook at the advanced undergraduate or introductory graduate level and as a professional reference for practicing engineers and computer scientists. Readers should have some familiarity with machine structures, computer programming, basic discrete mathematics and algorithms, and signals and systems.

Wireless Sensor Networks

Principles, Design and Applications

Springer Science & Business Media Wireless Sensor Networks presents the latest practical solutions to the design issues presented in wireless-sensor-network-based systems. Novel features of the text, distributed throughout, include workable solutions, demonstration systems and case studies of the design and application of wireless sensor networks (WSNs) based on the first-hand research and development experience of the author, and the chapters on real applications: building fire safety protection; smart home automation; and logistics resource management. Case studies and applications illustrate the practical perspectives of: · sensor node design; · embedded software design; · routing algorithms; · sink node positioning; · co-existence with other wireless systems; · data fusion; · security; · indoor location tracking; · integrating with radio-frequency identification; and · Internet of things Wireless Sensor Networks brings together multiple strands of research in the design of WSNs, mainly from software engineering, electronic engineering, and wireless communication perspectives, into an over-arching examination of the subject, benefiting students, field engineers, system developers and IT professionals. The contents have been well used as the teaching material of a course taught at postgraduate level in several universities making it suitable as an advanced text book and a reference book for final-year undergraduate and postgraduate students.

Advances in Network-Embedded Management and Applications

Proceedings of the First International Workshop on Network-Embedded Management and Applications

Springer Science & Business Media The general trend of modern network devices towards greater intelligence and programmability is accelerating the development of systems that are increasingly autonomous and to a certain degree self-managing. Examples range from router scripting environments to fully programmable server blades. This has opened up a new field of computer science research, reflected in this new volume. This selection of contributions to the first ever international workshop on network-embedded management applications (NEMA) features six papers selected from submissions to the workshop, held in October 2010 at Niagara Falls, Canada. They represent a wide cross-section of the current work in this vital field of inquiry. Covering a diversity of perspectives,

the volume's dual structure first of all examines the 'enablers' for NEMAs—the platforms, frameworks, and development environments which facilitate the evolution of network-embedded management and applications. The second section of the book covers network-embedded applications that might both empower and benefit from such enabling platforms. These papers cover topics ranging from deciding where to best place management control functions inside a network to a discussion of how multi-core hardware processors can be leveraged for traffic filtering applications. The section concludes with an analysis of a delay-tolerant network application in the context of the 'One Laptop per Child' program. There is a growing recognition that it is vital to make network operation and administration as easy as possible to contain operational expenses and cope with ever shorter control cycles. This volume provides researchers in the field with the very latest in current thinking.

Ultra-Low Energy Wireless Sensor Networks in Practice

Theory, Realization and Deployment

John Wiley & Sons Finally a book on Wireless Sensor Networks that covers real world applications and contains practical advice! Kuorilehto et al. have written the first practical guide to wireless sensor networks. The authors draw on their experience in the development and field-testing of autonomous wireless sensor networks (WSNs) to offer a comprehensive reference on fundamentals, practical matters, limitations and solutions of this fast moving research area. Ultra Low Energy Wireless Sensor Networks in Practice: Explains the essential problems and issues in real wireless sensor networks, and analyzes the most promising solutions. Provides a comprehensive guide to applications, functionality, protocols, and algorithms for WSNs. Offers practical experiences from new applications and their field-testing, including several deployed networks. Includes simulations and physical measurements for energy consumption, bit rate, latency, memory, and lifetime. Covers embedded resource-limited operating systems, middleware and application software. Ultra Low Energy Wireless Sensor Networks in Practice will prove essential reading for Research Scientists, advanced students in Networking, Electrical Engineering and Computer Science as well as Product Managers and Design Engineers.

Continuing Innovation in Information Technology

Workshop Report

National Academies Press The 2012 National Research Council report Continuing Innovation in Information Technology illustrates how fundamental research in information technology (IT), conducted at industry and universities, has led to the introduction of entirely new product categories that ultimately became billion-dollar industries. The central graphic from that report portrays and connects areas of major investment in basic research, university-based research, and industry research and development; the introduction of important commercial products resulting from this research; billion-dollar-plus industries stemming from it; and present-day IT market segments and representative U.S. firms whose creation was stimulated by the decades-long research. At a workshop hosted by the Computer Science and Telecommunications Board on March 5, 2015, leading academic and industry researchers and industrial technologists described key research and development results and their contributions and connections to new IT products and industries, and illustrated these developments as overlays to the 2012 "tire tracks" graphic. The principal goal of the workshop was to collect and make available to policy makers and members of the IT community first-person narratives that illustrate the link between government investments in academic and industry research to the ultimate creation of new IT industries. This report provides summaries of the workshop presentations organized into five broad themes - (1) fueling the innovation pipeline, (2) building a connected world, (3) advancing the hardware foundation, (4) developing smart machines, and (5) people and computers - and ends with a summary of remarks from the concluding panel discussion.

Network and Parallel Computing

17th IFIP WG 10.3 International Conference, NPC 2020, Zhengzhou, China, September 28–30, 2020, Revised Selected Papers

Springer Nature This book constitutes the proceedings of the 17th IFIP WG 10.3 International Conference on Network and Parallel Computing, NPC 2020, held in Zhengzhou, China, in September 2020. The 34 full and 7 short papers presented in this volume were carefully reviewed and selected from 95 submissions. They were organized in topical sections named: accelerator; AI; algorithm; architecture and hardware; big data and cloud; edge computing; emerging; network; and storage.

Ambient Intelligence with Microsystems

Augmented Materials and Smart Objects

Springer Science & Business Media Augmented Materials and Smart Objects investigates the issues required to ensure technology platforms capable of being seamlessly integrated into everyday objects. In particular, it deals with the requirements for integrated computation and MEMs sensors, system-in-a-package solutions, and multi-chip modules. On top of this, the publication's 500 pages cover the impact of the trend towards embedded microelectronic electronics sub-systems, novel assembly techniques for autonomous MEMs sensors, and practical performance issues that are key to the AmI concept.

Vehicular Ad Hoc Networks

Futuristic Technologies for Interactive Modelling, Dimensioning, and Optimization

CRC Press With the evolution of technology and sudden growth in the number of smart vehicles, traditional Vehicular Ad hoc NETworks (VANETs) face several technical challenges in deployment and management due to less flexibility, scalability, poor connectivity, and inadequate intelligence. VANETs have raised increasing attention from both academic research and industrial aspects resulting from their important role in driving assistant system. Vehicular Ad Hoc Networks focuses on recent advanced technologies and applications that address network protocol design, low latency networking, context-aware interaction, energy efficiency, resource management, security, human-robot interaction, assistive technology and robots, application development, and integration of multiple systems that support Vehicular Networks and smart interactions. Simulation is a key tool for the design and evaluation of Intelligent Transport Systems (ITS) that take advantage of communication-capable vehicles in order to provide valuable safety, traffic management, and infotainment services. It is widely recognized that simulation results are only significant when realistic models are considered within the simulation tool chain. However, quite often research works on the subject are based on simplistic models unable to capture the unique characteristics of vehicular communication networks. The support that different simulation tools offer for such models is discussed, as well as the steps that must be undertaken to fine-tune the model parameters in order to gather realistic results. Moreover, the book provides handy hints and references to help determine the most appropriate tools and models. This book will promote best simulation practices in order to obtain accurate results.

Wireless Sensor Networks for Healthcare Applications

Artech House This unique reference focuses on methods of application, validation and testing based on real deployments of sensor networks in the clinical and home environments. Key topics include healthcare and wireless sensors, sensor network applications, designs of experiments using sensors, data collection and decision making, clinical deployment of wireless sensor networks, contextual awareness medication prompting field trials in homes, social health monitoring, and the future of wireless sensor networks in healthcare.

New Technologies, Development and Application IV

Springer Nature This book features papers focusing on the implementation of new and future technologies, which were presented at the International Conference on New Technologies, Development, and Application, held at the Academy of Science and Arts of Bosnia and Herzegovina in Sarajevo on June 24–26, 2021. It covers a wide range of future technologies and technical disciplines, including complex systems such as Industry 4.0; patents in industry 4.0; robotics; mechatronics systems; automation; manufacturing; cyber-physical and autonomous systems; sensors; networks; control, energy, renewable energy sources; automotive and biological systems; vehicular networking and connected vehicles; effectiveness and logistics systems; smart grids; nonlinear systems; power, social and economic systems; education; and IoT. The book New Technologies, Development and Application III is oriented toward Fourth Industrial Revolution "Industry 4.0, "implementation which improves many aspects of human life in all segments and leads to changes in business paradigms and production models. Further, new business methods are emerging and transforming production systems, transport, delivery, and consumption, which need to be monitored and implemented by every company involved in the global market.

Communication and Networking

International Conference, FGCN/ACN 2009, Held as Part of the Future Generation Information Technology Conference, FGIT 2009, Jeju Island, Korea, December 10-12, 2009. Proceedings

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

Federal Networking and Information Technology Research and Development Program (NITRD)

Funding Issues and Activities

DIANE Publishing Contents: (1) Overview, Structure and Funding of NITRD:: Amer. Recovery and Reinvest. Act of 2009; Amer. Competitiveness Initiative; NCO, PITAC, and Related Reports and Activities: National Cyber Leap Year Summit; High-Confidence Medical Devices: Cyber-Physical Systems for 21st Cent. Health Care; Digital Data for Science and Society; Fed. Plan for Advanced Networking R&D; Info. Tech. R&D in a Competitive World; Fed. Plan for Cyber Security and Info. Assurance R&D; NSA Superconducting Tech. Assessment; Computational Science; Cyber Security; NITRD Enabling and Governing Legislation: High-Performance Computing Act of 1991; Next Generation Internet Research Act of 1998; (2) Fed. Tech. Funding. Illus.

Recent Advances in Information Systems and Technologies

Volume 3

Springer This book presents a selection of papers from the 2017 World Conference on Information Systems and Technologies (WorldCIST'17), held between the 11st and 13th of April 2017 at Porto Santo Island, Madeira, Portugal. WorldCIST is a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences and challenges involved in modern Information Systems and Technologies research, together with technological developments and applications. The main topics covered are: Information and Knowledge Management; Organizational Models and Information Systems; Software and Systems Modeling; Software Systems, Architectures, Applications and Tools; Multimedia Systems and Applications; Computer Networks, Mobility and Pervasive Systems; Intelligent and Decision Support Systems; Big Data Analytics and Applications; Human–Computer Interaction; Ethics, Computers & Security; Health Informatics; Information Technologies in Education; and Information Technologies in Radiocommunications.

Embedded Systems Design using the Rabbit 3000 Microprocessor

Interfacing, Networking, and Application Development

Elsevier The Rabbit 3000 is a popular high-performance microprocessor specifically designed for embedded control, communications, and Ethernet connectivity. This new technical reference book will help designers get the most out of the Rabbit's powerful feature set. The first book on the market to focus exclusively on the Rabbit 3000, it provides detailed coverage of: Rabbit architecture and development environment, interfacing to the external world, networking, Rabbit assembly language, multitasking, debugging, Dynamic C and much more! Authors Kamal Hyder and Bob Perrin are embedded engineers with years of experience and they offer a wealth of design details and "insider" tips and techniques. Extensive embedded design examples are supported by fully tested source code. Whether you're already working with the Rabbit or considering it for a future design, this is one reference you can't be without! Let the experts teach you how to design embedded systems that efficiently hook up to the Internet using networked core modules Provides a number of projects and source code using RabbitCore, which will make it easy for the system designer and programmer to get hands-on experience developing networked devices

Behavioral Modeling for Embedded Systems and Technologies: Applications for Design and Implementation

Applications for Design and Implementation

IGI Global "This book provides innovative behavior models currently used for developing embedded systems, accentuating on graphical and visual notations"--Provided by publisher.

Critical Issues for the Development of Sustainable E-health Solutions

Springer Science & Business Media Pervasive healthcare is an emerging research discipline, focusing on the development and application of pervasive and ubiquitous computing technology for healthcare and wellness. Pervasive healthcare seeks to respond to a variety of pressures on healthcare systems, including the increased incidence of life-style related and chronic diseases, emerging consumerism in healthcare, need for empowering patients and relatives for self-care and management of their health, and need to provide seamless access for healthcare services, independent of time and place. Pervasive healthcare may be defined from two perspectives. First, it is the development and application of pervasive computing (or ubiquitous computing, ambient intelligence) technologies for healthcare, health and wellness management. Second, it seeks to make healthcare available to anyone, anytime, and anywhere by removing locational, time and other restraints while increasing both the coverage and quality of healthcare. This book proposes to define the emerging area of pervasive health and introduce key management principles, most especially knowledge management, its tools, techniques and technologies. In addition, the book takes a socio-technical, patient-centric approach which serves to emphasize the importance of a key triumvirate in healthcare management namely, the focus on people, process and technology. Last but not least the book discusses in detail a specific example of pervasive health, namely the potential use of a wireless technology solution in the monitoring of diabetic patients.

Problem Solving for Wireless Sensor Networks

Springer Science & Business Media Problem Solving for Wireless Sensor Networks delivers a comprehensive review of the state of the art in the most important technological issues related to Wireless Sensor Networks (WSN). It covers topics such as hardware platforms, radio technologies, software technologies (including middleware), and network and deployment aspects. This book discusses the main open issues inside each of these categories and identifies innovations considered most interesting for future research. Features: - Hardware Platforms in WSN, - Software Technologies in SWN, - Network Aspects and Deployment in WSN, - Standards and Safety Regulation for WSN, - European Projects Related to WSN, - WSN Application Scenarios at both utility and technical levels. Complete, cutting-edge and resulting from the work of many recognized researchers, Problem Solving for Wireless Sensor Networks is an invaluable reference for graduates and researchers, as well as practitioners.

Advanced Information Networking and Applications

Proceedings of the 35th International Conference on Advanced Information Networking and Applications (AINA-2021), Volume 3

Springer Nature This book covers the theory, design and applications of computer networks, distributed computing and information systems. Networks of today are going through a rapid evolution, and there are many emerging areas of information networking and their applications. Heterogeneous networking supported by recent technological advances in low-power wireless communications along with silicon integration of various functionalities such as sensing, communications, intelligence and actuations is emerging as a critically important disruptive computer class based on a new platform, networking structure and interface that enable novel, low-cost and high-volume applications. Several of such applications have been difficult to realize because of many interconnections problems. To fulfill their large range of applications, different kinds of networks need to collaborate, and wired and next-generation wireless systems should be integrated in order to develop high-performance computing solutions to problems arising from the complexities of these networks. The aim of the book "Advanced Information Networking and Applications" is to provide latest research findings, innovative research results, methods and development techniques from both theoretical and practical perspectives related to the emerging areas of information networking and applications.

NexGen Technologies for Mining and Fuel Industries (Volume I and II)

Allied Publishers The papers in these two volumes were presented at the International Conference on "NexGen Technologies for Mining and Fuel Industries" [NxGnMiFu-2017] in New Delhi from February 15-17, 2017, organized by CSIR-Central Institute of Mining and Fuel Research, Dhanbad, India. The proceedings include the contributions from authors across the globe on the latest research on mining and fuel technologies. The major issues focused on are: Innovative Mining Technology, Rock Mechanics and Stability Analysis, Advances in Explosives and Blasting, Mine Safety and Risk Management, Computer Simulation and Mine Automation, Natural Resource Management for Sustainable Development, Environmental Impacts and Remediation, Paste Fill Technology and Waste Utilisation, Fly Ash Management, Clean Coal Initiatives, Mineral Processing and Coal Beneficiation, Quality Coal for Power Generation and Conventional and Non-conventional Fuels and Gases. This collection of contemporary articles contains unique knowledge, case studies, ideas and insights, a must-have for researchers and engineers working in the areas of mining technologies and fuel sciences.

Proceedings of the International Conference on ISMAC in Computational Vision and Bio-Engineering 2018 (ISMAC-CVB)

Springer These are the proceedings of the International Conference on ISMAC-CVB, held in Palladam, India, in May 2018. The book focuses on research to design new analysis paradigms and computational solutions for quantification of information provided by object recognition, scene understanding of computer vision and different algorithms like convolutional neural networks to allow computers to recognize and detect objects in images with unprecedented accuracy and to even understand the relationships between them. The proceedings treat the convergence of ISMAC in Computational Vision and Bioengineering technology and includes ideas and techniques like 3D sensing, human visual perception, scene understanding, human motion detection and analysis, visualization and graphical data presentation and a very wide range of sensor modalities in terms of surveillance, wearable applications, home automation etc. ISMAC-CVB is a forum for leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of computational vision and bioengineering.

Network World

For more than 20 years, Network World has been the premier provider of information, intelligence and insight for network and IT executives responsible for the digital nervous systems of large organizations. Readers are responsible for designing, implementing and managing the voice, data and video systems their companies use to support everything from business critical applications to employee collaboration and electronic commerce.

Programming Embedded Systems

With C and GNU Development Tools

"O'Reilly Media, Inc." Authored by two of the leading authorities in the field, this guide offers readers the knowledge and skills needed to achieve proficiency with embedded software.

The Industrial Information Technology Handbook

CRC Press The Industrial Information Technology Handbook focuses on existing and emerging industrial applications of IT, and on evolving trends that are driven by the needs of companies and by industry-led consortia and organizations. Emphasizing fast growing areas that have major impacts on industrial automation and enterprise integration, the Handbook covers topics such as industrial communication technology, sensors, and embedded systems. The book is organized into two parts. Part 1 presents material covering new and quickly evolving aspects of IT. Part 2 introduces cutting-edge areas of industrial IT. The Handbook presents material in the form of tutorials, surveys, and technology overviews, combining fundamentals and advanced issues, with articles grouped into sections for a cohesive and comprehensive presentation. The text contains 112 contributed reports by industry experts from government, companies at the forefront of development, and some of the most renowned academic and research institutions worldwide. Several of the reports on recent developments, actual deployments, and trends cover subject matter presented to the public for the first time.

Advanced Methodologies and Technologies in Network Architecture, Mobile Computing, and Data Analytics

IGI Global From cloud computing to data analytics, society stores vast supplies of information through wireless networks and mobile computing. As organizations are becoming increasingly more wireless, ensuring the security and seamless function of electronic gadgets while creating a strong network is imperative. Advanced Methodologies and Technologies in Network Architecture, Mobile Computing, and Data Analytics highlights the challenges associated with creating a strong network architecture in a perpetually online society. Readers will learn various methods in building a seamless mobile computing option and the most effective means of analyzing big data. This book is an important resource for information technology professionals, software developers, data analysts, graduate-level students, researchers, computer engineers, and IT specialists seeking modern information on emerging methods in data mining, information technology, and wireless networks.

Real-Time Simulation Technologies: Principles, Methodologies, and Applications

CRC Press Real-Time Simulation Technologies: Principles, Methodologies, and Applications is an edited compilation of work that explores fundamental concepts and basic techniques of real-time simulation for complex and diverse systems across a broad spectrum. Useful for both new entrants and experienced experts in the field, this book integrates coverage of detailed theory, acclaimed methodological approaches, entrenched technologies, and high-value applications of real-time simulation—all from the unique perspectives of renowned international contributors. Because it offers an accurate and otherwise unattainable assessment of how a system will behave over a particular time frame, real-time simulation is increasingly critical to the optimization of dynamic processes and adaptive systems in a variety of enterprises. These range in scope from the maintenance of the national power grid, to space exploration, to the development of virtual reality programs and cyber-physical systems. This book outlines how, for these and other undertakings, engineers must assimilate real-time data with computational tools for rapid decision making under uncertainty. Clarifying the central concepts behind real-time simulation tools and techniques, this one-of-a-kind resource: Discusses the state of the art, important challenges, and high-impact developments in simulation technologies Provides a basis for the study of real-time simulation as a fundamental and foundational technology Helps readers develop and refine principles that are applicable across a wide variety of application domains As science moves toward more advanced technologies, unconventional design approaches, and unproven regions of the design space, simulation tools are increasingly critical to successful design and operation of technical systems in a growing number of application domains. This must-have resource presents detailed coverage of real-time simulation for system design, parallel and distributed simulations, industry tools, and a large set of applications.

Sustainable Communication Networks and Application

ICSCN 2019

Springer Nature This book presents state-of-the-art theories and technologies and discusses developments in the two major fields: engineering and sustainable computing. In this modern era of information and communication technologies [ICT], there is a growing need for new sustainable and energy-efficient communication and networking technologies. The book highlights significant current and potential international research relating to theoretical and practical methods toward developing sustainable communication and networking technologies. In particular, it focuses on emerging technologies such as wireless communications, mobile networks, Internet of things [IoT], sustainability, and edge network models. The contributions cover a number of key research issues in software-defined networks, blockchain technologies, big data, edge/fog computing, computer vision, sentiment analysis, cryptography, energy-efficient systems, and cognitive platforms.

Mobile Computing and Wireless Networks: Concepts, Methodologies, Tools, and Applications

Concepts, Methodologies, Tools, and Applications

IGI Global We live in a wireless society, one where convenience and accessibility determine the efficacy of the latest electronic gadgets and mobile devices. Making the most of these technologies—and ensuring their security against potential attackers—requires increased diligence in mobile technology research and development. Mobile Computing and Wireless Networks: Concepts, Methodologies, Tools, and Applications brings together a comprehensive range of voices and research in the area of mobile and wireless technologies, exploring the successes and failures, advantages and drawbacks, and benefits and limitations of the technology. With applications in a plethora of different research and topic areas, this multi-volume reference work benefits researchers, service providers, end-users, and information technology professionals. This four-volume reference work includes a diverse array of chapters and authors covering topics such as m-commerce, network ethics, mobile agent systems, mobile learning, communications infrastructure, and applications in fields such as business, healthcare, government, tourism, and more.

Artificial Intelligence and Industrial Applications

Smart Operation Management

Springer Nature This book gathers the refereed proceedings of the Artificial Intelligence and Industrial Applications (A2IA'2020), the first installment of an annual international conference organized by the ENSAM-Meknes at Moulay Ismail University, Morocco. The 30 papers presented here were carefully reviewed and selected from 141 submissions by an international scientific committee. They address various aspects of artificial intelligence such as smart manufacturing, smart maintenance, smart supply chain management, supervised learning, unsupervised learning, reinforcement learning, graph-based and semi-supervised learning, neural networks, deep learning, planning and optimization, and other AI applications. The book is intended for AI experts, offering them a valuable overview of the status quo and a global outlook for the future, with many new and innovative ideas and recent important developments in AI applications, both of a foundational and practical nature. It will also appeal to non-experts who are curious about this timely and important subject.

Electromagnetics and Network Theory and their Microwave Technology Applications

A Tribute to Peter Russer

Springer Science & Business Media This volume provides a discussion of the challenges and perspectives of electromagnetics and network theory and their microwave applications in all aspects. It collects the most interesting contribution of the symposium dedicated to Professor Peter Russer held in October 2009 in Munich.

Internet of Things, Smart Spaces, and Next Generation Networking

13th International Conference, NEW2AN 2013, and 6th Conference, ruSMART 2013, St. Petersburg, Russia, August 28-30, 2013. Proceedings

Springer This book constitutes the joint refereed proceedings of the 13 International Conference on Next Generation Teletraffic and Wired/Wireless Advanced Networking, NEW2AN, and the 6th Conference on Internet of Things and Smart Spaces, ruSMART 2013, held in St. Petersburg, Russia, in August 2013. The total of 38 papers was carefully reviewed and selected for inclusion in this book. The 14 papers selected from ruSMART are organized in topical sections named: internet on things, smart spaces technologies; and smart systems. The 24 papers from NEW2AN deal with the following topics: performance and efficiency analysis, network and transport layer issues; cognitive radio networks; sensor and mesh networks; upper layer protocols and applications; ad-hoc, cellular and satellite networks.

Intelligent Sensor Networks

The Integration of Sensor Networks, Signal Processing and Machine Learning

CRC Press Although governments worldwide have invested significantly in intelligent sensor network research and applications, few books cover intelligent sensor networks from a machine learning and signal processing perspective. Filling this void, Intelligent Sensor Networks: The Integration of Sensor Networks, Signal Processing and Machine Learning focuses on the close integration of sensing, networking, and smart signal processing via machine learning. Based on the world-class research of award-winning authors, the book provides a firm grounding in the fundamentals of intelligent sensor networks, including compressive sensing and sampling, distributed signal processing, and intelligent signal learning. Presenting recent research results of world-renowned sensing experts, the book is organized into three parts: Machine Learning—describes the application of machine learning and other AI principles in sensor network intelligence—covering smart sensor/transducer architecture and data representation for intelligent sensors Signal Processing—considers the optimization of sensor network performance based on digital signal processing techniques—including cross-layer integration of routing and application-specific signal processing as well as on-board image processing in wireless multimedia sensor networks for intelligent transportation systems Networking—focuses on network protocol design in order to achieve an intelligent sensor networking—covering energy-efficient opportunistic routing protocols for sensor networking and multi-agent-driven wireless sensor cooperation Maintaining a focus on "intelligent" designs, the book details signal processing principles in sensor networks. It elaborates on critical platforms for intelligent sensor networks and illustrates key applications—including target tracking, object identification, and structural health monitoring. It also includes a paradigm for validating the extent of spatiotemporal associations among data sources to enhance data cleaning in sensor networks, a sensor stream reduction application, and also considers the use of Kalman filters for attack detection in a water system sensor network that consists of water level sensors and velocity sensors.

Concepts, Applications, Experimentation and Analysis of Wireless Sensor Networks

Springer Nature The new edition of this popular book has been transformed into a hands-on textbook, focusing on the principles of wireless sensor networks (WSNs), their applications, their protocols and standards, and their analysis and test tools; a meticulous care has been accorded to the definitions and terminology. To make WSNs felt and seen, the adopted technologies as well as their manufacturers are presented in detail. In introductory computer networking books, chapters sequencing follows the bottom up or top down architecture of the seven layers protocol. This book starts some steps later, with chapters ordered based on a topic's significance to the elaboration of wireless sensor networks (WSNs) concepts and issues. With such a depth, this book is intended for a wide audience, it is meant to be a helper and motivator, for both the senior undergraduates, postgraduates, researchers, and practitioners; concepts and WSNs related applications are laid out, research and practical issues are backed by appropriate literature, and new trends are put under focus. For senior undergraduate students, it familiarizes readers with conceptual foundations, applications, and practical project implementations. For graduate students and researchers, transport layer protocols and cross-layering protocols are presented and testbeds and simulators provide a must follow emphasis on the analysis methods and tools for WSNs. For practitioners, besides applications and deployment, the manufacturers and components of WSNs at several platforms and testbeds are fully explored.

Green Networking and Communications

ICT for Sustainability

CRC Press Although the information and communication technology (ICT) industry accounted for only 2 percent of global greenhouse gas emissions in 2007, the explosive increase in data traffic brought about by a rapidly growing user base of more than a billion wireless subscribers is expected to nearly double that number by 2020. It is clear that now is the time to rethink how we design and build our networks. Green Networking and Communications: ICT for Sustainability brings together leading academic and industrial

researchers from around the world to discuss emerging developments in energy-efficient networking and communications. It covers the spectrum of research subjects, including methodologies and architectures for energy efficiency, energy-efficient protocols and networks, energy management, smart grid communications, and communication technologies for green solutions. Examines foraging-inspired radio-communication energy management for green multi-radio networks Considers a cross-layer approach to the design of energy-efficient wireless access networks Investigates the interplay between cooperative device-to-device communications and green LTE cellular networks Considers smart grid energy procurement for green LTE cellular networks Details smart grid networking protocols and standards Considering the spectrum of energy-efficient network components and approaches for reducing power consumption, the book is organized into three sections: Energy Efficiency and Management in Wireless Networks, Cellular Networks, and Smart Grids. It addresses many open research challenges regarding energy efficiency for IT and for wireless sensor networks, including mobile and wireless access networks, broadband access networks, home networks, vehicular networks, intelligent future wireless networks, and smart grids. It also examines emerging standards for energy-efficient protocols. Since ICT technologies touch on nearly all sectors of the economy, the concepts presented in this text offer you the opportunity to make a substantial contribution to the reduction of global greenhouse gas emissions.

Springer Handbook of Optical Networks

Springer Nature This handbook is an authoritative, comprehensive reference on optical networks, the backbone of today's communication and information society. The book reviews the many underlying technologies that enable the global optical communications infrastructure, but also explains current research trends targeted towards continued capacity scaling and enhanced networking flexibility in support of an unabated traffic growth fueled by ever-emerging new applications. The book is divided into four parts: Optical Subsystems for Transmission and Switching, Core Networks, Datacenter and Super-Computer Networking, and Optical Access and Wireless Networks. Each chapter is written by world-renown experts that represent academia, industry, and international government and regulatory agencies. Every chapter provides a complete picture of its field, from entry-level information to a snapshot of the respective state-of-the-art technologies to emerging research trends, providing something useful for the novice who wants to get familiar with the field to the expert who wants to get a concise view of future trends.

Advancing Embedded Systems and Real-Time Communications with Emerging Technologies

IGI Global Embedded systems and real-time computing can be useful tools for a variety of applications. Further research developments in this field can assist in promoting the future development of these technologies for various applications. Advancing Embedded Systems and Real-Time Communications with Emerging Technologies discusses embedded systems, communication system engineering, and real-time systems in an integrated manner. This research book includes advancements in the fields of computer science, computer engineering, and telecommunication engineering in regard to how they are used in embedded and real-time systems for communications purposes. With its practical and theoretical research, this book is an essential reference for academicians, students, researchers, practitioners, and IT professionals.

Mobility Internet of Things 2018

Mobility IoT

Springer Nature The scientific monograph Mobility IoT deals with innovative technologies influencing industry and connectivity sectors in the future industrial, urban, social and sustainable development. The mobility and Internet of Things are worldwide phenomena almost in everyday life. It is a challenge in many industries, not only in car manufacturing sector but additionally in e-mobility, smart cities, smart factories (Industry 4.0), smart logistics, social mobility, technological innovations, sustainability, multicultural development, Internet of Things sectors, etc., belonging to the topic of SMART Mobility IoT issue. Features practical, tested applications in Internet of Things mobility as presented at Mobility IoT 2018 Includes application domains such as urban mobility, smart factory, social mobility, and sustainability Applicable to researchers, academics, students, and professionals

Body Sensor Networks

Springer The last decade has witnessed a rapid surge of interest in new sensing and monitoring devices for wellbeing and healthcare. One key development in this area is wireless, wearable and implantable in vivo monitoring and intervention. A myriad of platforms are now available from both academic institutions and commercial organisations. They permit the management of patients with both acute and chronic symptoms, including diabetes, cardiovascular diseases, treatment of epilepsy and other debilitating neurological disorders. Despite extensive developments in sensing technologies, there are significant research issues related to system integration, sensor miniaturisation, low-power sensor interface, wireless telemetry and signal processing. In the 2nd edition of this popular and authoritative reference on Body Sensor Networks (BSN), major topics related to the latest technological developments and potential clinical applications are discussed, with contents covering. Biosensor Design, Interfacing and Nanotechnology Wireless Communication and Network Topologies Communication Protocols and Standards Energy Harvesting and Power Delivery Ultra-low Power Bio-inspired Processing Multi-sensor Fusion and Context Aware Sensing Autonomic Sensing Wearable, Ingestible Sensor Integration and Exemplar Applications System Integration and Wireless Sensor Microsystems The book also provides a comprehensive review of the current wireless sensor development platforms and a step-by-step guide to developing your own BSN applications through the use of the BSN development kit.

Building the Hyperconnected Society- Internet of Things Research and Innovation Value Chains, Ecosystems and Markets

CRC Press This book aims to provide a broad overview of various topics of Internet of Things (IoT), ranging from research, innovation and development priorities to enabling technologies, nanoelectronics, cyber-physical systems, architecture, interoperability and industrial applications. All this is happening in a global context, building towards intelligent, interconnected decision making as an essential driver for new growth and co-competition across a wider set of markets. It is intended to be a standalone book in a series that covers the Internet of Things activities of the IERC – Internet of Things European Research Cluster from research to technological innovation, validation and deployment.The book builds on the ideas put forward by the European Research Cluster on the Internet of Things Strategic Research and Innovation Agenda, and presents global views and state of the art results on the challenges facing the research, innovation, development and deployment of IoT in future years. The concept of IoT could disrupt consumer and industrial product markets generating new revenues and serving as a growth driver for semiconductor, networking equipment, and service provider end-markets globally. This will create new application and product end-markets, change the value chain of companies that creates the IoT technology and deploy it in various end sectors, while impacting the business models of semiconductor, software, device, communication and service provider stakeholders. The proliferation of intelligent devices at the edge of the network with the introduction of embedded software and app-driven hardware into manufactured devices, and the ability, through embedded software/hardware developments, to monetize those device functions and features by offering novel solutions, could generate completely new types of revenue streams. Intelligent and IoT devices leverage software, software licensing, entitlement management, and Internet connectivity in ways that address many of the societal challenges that we will face in the next decade.

Governance of Communication Networks

Connecting Societies and Markets with IT

Springer Science & Business Media Few would doubt the potential of information technology to connect individuals, firms and organisations. Whether this will actually lead to the integration of markets and societies is a different issue. The articles collected in this book shed light on crucial considerations for the success of global communication networks. These include frameworks for regulation, inclusion of customers in defining product and service strategies, access to advanced technology and networks for all groups, and more.