

Wireless Body Area Network River Publisheraposs Series In Information Science And Technology

This book approaches the topic area of the Internet of Things (IoT) from the perspective of the five types of human communication. Through this perspective on the human communication types, the book aims to specifically address how IoT technologies can support humans and their endeavors. The book explores the fields of sensors, wireless, physiology, biology, wearables, and the Internet. This book is organized with five sections, each covering a central theme; Section 1: The basics of human bond communication Section 2: Relevance IoT, BAN and PAN Section 3: Applications of HBC Section 4: Security, Privacy and Regulatory Challenges Section 5: The Big Picture (Where do we go from here?)

During the last decade there was a shift from wireless and mobile communications technology, networks and applications towards integration of radio with other disciplines. Integration of navigation, sensing and services allow for entering new areas in which many requirements from individuals and organizations are satisfied. Potential applications are manifold. Developments for realizing these new application areas will cause a boost on new systems demonstrating the potentials of this integration approach. In this first book the fundamentals of this new approach on integrated communication, navigation, sensing and services (Conasense) will be elucidated. Furthermore, several applications illustrate some of the aims of Conasense. Two major areas have been selected 1. Quality of life 2. Intelligent Conasense architectures Topics in the book on 'quality of life' include: Visionary plans on health, security, neurophysics, indoor and outdoor safeguarding: in all these areas new Conasense technology and systems are essential. Topics in the book on intelligent Conasense architectures concern: a framework describing novelties in Conasense technology needed to realize the aimed improve in 'quality of life'. Breakthroughs on full integration of space-based and terrestrial communication and navigation systems with advanced high resolution sensing of the local environment supplemented with geographical information at regionals, national and international scales.

This book discusses the evolution of future-generation technologies through the Internet of things, bringing together all the related technologies on a single platform to offer valuable insights for undergraduate and postgraduate students, researchers, academics and industry practitioners. The book uses data, network engineering and intelligent decision- support system-by-design principles to design a reliable IoT-enabled ecosystem and to implement cyber-physical pervasive infrastructure solutions. It takes readers on a journey that begins with understanding the insight paradigm of IoT-enabled technologies and how it can be applied. It walks readers through engaging with real-time challenges and building a safe infrastructure for IoT-based, future-generation technologies. The book helps researchers and practitioners to understand the design architecture through IoT and the state of the art in IoT countermeasures. It also highlights the differences between heterogeneous platforms in IoT-enabled infrastructure and traditional ad hoc or infrastructural networks, and provides a comprehensive discussion on functional frameworks for IoT, object identification, IoT domain model, RFID technology, wearable sensors, WBAN, IoT semantics, knowledge extraction, and security and privacy issues in IoT-based ecosystems. Written by leading international experts, it explores IoT-enabled insight paradigms, which are utilized for the future benefit of humans. It also includes references to numerous works. Divided into stand-alone chapters, this highly readable book is intended for specialists, researchers, graduate students, designers, experts, and engineers involved in research on healthcare-related issues.

Issues in Electronics Research and Application: 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Radar and Sonar Research. The editors have built Issues in Electronics Research and Application: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Radar and Sonar Research in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Electronics Research and Application: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

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.

Wireless body area network (WBAN) is a small-scaled network that operates inside, on, or in the peripheral proximity of a body. The strong demands from both the medical and healthcare society and the consumer electronics industry have been accelerating the development of WBAN. WBAN is expected to be one of the main technologies to provide extremely high convenience and high efficiency in assisting healthcare or medical services. From the consumer electronics' point of view, WBAN is also of great interest in providing body-centric electronics for leisure, entertainment, game control, etc. Recent technological advances in low-power microelectronics, miniaturization, and wireless networking enable the design and proliferation of WBAN. However, engineers and designers of WBAN may face a number of challenging tasks such as regulatory circumstance, channel model, low power consumption, thermal effect, antenna and body loss, high-efficiency radios, reasonable data rate, high reliability, and efficient medium access. Wireless Body Area Network addresses various aspects of WBAN including: * Regulations * Antenna, Body Tissues and Radio Propagation * Physical Layer Technologies * Medium Access Control * Standardization The objective of this book is to provide sound understanding of the basic concepts, characteristics, and technologies of the new fast growing WBAN system. It investigates and summarizes frequency regulations on candidate frequency bands, such as ultra wideband (UWB), industrial, scientific, and medical (ISM), medical implant communication service (MICS), and wireless medical telemetry system (WMTS), in different countries and regions. The text describes antenna, propagation, and channel modeling related to WBAN, and it addresses the effects of radio frequency on tissues and organs and the effects of human tissues on RF propagations. Physical (PHY) layer technologies, including both narrow band and UWB are illustrated. Medium access control (MAC) technologies for WBAN are discussed, and

a unified MAC design, which is independent of underlying PHY technologies, is provided. The text also briefly reviews standardization with IEEE802.15.6, IEEE 11073, and ETSI eHealth Project. This book is a useful tool for university students, communication system engineers, and communication system researchers who study or design WBAN.

The two volumes LNCS 9597 and 9598 constitute the refereed conference proceedings of the 19th European Conference on the Applications of Evolutionary Computation, EvoApplications 2016, held in Porto, Portugal, in March/April 2016, co-located with the Evo* 2016 events EuroGP, EvoCOP, and EvoMUSART. The 57 revised full papers presented together with 17 poster papers were carefully reviewed and selected from 115 submissions. EvoApplications 2016 consisted of the following 13 tracks: EvoBAFIN (natural computing methods in business analytics and finance), EvoBIO (evolutionary computation, machine learning and data mining in computational biology), EvoCOMNET (nature-inspired techniques for telecommunication networks and other parallel and distributed systems), EvoCOMPLEX (evolutionary algorithms and complex systems), EvoENERGY (evolutionary computation in energy applications), EvoGAMES (bio-inspired algorithms in games), EvoIASP (evolutionary computation in image analysis, signal processing, and pattern recognition), EvoINDUSTRY (nature-inspired techniques in industrial settings), EvoNUM (bio-inspired algorithms for continuous parameter optimization), EvoPAR (parallel implementation of evolutionary algorithms), EvoRISK (computational intelligence for risk management, security and defence applications), EvoROBOT (evolutionary robotics), and EvoSTOC (evolutionary algorithms in stochastic and dynamic environments).

This book investigates the possible circuit solutions to overcome the temperature and supply voltage-sensitivity of fully-integrated time references for ultra-low-power communication in wireless sensor networks. The authors provide an elaborate theoretical introduction and literature study to enable full understanding of the design challenges and shortcomings of current oscillator implementations. Furthermore, a closer look to the short-term as well as the long-term frequency stability of integrated oscillators is taken. Next, a design strategy is developed and applied to 5 different oscillator topologies and 1 sensor interface. All 6 implementations are subject to an elaborate study of frequency stability, phase noise and power consumption. In the final chapter all blocks are compared to the state of the art.

Wireless communication is one of the fastest growing fields in the engineering world today. Rapid growth in the domain of wireless communication systems, services and application has drastically changed the way we live, work and communicate. Wireless communication offers a broad and dynamic technological field, which has stimulated incredible excitements and technological advancements over last few decades. The expectations from wireless communication technology are increasing every day. This is placing enormous challenges to wireless system designers. Moreover, this has created an ever increasing demand for conceptually strong and well versed communication engineers who understand the wireless technology and its future possibilities. In recent years, significant progress in wireless communication system design has taken place, which will continue in future. Especially for last two decades, the research contributions in wireless communication system design have resulted in several new concepts and inventions at remarkable speed. A text book is indeed required to offer familiarity with such developments and underlying concepts, to be taught in the classroom to future engineers. This is one of the motivations for writing this book. Practically no book can be up to date in this field, due to the fast ongoing research and developments. The new developments are announced almost every day. Teaching directly from the research papers in the classroom cannot build the necessary foundation. Therefore need for a textbook is unavoidable, which is integral to learning, and is an essential source to build the concept. The prime goal of this book is to cooperate in the learning process. This book is based on current research as well as classical text books in the field, and aims to provide in depth understanding on fundamental concepts, which form the basis of wireless communication and build the

platform, on which current developments can be understood and future contributions can be made. This book is written in self-explanatory manner to facilitate critical thinking and to support self study. Special emphasis has been given in this book to systematically organize and present the wide domain of wireless communication technology. Extra care has been taken to present the contents and the concepts in user friendly way to enable an easy understanding. Therefore the language of this book is made to make one feel, listening to a classroom lecture. This makes learning straight forward. Sometimes, the explanation could seem to be oversimplified, this is in order to support wide spectrum of readers as well as to clarify the hazy picture. A book of this kind, which addresses a fast developing technology, the frequent use of acronyms and abbreviations is almost inevitable. A care has been taken to spell the acronyms and abbreviations as frequently as practically suitable in the text. Besides, a list of acronyms and abbreviations has also been provided.

"This book presents a unique integration of knowledge from multidisciplinary fields of engineering, industrial design, and medical science for the healthcare of a specific user group"--Provided by publisher.

The LNCS journal Transactions on Computational Science reflects recent developments in the field of Computational Science, conceiving the field not as a mere ancillary science but rather as an innovative approach supporting many other scientific disciplines. The journal focuses on original high-quality research in the realm of computational science in parallel and distributed environments, encompassing the facilitating theoretical foundations and the applications of large-scale computations and massive data processing. It addresses researchers and practitioners in areas ranging from aerospace to biochemistry, from electronics to geosciences, from mathematics to software architecture, presenting verifiable computational methods, findings, and solutions, and enabling industrial users to apply techniques of leading-edge, large-scale, high performance computational methods. This, the 33rd issue of the Transactions on Computational Science, focusses on computational geometry and computability, with applications in IoT (Internet of Things), Bioinformatics, and WBAN (Wireless Body Area Networks). Three of the seven papers constitute extended versions of papers presented at the 18th International Workshop on Computational Geometry and Security Applications, CGSA 2017, held in Trieste, Italy, in June 2017.

Telemedicine Technologies: Big Data, Deep Learning, Robotics, Mobile and Remote Applications for Global Healthcare illustrates the innovative concepts, methodologies and frameworks that will increase the feasibility of the existing telemedicine system. The book also focuses on showcasing prototypes of remote healthcare systems, thus emphasizing the data processing side that is often recognized as the backbone of any telemedicine system. Illustrates the innovative concepts, methodologies and frameworks that will increase the feasibility of the existing telemedicine system Focuses on showcasing prototypes of remote healthcare systems

This book constitutes the refereed proceedings of the 10th International Conference on Communication Systems and Networks, COMSNETS 2018, held in Banaglore, India, in January 2018. The 12 revised full papers presented in this book were carefully reviewed and selected from 134 submissions. They cover various topics in networking and communications systems.

The implementation of wireless sensor networks has wide-ranging applications for monitoring various physical and environmental settings. However, certain limitations with these technologies must be addressed in order to effectively utilize them. The Handbook of Research on Advanced Wireless Sensor Network Applications, Protocols, and Architectures is a pivotal reference source for the latest research on recent innovations and developments in the field of wireless sensors. Examining the advantages and challenges presented by the application of these networks in various areas, this book is ideally designed for academics, researchers, students, and IT developers.

Providing an introduction to the fundamentals of body area communications, this book covers the key topics of channel modeling, modulation

and demodulation, and performance evaluation A systematic introduction to body area networks (BAN), this book focuses on three major parts: channel modeling, modulation/demodulation communications performance, and electromagnetic compatibility considerations. The content is logically structured to lead readers from an introductory level through to in-depth and more advanced topics. Provides a concise introduction to this emerging topic based on classroom-tested materials Details the latest IEEE 802.15.6 standard activities Moves from very basic physics, to useful mathematic models, and then to practical considerations Covers not only EM physics and communications, but also biological applications Topics approached include: link budget, bit error rate performance, RAKE and diversity reception; SAR analysis for human safety evaluation; and modeling of electromagnetic interference to implanted cardiac pacemakers Provides Matlab and Fortran programs for download from the Companion Website

Addresses recent advances from both the clinical and technological perspectives to provide a comprehensive presentation of m-Health This book introduces the concept of m-Health, first coined by Robert S. H. Istepanian in 2003. The evolution of m-Health since then—how it was transformed from an academic concept to a global healthcare technology phenomenon—is discussed. Afterwards the authors describe in detail the basics of the three enabling scientific technological elements of m-Health (sensors, computing, and communications), and how each of these key ingredients has evolved and matured over the last decade. The book concludes with detailed discussion of the future of m-Health and presents future directions to potentially shape and transform healthcare services in the coming decades. In addition, this book: Discusses the rapid evolution of m-Health in parallel with the maturing process of its enabling technologies, from bio-wearable sensors to the wireless and mobile communication technologies from IOT to 5G systems and beyond Includes clinical examples and current studies, particularly in acute and chronic disease management, to illustrate some of the relevant medical aspects and clinical applications of m-Health Describes current m-Health ecosystems and business models Covers successful applications and deployment examples of m-Health in various global health settings, particularly in developing countries

Mobile ad-hoc networks have attracted considerable attention and interest from the commercial sector as well as the standards community. Many new ad-hoc networking applications have been conceived to help enable new commercial and personal communication beyond the domain of tactical networks, including personal area networking, home networking, law enforcement operations, search and rescue operations, commercial and educational applications, and sensor networks. Emerging Technologies in Wireless Ad-hoc Networks: Applications and Future Development provides the rationale, state-of-the-art studies and practical applications, proof-of-concepts, experimental studies, and future development on the use of emerging technologies in wireless ad-hoc networks. In addition, this work explores emerging wireless ad hoc technologies based on communication coverage areas: body sensor networks, personal area networks, local area networks, and metropolitan area networks and their applications in critical sectors, for example, agriculture, environment, public health and public transportation.

This book is a printed edition of the Special Issue "QoS in Wireless Sensor/Actuator Networks and Systems" that was published in JSAN

The book gathers a collection of high-quality peer-reviewed research papers presented at the International Conference on Data and Information Systems (ICDIS 2017), held at Indira Gandhi National Tribal University, India from November 3 to 4, 2017. The book covers all aspects of computational sciences and information security. In chapters written by leading researchers, developers and practitioner from academia and industry, it highlights the latest developments and technical solutions, helping readers from the computer industry capitalize on key advances in next-generation computer and communication technology.

Principles of Ad Hoc Networking presents a systematic introduction to the fundamentals of ad hoc networks. An ad-hoc network is a small network, especially one with wireless or temporary plug-in connections. Typically, some of the network devices are part of the network only for the duration of a communications session or, in the case of mobile or portable devices, while in some close proximity to the rest of the network. These networks can range from small and static systems with constrained power resources to larger-scale dynamic and mobile environments. Wireless ad hoc networks facilitate numerous and diverse applications for establishing survivable dynamic systems in emergency and rescue operations, disaster relief and intelligent home settings. Principles of Ad Hoc Networking: Introduces the essential characteristics of ad hoc networks such as: physical layer, medium access control, Bluetooth discovery and network formation, wireless network programming and protocols. Explains the crucial components involved in ad-hoc networks in detail with numerous exercises to aid understanding. Offers key results and merges practical methodologies with mathematical considerations. Principles of Ad Hoc Networking will prove essential reading for graduate students in Computer Science, Electrical Engineering, Applied Mathematics and Physics as well as researchers in the field of ad hoc networking, professionals in wireless telecoms, and networking system developers. Check out

www.scs.carleton.ca/~barbeau/pahn/index.htm for further reading, sample chapters, a bibliography and lecture slides! Wireless Personal Area Networks provides an in-depth analysis of the recent IEEE 802.15.4 standard for low data rate wireless personal area networks (LR-WPANs), including suggestions to improve performance and comparisons with the related 802.15.1 (Bluetooth) standard. It assesses the suitability of the standard for the development and deployment of wireless sensor networks as well as providing guidance and insight into the relative advantages and disadvantages of various performance solutions. Wireless Personal Area Networks: Provides a comprehensive, in-depth look at the issues surrounding WPAN network operation and performance. Investigates multi-cluster networks and compares how they can be implemented. Analyzes the performance of a single cluster under different traffic and power management regimes including uplink vs. downlink traffic, acknowledged vs. unacknowledged traffic, saturation vs. non-saturation, and the like. Discusses security issues in WPANs such as different security threats, their impact on performance, standard security

mechanisms, and security policies. Compares the IEEE 802.15.4 standard with the related Bluetooth IEEE 802.15.1 standard in terms of suitability for implementing wireless sensor networks. This reference is a valuable tool for developers and researchers getting acquainted with various aspects of IEEE 802.15.4 technology. Graduate students studying courses such as Performance Evaluation, Wireless Sensor Networks and Queuing Theory will also find this book very insightful.

Estimation of unknown parameters is considered as one of the major research areas in statistical signal processing. In the most recent decades, approaches in estimation theory have become more and more attractive in practical applications. Examples of such applications may include, but are not limited to, positioning using various measurable radio signals in indoor environments, self-navigation for autonomous cars, image processing, radar tracking and so on. One issue that is usually encountered when solving an estimation problem is to identify a good system model, which may have great impacts on the estimation performance. In this thesis, we are interested in studying estimation problems particularly in inferring the unknown positions from noisy radio signal measurements. In addition, the modeling of the system is studied by investigating the relationship between positions and radio signal strength measurements. One of the main contributions of this thesis is to propose a novel indoor positioning framework based on proximity measurements, which are obtained by quantizing the received signal strength measurements. Sequential Monte Carlo methods, to be more specific particle filter and smoother, are utilized for estimating unknown positions from proximity measurements. The Cramér-Rao bounds for proximity-based positioning are further derived as a benchmark for the positioning accuracy in this framework. Secondly, to improve the estimation performance, Bayesian non-parametric modeling, namely Gaussian processes, have been adopted to provide more accurate and flexible models for both dynamic motions and radio signal strength measurements. Then, the Cramér-Rao bounds for Gaussian process based system models are derived and evaluated in an indoor positioning scenario. In addition, we estimate the positions of stationary devices by comparing the individual signal strength measurements with a pre-constructed fingerprinting database. The positioning accuracy is further compared to the case where a moving device is positioned using a time series of radio signal strength measurements. Moreover, Gaussian processes have been applied to sports analytics, where trajectory modeling for athletes is studied. The proposed framework can be further utilized to carry out, for instance, performance prediction and analysis, health condition monitoring, etc. Finally, a grey-box modeling is proposed to analyze the forces, particularly in cross-country skiing races, by combining a deterministic kinetic model with Gaussian process.

This book is a detailed compendium of these major advancements focusing exclusively on the emerging broadband wireless communication technologies which support broadband wireless data rate transmissions. Editor: Jan Nikodem,

La Trobe University, Melbourne, Australia.

Undoubtedly the applications of polymers are rapidly evolving. Technology is continually changing and quickly advancing as polymers are needed to solve a variety of day-to-day challenges leading to improvements in quality of life. The Encyclopedia of Polymer Applications presents state-of-the-art research and development on the applications of polymers. This groundbreaking work provides important overviews to help stimulate further advancements in all areas of polymers. This comprehensive multi-volume reference includes articles contributed from a diverse and global team of renowned researchers. It offers a broad-based perspective on a multitude of topics in a variety of applications, as well as detailed research information, figures, tables, illustrations, and references. The encyclopedia provides introductions, classifications, properties, selection, types, technologies, shelf-life, recycling, testing and applications for each of the entries where applicable. It features critical content for both novices and experts including, engineers, scientists (polymer scientists, materials scientists, biomedical engineers, macromolecular chemists), researchers, and students, as well as interested readers in academia, industry, and research institutions.

With the help of artificial intelligence, machine learning, and big data analytics, the internet of things (IoT) is creating partnerships within industry where machines, processes, and humans communicate with one another. As this radically changes traditional industrial operations, this results in the rapid design, cheap manufacture, and effective customization of products. Answering the growing demand of customers and their preferences has become a challenge for such partnerships. Industrial Internet of Things and Cyber-Physical Systems: Transforming the Conventional to Digital is a collection of innovative research that discusses development, implementation, and business impacts of IoT technologies on sustainable societal development and improved life quality. Highlighting a wide range of topics such as green technologies, wireless networks, and IoT policy, this book is ideally designed for technology developers, entrepreneurs, industrialists, programmers, engineers, technicians, researchers, academicians, and students.

"If we had computers that knew everything there was to know about things—using data they gathered without any help from us—we would be able to track and count everything, and greatly reduce waste, loss, and cost. We would know when things needed replacing, repairing or recalling, and whether they were fresh or past their best. The Internet of Things has the potential to change the world, just as the Internet did. Maybe even more so." —Kevin Ashton, originator of the term, Internet of Things

An examination of the concept and unimagined potential unleashed by the Internet of Things (IoT) with IPv6 and MIPv6

What is the Internet of Things? How can it help my organization? What is the cost of deploying such a system? What are the security implications? Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications answers these questions and many more. This essential book explains the concept and potential that the IoT presents, from mobile applications that allow home appliances to be programmed remotely, to solutions in manufacturing and energy conservation. It

features a tutorial for implementing the IoT using IPv6 and Mobile IPv6 and offers complete chapter coverage that explains: What is the Internet of Things? Internet of Things definitions and frameworks Internet of Things application examples Fundamental IoT mechanisms and key technologies Evolving IoT standards Layer 1/2 connectivity: wireless technologies for the IoT Layer 3 connectivity: IPv6 technologies for the IoT IPv6 over low power WPAN (6lowpan) Easily accessible, applicable, and not overly technical, Building the Internet of Things with IPv6 and MIPv6 is an important resource for Internet and ISP providers, telecommunications companies, wireless providers, logistics professionals, and engineers in equipment development, as well as graduate students in computer science and computer engineering courses.

Information networking has emerged as a multidisciplinary diversified area of research over the past few decades. From traditional wired telephony to cellular voice telephony and from wired access to wireless access to the Internet, information networks have profoundly impacted our lifestyles as they have undergone enormous growth. To understand this technology, students need to learn several disciplines and develop an intuitive feeling of how they interact with one another. To achieve this goal, the book describes important networking standards, classifying their underlying technologies in a logical manner and gives detailed examples of successful applications. The emergence of wireless access and dominance of the Ethernet in LAN technologies has shifted the innovations in networking towards the physical layer and characteristics of the medium. This book pays attention to the physical layer while we provide fundamentals of information networking technologies which are used in wired and wireless networks designed for local and wide area operations. The book provides a comprehensive treatment of the wired IEEE802.3 Ethernet, and Internet as well as ITU cellular 2G-6G wireless networks, IEEE 802.11 for Wi-Fi, and IEEE 802.15 for Bluetooth, ZigBee and ultra-wideband (UWB) technologies. The novelty of the book is that it places emphasis on physical communications issues related to formation and transmission of packets and characteristics of the medium for transmission in a variety of networks. Material presented in the book will be beneficial for students of Electrical and Computer Engineering, Computer Science, Robotics Engineering, Biomedical Engineering, or other disciplines who are interested in integration of navigation into their multi-disciplinary projects. The book provides examples with supporting MATLAB codes and hands-on projects throughout to improve the ability of the readers to understand and implement a variety of algorithms.

This book constitutes the refereed proceedings of the First International Conference on Wireless Sensor Networks for Developing Countries, WSN4DC 2013, held in Jamshoro, Pakistan, in April 2013. The 10 revised full papers presented were carefully reviewed and selected from 30 submissions. The papers are organized in topical sections on WSN applications/services for developing countries; mobile WSN; underwater WSN; VANETS; body area networks; energy harvesting in WSN; WSN and cloud integration; WSN and IoT; QoS and Qot; WSN MAC, network and transport protocols; cross layer approaches; security aspects in WSN; WSN applications in smart grid and energy management; WSN in structural health monitoring.

Ambient Assisted Living and Enhanced Living Environments: Principles, Technologies and Control separates the theoretical concepts concerning the design of such systems from their real-world implementations. For each important topic, the book bridges

theory and practice, introducing the instruments needed by professionals in their activities. To this aim, topics are presented in a logical sequence, with the introduction of each topic motivated by the need to respond to claims and requirements from a wide range of AAL/ELE applications. The advantages and limitations of each model or technology are presented through concrete case studies for AAL/ELE systems. The book also presents up-to-date technological solutions to the main aspects regarding AAL/ELE systems and applications, a highly dynamic scientific domain that has gained much interest in the world of IT in the last decade. In addition, readers will find discussions on recent AAL/ELE technologies that were designed to solve some of the thorniest business problems that affect applications in areas such as health and medical supply, smart city and smart housing, Big Data and Internet of Things, and many more. Introduces readers to technologies supporting the development of Ambient Assisted Living applications Explains state-of-the-art technological solutions for the main issues regarding AAL and Enhanced Living Environments Reports the development process of scientific and commercial applications and platforms that support AAL and ELE Identifies the advanced solutions in the context of Enhanced Living Environments

A comprehensive, encompassing and accessible text examining a wide range of key Wireless Networking and Localization technologies This book provides a unified treatment of issues related to all wireless access and wireless localization techniques. The book reflects principles of design and deployment of infrastructure for wireless access and localization for wide, local, and personal networking. Description of wireless access methods includes design and deployment of traditional TDMA and CDMA technologies and emerging Long Term Evolution (LTE) techniques for wide area cellular networks, the IEEE 802.11/WiFi wireless local area networks as well as IEEE 802.15 Bluetooth, ZigBee, Ultra Wideband (UWB), RF Microwave and body area networks used for sensor and ad hoc networks. The principles of wireless localization techniques using time-of-arrival and received-signal-strength of the wireless signal used in military and commercial applications in smart devices operating in urban, indoor and inside the human body localization are explained and compared. Questions, problem sets and hands-on projects enhances the learning experience for students to understand and appreciate the subject. These include analytical and practical examples with software projects to challenge students in practically important simulation problems, and problem sets that use MatLab. Key features: Provides a broad coverage of main wireless technologies including emerging technical developments such as body area networking and cyber physical systems Written in a tutorial form that can be used by students and researchers in the field Includes practical examples and software projects to challenge students in practically important simulation problems Significant research effort has been devoted to the study and realization of autonomous wireless systems for wireless sensor and personal-area networking, the internet of things, and machine-to-machine communications. Low-power RF integrated circuits, an energy harvester and a power management circuit are fundamental elements of these systems. An FM-UWB Transceiver for Autonomous Wireless Systems presents state-of-the-art developments in low-power FM-UWB transceiver realizations. The design, performance and implementation of prototype transceivers in CMOS technology are presented. A working hardware realization of an autonomous node that includes a prototype power management circuit is also proposed and detailed in this book.

Technical topics include: Low-complexity FM-UWB modulation schemes Low-power FM-UWB transceiver prototypes in CMOS technology CMOS on-chip digital calibration techniques Solar power harvester and power management in CMOS for low-power RF circuits An FM-UWB Transceiver for Autonomous Wireless Systems is an ideal text and reference for engineers working in wireless communication industries, as well as academic staff and graduate students engaged in electrical engineering and communication systems research.

Ultra Wideband Demystified: Technologies, Applications, and System Design Considerations is a comprehensive text for emerging high speed short range wireless technology of Ultra Wideband. It provides background concepts and information on evolving standards and their development efforts, radio technology, practical system design/implementation and real life applications. The book also deliberates on the regulatory frameworks, security aspects and power management techniques essential to Ultra Wideband usage in consumer devices like portable handheld mobile devices. Important topics as UWB common radio usage for adapting to different existing/new applications and upper layer protocols like Wireless USB are also discussed.

Biosensors and systems in the form of wearables and “nearables” (i.e., everyday sensorized objects with transmitting capabilities such as smartphones) are rapidly evolving for use in healthcare. Unlike conventional approaches, these technologies can enable seamless or on-demand physiological monitoring, anytime and anywhere. Such monitoring can help transform healthcare from the current reactive, one-size-fits-all, hospital-centered approach into a future proactive, personalized, decentralized structure. Wearable and nearable biosensors and systems have been made possible through integrated innovations in sensor design, electronics, data transmission, power management, and signal processing. Although much progress has been made in this field, many open challenges for the scientific community remain, especially for those applications requiring high accuracy. This book contains the 12 papers that constituted a recent Special Issue of Sensors sharing the same title. The aim of the initiative was to provide a collection of state-of-the-art investigations on wearables and nearables, in order to stimulate technological advances and the use of the technology to benefit healthcare. The topics covered by the book offer both depth and breadth pertaining to wearable and nearable technology. They include new biosensors and data transmission techniques, studies on accelerometers, signal processing, and cardiovascular monitoring, clinical applications, and validation of commercial devices.

This book constitutes the proceedings of the 10th International Symposium on Cyberspace Safety and Security, CSS 2018, held in Amalfi, Italy, in October 2018. The 25 full papers presented in this volume were carefully reviewed and selected from 79 submissions. The papers focus on cybersecurity; cryptography, data security, and biometric techniques; and social security, ontologies, and smart applications.

Edited by a panel of experts, this book fills a gap in the existing literature by comprehensively covering system,

processing, and application aspects of biometrics, based on a wide variety of biometric traits. The book provides an extensive survey of biometrics theory, methods, and applications, making it an indispensable source of information for researchers, security experts, policy makers, engineers, practitioners, and graduate students. The book's wide and in-depth coverage of biometrics enables readers to build a strong, fundamental understanding of theory and methods, and provides a foundation for solutions to many of today's most interesting and challenging biometric problems. Biometric traits covered: Face, Fingerprint, Iris, Gait, Hand Geometry, Signature, Electrocardiogram (ECG), Electroencephalogram (EEG), physiological biometrics. Theory, Methods and Applications covered: Multilinear Discriminant Analysis, Neural Networks for biometrics, classifier design, biometric fusion, Event-Related Potentials, person-specific characteristic feature selection, image and video-based face, recognition/verification, near-infrared face recognition, elastic graph matching, super-resolution of facial images, multimodal solutions, 3D approaches to biometrics, facial aging models for recognition, information theory approaches to biometrics, biologically-inspired methods, biometric encryption, decision-making support in biometric systems, privacy in biometrics.

This book is a collection of peer-reviewed best selected research papers presented at the First International Conference on Machine Intelligence and Smart Systems 2020 (MISS 2020), organized during September 24–25, 2020, in Gwalior, India. The book presents new advances and research results in the fields of machine intelligence, artificial intelligence and smart systems. It includes main paradigms of machine intelligence algorithms, namely (1) neural networks, (2) evolutionary computation, (3) swarm intelligence, (4) fuzzy systems and (5) immunological computation.

Springer Brief Basics of Computer Networking provides a non-mathematical introduction to the world of networks. This book covers both technology for wired and wireless networks. Coverage includes transmission media, local area networks, wide area networks, and network security. Written in a very accessible style for the interested layman by the author of a widely used textbook with many years of experience explaining concepts to the beginner.

The internet is established in most households worldwide and used for entertainment purposes, shopping, social networking, business activities, banking, telemedicine, and more. As more individuals and businesses use this essential tool to connect with each other and consumers, more private data is exposed to criminals ready to exploit it for their gain. Thus, it is essential to continue discussions involving policies that regulate and monitor these activities, and anticipate new laws that should be implemented in order to protect users. Cyber Law, Privacy, and Security: Concepts, Methodologies, Tools, and Applications examines current internet and data protection laws and their impact on user experience and cybercrime, and explores the need for further policies that protect user identities, data, and privacy. It also offers the latest methodologies and applications in the areas of digital security and threats. Highlighting a range of

topics such as online privacy and security, hacking, and online threat protection, this multi-volume book is ideally designed for IT specialists, administrators, policymakers, researchers, academicians, and upper-level students.

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