Wireless Sensor Networks

Getting the books **Wireless Sensor Networks** now is not type of inspiring means. You could not lonesome going in the manner of ebook accrual or library or borrowing from your links to edit them. This is an certainly simple means to specifically get guide by on-line. This online statement Wireless Sensor Networks can be one of the options to accompany you following having other time.

It will not waste your time. agree to me, the e-book will utterly song you additional business to read. Just invest tiny mature to get into this on-line publication **Wireless Sensor Networks** as capably as evaluation them wherever you are now.

Wireless Sensor Networks - Holger Karl 2006-02
This book constitutes the refereed proceedings of the Third European Workshop on Wireless Sensor Networks February 2006. The 21 revised full papers presented together with the abstracts of one invited talk and two tutorials were carefully reviewed and selected from 133 submissions. The papers are organized in topical sections on query systems, sensor network services, routing, localization, platforms and development, medium access control, and measurements.
Wireless Sensor Networks - Rastko R. Selmic 2016-11-02
This book presents a comprehensive overview of wireless sensor networks (WSNs) with an emphasis on security, coverage, and localization. It offers a structural treatment of WSN building blocks including hardware and protocol architectures and also provides a systems-level view of how WSNs operate. These building blocks will allow readers to program specialized applications and conduct research in advanced topics. A brief introductory chapter covers common applications and communication protocols for WSNs. Next, the authors review basic mathematical models such as Voroni diagrams and Delaunay triangulations. Sensor principles, hardware structure, and medium access protocols are examined. Security challenges ranging from defense strategies to network robustness are explored, along with quality of service measures. Finally, this book discusses recent developments and future directions in WSN platforms. Each chapter concludes with classroom-tested exercises that reinforce key concepts. This book is suitable for researchers and for practitioners in industry. Advanced-level students in electrical engineering and computer science will also find the content helpful as a textbook or reference.
Guide to Wireless Sensor Networks - Sudip Misra 2009-05-29
Overview and Goals Wireless communication technologies are undergoing rapid advancements. The last few years have experienced a steep growth in research in the area of wireless sensor networks (WSNs). In WSNs, communication takes place with the help of spatially distributedautonomoussensornodesequippedtosensespeci?cinformation. WSNs, especially the ones that have gained much popularity in the recent years, are, ty- cally, ad hoc in nature and they inherit many characteristics/features of wireless ad hoc networks such as the ability for infrastructure-less setup, minimal or no reliance on network planning, and the ability of the nodes to self-organize and self-con?gure without the involvement of a centralized network manager, router, access point, or a switch. These features help to set up WSNs fast in situations where there is no existing network setup or in times when setting up a ?xed infrastructure network is considered infeasible, for example, in times of emergency or during relief - erations. WSNs ?nd a variety of applications in both the military and the civilian population worldwide such as in cases of enemy intrusion in the battle?eld, object tracking, habitat monitoring, patient monitoring, ?re detection, and so on. Even though sensor networks have emerged to be attractive and they hold great promises for our future, there are

several challenges that need to be addressed. Some of the well-known challenges are attributed to issues relating to coverage and deployment, scalability, quality-of-service, size, computational power, energy ef?ciency, and security.

Wireless Sensor Networks - Roberto Verdone 2008-01-24

This book constitutes the refereed proceedings of the 5th European Workshop on Wireless Sensor Networks, EWSN 2008, held in Bologna, Italy, in January/February 2008. The 23 revised full papers presented were carefully reviewed and selected from 110 submissions. The papers are organized in topical sections on localization, detection of space/time correlated events, network coding, ZigBee, topology, software, as well as deployment and application development.

Wireless Sensor Networks - Kazem Sohraby 2007-04-06

Infrastructure for Homeland Security Environments Wireless Sensor Networks helps readers discover the emerging field of low-cost standards-based sensors that promise a high order of spatial and temporal resolution and accuracy in an ever-increasing universe of applications. It shares the latest advances in science and engineering paving the way towards a large plethora of new applications in such areas as infrastructure protection and security, healthcare, energy, food safety, RFID, ZigBee, and processing. Unlike other books on wireless sensor networks that focus on limited topics in the field, this book is a broad introduction that covers all the major technology, standards, and application topics. It contains everything readers need to know to enter this burgeoning field, including current applications and promising research and development; communication and networking protocols; middleware architecture for wireless sensor networks; and security and management. The straightforward and engaging writing style of this book makes even complex concepts and processes easy to follow and understand. In addition, it offers several features that help readers grasp the material and then apply their knowledge in designing their own wireless sensor network systems: * Examples illustrate how concepts are applied to the development and application of * wireless sensor networks * Detailed case studies set forth all the steps of design and implementation needed to solve real-world problems * Chapter conclusions that serve as an excellent review by stressing the chapter's key concepts * References in each chapter guide readers to in-depth discussions of individual topics This book is ideal for networking designers and engineers who want to fully exploit this new technology and for government employees who are concerned about homeland security. With its examples, it is appropriate for use as a coursebook for upper-level undergraduates and graduate students.

Building Wireless Sensor Networks - Robert Faludi 2010-12-14

Get ready to create distributed sensor systems and intelligent interactive devices using the ZigBee wireless networking protocol and Series 2 XBee radios. By the time you're halfway through this fast-paced, hands-on guide, you'll have built a series of useful projects, including a complete ZigBee wireless network that delivers remotely sensed data. Radio networking is creating revolutions in volcano monitoring, performance art, clean energy, and consumer electronics. As you follow the examples in each chapter, you'll learn how to tackle inspiring projects of your own. This practical guide is ideal for inventors, hackers, crafters, students, hobbyists, and scientists. Investigate an assortment of practical and intriguing project ideas Prep your ZigBee toolbox with an extensive shopping list of parts and programs Create a simple, working ZigBee network with XBee radios in less than two hours -- for under $100 Use the Arduino open source electronics prototyping platform to build a series of increasingly complex projects Get familiar with XBee's API mode for creating sensor networks Build fully scalable sensing and actuation systems with inexpensive components Learn about power management, source routing, and other XBee technical nuances Make gateways that connect with neighboring networks, including the Internet

Wireless Sensor Networks - Ibrahiem M. M. El Emary 2013-08-28

Although there are many books available on WSNs, most are low-level, introductory books. The few available for advanced readers fail to convey the breadth of knowledge required for

those aiming to develop next-generation solutions for WSNs. Filling this void, Wireless Sensor Networks: From Theory to Applications supplies comprehensive coverage of WSNs. In order to provide the wide-ranging guidance required, the book brings together the contributions of domain experts working in the various subfields of WSNs worldwide. This edited volume examines recent advances in WSN technologies and considers the theoretical problems in WSN, including issues with monitoring, routing, and power control. It also details methodologies that can provide solutions to these problems. The book's 25 chapters are divided into seven parts: Data Collection Physical Layer and Interfacing Routing and Transport Protocols Energy-Saving Approaches Mobile and Multimedia WSN Data Storage and Monitoring Applications The book examines applications of WSN across a range of fields, including health, military, transportation, and mining. Addressing the main challenges in applying WSNs across all phases of our life, it explains how WSNs can assist in community development. Complete with a list of references at the end of each chapter, this book is ideal for senior undergraduate and postgraduate students, researchers, scholars, academics, industrial researchers, and practicing engineers working on WSNs. The text assumes that readers possess a foundation in computer networks, wireless communication, and basic electronics.

Wireless Sensor Networks - Hossam Mahmoud Ahmad Fahmy 2016-03-02

This book focuses on the principles of wireless sensor networks (WSNs), their applications, and their analysis tools, with meticulous attention paid to definitions and terminology. This book presents the adopted technologies and their manufacturers in detail, making WSNs tangible for the reader. In introductory computer networking books, chapter sequencing follows the bottom-up or top-down architecture of the 7-layer protocol. This book addresses subsequent steps in this process, both horizontally and vertically, thus fostering a clearer and deeper understanding through chapters that elaborate on WSN concepts and issues. With such depth, this book is intended for a wide audience; it is meant to be a helper and motivator for senior undergraduates, postgraduates, researchers, and practitioners. It lays out important concepts and WSN-relate applications; uses appropriate literature to back research and practical issues; and focuses on new trends. Senior undergraduate students can use it to familiarize themselves with conceptual foundations and practical project implementations. For graduate students and researchers, test beds and simulators provide vital insights into analysis methods and tools for WSNs. Lastly, in addition to applications and deployment, practitioners will be able to learn more about WSN manufacturers and components within several platforms and test beds.

Problem Solving for Wireless Sensor Networks - Ana-Belén García-Hernando 2008-10-27

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.

Wireless Sensor Networks - Jun Zheng 2009-10-27

Learn the fundamental concepts, major challenges, and effective solutions in wireless sensor networking This book provides a comprehensive and systematic introduction to the fundamental concepts, major challenges, and effective solutions in wireless sensor networking (WSN). Distinguished from other books, it focuses on the networking aspects of WSNs and covers the most important networking issues, including network architecture design, medium

access control, routing and data dissemination, node clustering, node localization, query processing, data aggregation, transport and quality of service, time synchronization, network security, and sensor network standards. With contributions from internationally renowned researchers, Wireless Sensor Networks expertly strikes a balance between fundamental concepts and state-of-the-art technologies, providing readers with unprecedented insights into WSNs from a networking perspective. It is essential reading for a broad audience, including academic researchers, research engineers, and practitioners in industry. It is also suitable as a textbook or supplementary reading for electrical engineering, computer engineering, and computer science courses at the graduate level.

Wireless Sensor Networks - Holger Karl 2004-01-14

This book constitutes the refereed proceedings of the First European Workshop on Wireless Sensor Networks, EWSN 2004, held in Berlin, Germany in January 2004. The 24 revised full papers presented were carefully reviewed and selected from 76 submissions. Wireless sensor networks are a key technology for new ways of interaction between computers and the physical world around us. Compared to traditional networking, wireless sensor networks are faced with a rather unique mix of challenges: scalability, energy-efficiency, self-configuration, constrained computation and memory resources in individual nodes, data centricity, etc. This is one of a very small number of books entirely devoted to the presentation of cutting-edge R & D results in this exciting new area.

Wireless Sensor Networks - Shafiullah Khan 2016-04-21

Wireless sensor networks (WSNs) utilize fast, cheap, and effective applications to imitate the human intelligence capability of sensing on a wider distributed scale. But acquiring data from the deployment area of a WSN is not always easy and multiple issues arise, including the limited resources of sensor devices run with one-time batteries. Additi

Wireless Sensor Networks - Feng Zhao 2004-07-06

Designing, implementing, and operating a wireless sensor network involves a wide range of disciplines and many application-specific constraints. To make sense of and take advantage of these systems, a holistic approach is needed--and this is precisely what Wireless Sensor Networks delivers. Inside, two eminent researchers review the diverse technologies and techniques that interact in today's wireless sensor networks. At every step, they are guided by the high-level information-processing tasks that determine how these networks are architected and administered. Zhao and Guibas begin with the canonical problem of localizing and tracking moving objects, then systematically examine the many fundamental sensor network issues that spring from it, including network discovery, service establishment, data routing and aggregation, query processing, programming models, and system organization. The understanding gained as a result--how different layers support the needs of different applications, and how a wireless sensor network should be built to optimize performance and economy--is sure to endure as individual component technologies come and go. ·Written for practitioners, researchers, and students and relevant to all application areas, including environmental monitoring, industrial sensing and diagnostics, automotive and transportation, security and surveillance, military and battlefield uses, and large-scale infrastructural maintenance. ·Skillfully integrates the many disciplines at work in wireless sensor network design: signal processing and estimation, communication theory and protocols, distributed algorithms and databases, probabilistic reasoning, energy-aware computing, design methodologies, evaluation metrics, and more. ·Demonstrates how querying, data routing, and network self-organization can support high-level information-processing tasks.

Wireless Sensor and Actuator Networks - Roberto Verdone 2010-07-27

When choosing the technology options to develop a wireless sensor network (WSN), it is vital that their performance levels can be assessed for the type of application intended. This book describes the different technology options – MAC protocols, routing protocols, localisation and data fusion techniques – and provides the means to numerically measure their performance, whether by simulation, mathematical models or experimental test beds.

Case studies, based on the authors' direct experience of implementing wireless sensor networks, describe the design methodology and the type of measurements used, together with samples of the performance measurements attained. The book will enable you to answer vital questions such as: * How long will my network remain alive given the amount of sensing required of it? * For how long should I set the sleeping state of my motes? * How many sensors should I distribute to meet the expected requirements of the application? * What type of throughput should I expect as a function of the number of nodes deployed and the radio interface chosen (whether it be Bluetooth or Zigbee)? * How is the Packet Error Rate of my Zigbee motes affected by the selection of adjacent frequency sub bands in the ISM 2.4GHz band? * How is the localisation precision dependant on the number of nodes deployed in a corridor? Communications and signal processing engineers, researchers and graduate students working in wireless sensor networks will find this book an invaluable practical guide to this important technology. "This book gives a proper balance between theory and application; it is a book for those R&D engineers that want to appreciate both why, how and in which domains Wireless Sensor Networks can be best applied." - Fabio Bellifemine, Telecom Italia "This book is a thorough and accessible exposition on wireless sensor networks with a good balance between theory and practice; it is valuable for both students and practicing engineers, and is an essential addition for engineering libraries." - Professor Moe Win, Associate Professor at the Laboratory for Information and Decision Systems (LIDS), Massachusetts Institute of Technology *Only book to examine wireless sensor network technologies and assess their performance capabilities against possible applications *Enables the engineer to choose the technology that will give the best performance for the intended application *Case studies, based on the authors' direct experience of implementing wireless sensor networks, describe the design methodology and the type of measurements used, together with samples of the performance measurements attained

Wireless Sensor Networks - Pedro José Marrón 2011-02-17

This book constitutes the refereed proceedings of the 8th European Conference on Wireless Sensor Networks, EWSN 2011, held in Bonn, Germany, in February 2011. The 14 revised full papers presented were carefully reviewed and selected from 87 submissions. The papers are organized in topical sections on routing and mobility, optimization techniques, MAC protocols, algorithms, and systems and abstractions.

Advanced Principles of Wireless Sensor Networks - Arthur Nelson 2020-09-22

Wireless sensor network is a group of dedicated and spatially distributed sensors used to monitor and record the physical conditions of the environment. It also organizes the collected data at a central location. It helps in measuring the environmental conditions such as temperature, pollution levels, sound, humidity, and wind. They rely on wireless connectivity and spontaneously form a network to ensure the wireless transportation of sensor data. Modern wireless sensor networks are bi-directional that enable the control of sensor activity. It plays an important role in military applications such as battlefield surveillance. Such networks are also used in many industrial and consumer applications such as industrial process monitoring and control and machine health monitoring. This book elucidates the concepts and innovative models around prospective developments with respect to wireless sensors network. Some of the diverse topics covered herein book address the varied branches that fall under this category. The book is appropriate for those seeking detailed information in this area.

Wireless Sensor Networks - Mohamed Ibnkahla 2017-12-19

With classical techniques for data transmission soon reaching their limitations, cognitive approaches may offer a solution to user requirements for better coverage, connectivity, security, and energy efficiency at lower cost. Wireless Sensor Networks: A Cognitive Perspective presents a unified view of the state of the art of cognitive approaches in telecommunications. A benchmark in the field, it brings together research that has previously been scattered throughout conference and journal papers. Cutting-Edge Topics in Cognitive Communications After a review of the cognitive

concept and approaches, the book outlines a generic architecture for cognition in wireless sensor networks. It then targets specific issues that need to be addressed through cognition, from cognitive radio and spectrum access to routing protocols. The book also explores how to use weighted cognitive maps to improve network lifetime through optimizing routing, medium access, and power control while fulfilling end-to-end goals. The final chapter discusses the implementation of hardware for GPS/INS-enabled wireless sensor networks. This addresses an important need for real-time node position information in many wireless sensor network applications and communication protocols. Real-World Applications of Wireless Sensor Networks using the Cognitive Concept Written in a tutorial style, the book supplies an in-depth survey of each topic, accompanied by detailed descriptions of the algorithms and protocols. It also provides a step-by-step analysis of the various communications systems through extensive computer simulations and illustrations. Examples cover environmental monitoring, vehicular communications, tracking, and more. A comprehensive overview of cognitive communications in wireless sensor networks, this work lays the foundations for readers to participate in a new era of research in this emerging field.

Wireless Sensor Networks - Elena Gaura 2010-09-14

The twentieth century ended with the vision of smart dust: a network of wirelessly connected devices whose size would match that of a dust particle, each one a se-containedpackageequippedwithsensing,computation,communication,andpower. Smart dust held the promise to bridge the physical and digital worlds in the most unobtrusive manner, blending together realms that were previously considered well separated. Applications involved scattering hundreds, or even thousands, of smart dust devices to monitor various environmental quantities in scenarios ranging from habitat monitoring to disaster management. The devices were envisioned to se-organize to accomplish their task in the most ef?cient way. As such, smart dust would become a powerful tool, assisting the daily activities of scientists and en- neers in a wide range of disparate disciplines. Wireless sensor networks (WSNs), as we know them today, are the most no- worthy attempt at implementing the smart dust vision. In the last decade, this ?eld has seen a fast-growing investment from both academia and industry. Signi?cant ?nancial resources and manpower have gone into making the smart dust vision a reality through WSNs. Yet, we still cannot claim complete success. At present, only specialist computerscientists or computerengineershave the necessary background to walk the road from conception to a ?nal, deployed, and running WSN system.

Wireless Sensor Networks and Applications - Yingshu Li 2008-02-10

A crucial reference tool for the increasing number of scientists who depend upon sensor networks in a widening variety of ways. Coverage includes network design and modeling, network management, data management, security and applications. The topic covered in each chapter receives expository as well as scholarly treatment, covering its history, reviewing state-of-the-art thinking relative to the topic, and discussing currently unsolved problems of special interest.

Wireless Sensor Networks - Hossam Mahmoud Ahmad Fahmy 2020-01-25

This second book by the author on WSNs focuses on the concepts of energy, and energy harvesting and management techniques. Definitions and terminologies are made clear without leaning on the relaxing assumption that they are already known or easily reachable, the reader is not to be diverted from the main course. Neatly drawn figures assist in viewing and imagining the offered topics. To make energy related topics felt and seen, the adopted technologies as well as their manufacturers are presented in details. With such a depth, this book is intended for a wide audience, it is meant to be helper and motivator, for the senior undergraduates, postgraduates, researchers, and practitioners; concepts and energy 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 with conceptual foundations and practical projects implementations. Also, it is intended for graduate students working on their thesis and in

need of specific knowledge on WSNs and the related energy harvesting and management techniques. Moreover, it is targeting researchers and practitioners interested in features and applications of WSNs, and on the available energy harvesting and management projects and testbeds. Exercises at the end of each chapter are not just questions and answers; they are not limited to recapitulate ideas. Their design objective is not bound to be a methodical review of the provided concepts, but rather as a motivator for lot more of searching, finding, and comparing beyond what has been presented in the book.

Wireless Sensor Networks - Jianzhong Li 2018-02-23

This book constitutes the refereed proceedings of the 11th China Conference on Wireless Sensor Networks, CWSN 2017, held in Tianjin, China, in October 2017. The 28 revised full papers were carefully reviewed and selected from 213 submissions. The papers are organized in topical sections on wireless sensor networks; energy efficiency and harvesting; data fusion; mobile computing and social services.

Protocols and Architectures for Wireless Sensor Networks - Holger Karl 2007-10-08

Learn all you need to know about wireless sensor networks! Protocols and Architectures for Wireless Sensor Networks provides a thorough description of the nuts and bolts of wireless sensor networks. The authors give an overview of the state-of-the-art, putting all the individual solutions into perspective with one and other. Numerous practical examples, case studies and illustrations demonstrate the theory, techniques and results presented. The clear chapter structure, listing learning objectives, outline and summarizing key points, help guide the reader expertly through the material. Protocols and Architectures for Wireless Sensor Networks: Covers architecture and communications protocols in detail with practical implementation examples and case studies. Provides an understanding of mutual relationships and dependencies between different protocols and architectural decisions. Offers an in-depth investigation of relevant protocol mechanisms. Shows which protocols are suitable for which tasks within a wireless sensor network and in which circumstances they perform efficiently. Features an extensive website with the bibliography, PowerPoint slides, additional exercises and worked solutions. This text provides academic researchers, graduate students in computer science, computer engineering, and electrical engineering, as well as practitioners in industry and research engineers with an understanding of the specific design challenges and solutions for wireless sensor networks. Check out www.wiley.com/go/wsn for accompanying course material! "I am deeply impressed by the book of Karl & Willig. It is by far the most complete source for wireless sensor networks...The book covers almost all topics related to sensor networks, gives an amazing number of references, and, thus, is the perfect source for students, teachers, and researchers. Throughout the book the reader will find high quality text, figures, formulas, comparisons etc. - all you need for a sound basis to start sensor network research." Prof. Jochen Schiller, Institute of Computer Science, Freie Universität Berlin

Algorithmic Aspects of Wireless Sensor Networks - Sotiris Nikoletseas 2004-07-07

This book constitutes the reviewed proceedings of the First International Workshop on Algorithmic Aspects of Wireless Sensor Networks, ALGOSENSORS 2004, held in Turku, Finland in July 2004, in association with ICALP 2004. The 15 revised full papers presented together with abstracts of two invited papers were carefully reviewed and selected from 40 submissions. Among the topics addressed are sensor network modeling, algorithms for sensor localization, dynamic sensor networks, sensor network architectures, attribute-based named networks, routing, communication protocols, access control in sensor networks, sensor architecture, and energy consumption issues.

Wireless Sensor Networks - Cailian Chen 2015-01-05

This SpringerBrief evaluates the cooperative effort of sensor nodes to accomplish high-level tasks with sensing, data processing and communication. The metrics of network-wide convergence, unbiasedness, consistency and optimality are discussed through network topology, distributed estimation algorithms and consensus strategy. Systematic analysis reveals that proper deployment of sensor nodes and a

small number of low-cost relays (without sensing function) can speed up the information fusion and thus improve the estimation capability of wireless sensor networks (WSNs). This brief also investigates the spatial distribution of sensor nodes and basic scalable estimation algorithms, the consensus-based estimation capability for a class of relay assisted sensor networks with asymmetric communication topology, and the problem of filter design for mobile target tracking over WSNs. From the system perspective, the network topology is closely related to the capability and efficiency of network-wide scalable distributed estimation. Wireless Sensor Networks: Distributed Consensus Estimation is a valuable resource for researchers and professionals working in wireless communications, networks and distributed computing. Advanced-level students studying computer science and electrical engineering will also find the content helpful.

Wireless Sensor Networks - Ian F. Akyildiz 2010-06-10

This book presents an in-depth study on the recent advances in Wireless Sensor Networks (WSNs). The authors describe the existing WSN applications and discuss the research efforts being undertaken in this field. Theoretical analysis and factors influencing protocol design are also highlighted. The authors explore state-of-the-art protocols for WSN protocol stack in transport, routing, data link, and physical layers. Moreover, the synchronization and localization problems in WSNs are investigated along with existing solutions. Furthermore, cross-layer solutions are described. Finally, developing areas of WSNs including sensor-actor networks, multimedia sensor networks, and WSN applications in underwater and underground environments are explored. The book is written in an accessible, textbook style, and includes problems and solutions to assist learning. Key Features: The ultimate guide to recent advances and research into WSNs Discusses the most important problems and issues that arise when programming and designing WSN systems Shows why the unique features of WSNs – self-organization, cooperation, correlation -- will enable new applications that will provide the end user with intelligence and a better understanding of the environment Provides an overview of the existing evaluation approaches for WSNs including physical testbeds and software simulation environments Includes examples and learning exercises with a solutions manual; supplemented by an accompanying website containing PPT-slides. Wireless Sensor Networks is an essential textbook for advanced students on courses in wireless communications, networking and computer science. It will also be of interest to researchers, system and chip designers, network planners, technical mangers and other professionals in these fields.

Wireless Sensor Networks: Technology, Protocols, And Applications - Daniel Minoli Kazem Sohraby, Taieb Znati 2010-07-21

This book is intended to be a high-quality textbook that provides a carefully designed exposition of the important aspects of Wireless Sensor Networks. The book provides a thorough coverage of wireless sensor networks, including applications, communication and networking protocols, middleware, security and management. The book is targeted at networking professionals, managers, and practitioners, and government agencies who want to understand the benefits of this new technology and plan for its use and deployment. " Chapter 1. Introduction and Overview of Wireless Sensor Networks." Chapter 2. Commercial and Scientific Applications of Wireless Sensor Networks." Chapter 3. Basic Wireless Sensor Technology." Chapter 4. Wireless Sensors Networks Protocols: Physical Layer." Chapter 5. Medium Access Control Protocols for Wireless Sensor Networks." Chapter 6. Sensors Network Protocols: Routing Protocols." Chapter 7. Transport Control Protocols for Wireless Sensors Networks." Chapter 8. Middleware for Sensor Networks." Chapter 9. Network Management for Wireless Sensor Networks." Chapter 10. Operating Systems for Sensor Networks." Chapter 11. Performance and Traffic Management Issues.

Wireless Sensor Networks - Gian Pietro Picco 2012-01-24

This book constitutes the refereed proceedings of the 9th European Conference on Wireless Sensor Networks, EWSN 2012, held in Trento, Italy, in Februar 2012. The 16 revised full papers presented were carefully reviewed and selected from 78 submissions. The papers are

organized in topical sections on communication and security, system issues, reliability, localization and smart cameras, and hardware and sensing.

Randomly Deployed Wireless Sensor Networks - Xi Chen 2020-06-18

Wireless sensor networks have a range of applications, including military uses and in environmental monitoring. When an area of interest is inaccessible by conventional means, such a network can be deployed in ways resulting in a random distribution of the sensors. Randomly Deployed Wireless Sensor Networks offers a probabilistic method to model and analyze these networks. The book considers the network design, coverage, target detection, localization and tracking of sensors in randomly deployed wireless networks, and proposes a stochastic model. It quantifies the relationship between parameters of the network and its performance, and puts forward a communication protocol. The title provides analyses and formulas, giving engineering insight into randomly deployed wireless sensor networks. Five chapters consider the analysis of coverage performance; working modes and scheduling mechanisms; the relationship between sensor behavior and network performance properties; probabilistic forwarding routing protocols; localization methods for multiple targets and target number estimation; and experiments on target localization and tracking with a Mica sensor system. Details a probabilistic method to model and analyze randomly deployed wireless sensor networks Gives working modes and scheduling mechanisms for sensor nodes, allowing high-probability of target detection Considers the relationship between sensor behaviour and network performance and lifetime Offers probabilistic forwarding routing protocols for randomly deployed wireless sensor networks Describes a method for localizing multiple targets and estimating their number

Industrial Wireless Sensor Networks - R Budampati 2015-10-23

Industrial Wireless Sensor Networks: Monitoring, Control and Automation explores the explosive growth that has occurred in the use of wireless sensor networks in a variety of applications during the last few years. As wireless technology can reduce costs, increase productivity, and ease maintenance, the book looks at the progress in standardization efforts regarding reliability, security, performance, power consumption, and integration. Early sections of the book discuss issues such as media access control (MAC), antenna design and site survey, energy harvesting, and explosion-proof design. Subsequent sections present WSN standards, including ISA100, ZigBeeTM, WifiTM, WirelessHARTTM and 6loWPAN, and the applications of WSNs in the oil and gas, chemical, food, and nuclear power industries. Reviews technologies and standards for industrial wireless sensor networks Considers particular applications for the technology and their ability to reduce costs, increase productivity, and ease maintenance Focuses on industry needs and standardization efforts regarding reliability, security, performance, power consumption, and integration.

Deploying Wireless Sensor Networks - Mustapha Reda Senouci 2016-04-07

Wireless Sensor Networks: Theory and Practice for Deployment addresses WSNs deployment, a mandatory and critical step in the process of developing WSNs solutions for real-life applications. The authors address simple approaches to deploy static WSNs, then exploring more sophisticated approaches to deploy mobile WSNs. Featuring detailed investigations of deployment-related issues such as deployment cost, coverage, connectivity, sensors reliability, and harsh deployment environments, this book will equip you with the basics and an advanced view of both the theoretical and practical aspects, along with knowledge of the guidelines for WSNs deployment. Provides both the theoretical basis and practical applications Features an in-depth discussion of deployment-related issues Covers basic concepts and terminologies as well as highlighting open problems in the research areas to help you solve your deployment-related issues

Principles of Wireless Sensor Networks - Mohammad S. Obaidat 2014-12-04

A concise and clear guide to the concepts and applications of wireless sensor networks, ideal for students, practitioners and researchers.

Introduction to Wireless Sensor Networks - Anna Forster 2016-07-12

Explores real-world wireless sensor network development, deployment, and applications Presents state-of-the-art protocols and algorithms Includes end-of-chapter summaries, exercises, and references For students, there are hardware overviews, reading links, programming examples, and tests available at [website] For Instructors, there are PowerPoint slides and solutions available at [website]

Industrial Wireless Sensor Networks - V. Çağrı Güngör 2017-12-19

The collaborative nature of industrial wireless sensor networks (IWSNs) brings several advantages over traditional wired industrial monitoring and control systems, including self-organization, rapid deployment, flexibility, and inherent intelligent processing. In this regard, IWSNs play a vital role in creating more reliable, efficient, and productive industrial systems, thus improving companies' competitiveness in the marketplace. Industrial Wireless Sensor Networks: Applications, Protocols, and Standards examines the current state of the art in industrial wireless sensor networks and outlines future directions for research. What Are the Main Challenges in Developing IWSN Systems? Featuring contributions by researchers around the world, this book explores the software and hardware platforms, protocols, and standards that are needed to address the unique challenges posed by IWSN systems. It offers an in-depth review of emerging and already deployed IWSN applications and technologies, and outlines technical issues and design objectives. In particular, the book covers radio technologies, energy harvesting techniques, and network and resource management. It also discusses issues critical to industrial applications, such as latency, fault tolerance, synchronization, real-time constraints, network security, and cross-layer design. A chapter on standards highlights the need for specific wireless communication standards for industrial applications. A Starting Point for Further Research Delving into wireless sensor networks from an industrial perspective, this comprehensive work provides readers with a better understanding of the potential advantages and research challenges of IWSN applications. A contemporary reference for anyone working at the cutting edge of industrial automation, communication systems, and networks, it will inspire further exploration in this promising research area.

Wireless Sensor Networks - Fei Hu 2010-05-06

Written by award-winning engineers whose research has been sponsored by the U.S. National Science Foundation (NSF), IBM, and Cisco's University Research Program, Wireless Sensor Networks: Principles and Practice addresses everything product developers and technicians need to know to navigate the field. It provides an all-inclusive examina

Fundamentals of Wireless Sensor Networks - Waltenegus Dargie 2010-11-05

In this book, the authors describe the fundamental concepts and practical aspects of wireless sensor networks. The book provides a comprehensive view to this rapidly evolving field, including its many novel applications, ranging from protecting civil infrastructure to pervasive health monitoring. Using detailed examples and illustrations, this book provides an inside track on the current state of the technology. The book is divided into three parts. In Part I, several node architectures, applications and operating systems are discussed. In Part II, the basic architectural frameworks, including the key building blocks required for constructing large-scale, energy-efficient sensor networks are presented. In Part III, the challenges and approaches pertaining to local and global management strategies are presented – this includes topics on power management, sensor node localization, time synchronization, and security. At the end of each chapter, the authors provide practical exercises to help students strengthen their grip on the subject. There are more than 200 exercises altogether. Key Features: Offers a comprehensive introduction to the theoretical and practical concepts pertaining to wireless sensor networks Explains the constraints and challenges of wireless sensor network design; and discusses the most promising solutions Provides an in-depth treatment of the most critical technologies for sensor network communications, power management, security, and programming Reviews the latest research results in sensor network design, and demonstrates how the individual components fit

together to build complex sensing systems for a variety of application scenarios Includes an accompanying website containing solutions to exercises (http://www.wiley.com/go/dargie_fundamentals) This book serves as an introductory text to the field of wireless sensor networks at both graduate and advanced undergraduate level, but it will also appeal to researchers and practitioners wishing to learn about sensor network technologies and their application areas, including environmental monitoring, protection of civil infrastructure, health care, precision agriculture, traffic control, and homeland security.

Wireless Sensor Networks - Jr., Edgar H. Callaway 2003-08-26

Because they provide practical machine-to-machine communication at a very low cost, the popularity of wireless sensor networks is expected to skyrocket in the next few years, duplicating the recent explosion of wireless LANs. Wireless Sensor Networks: Architectures and Protocols describes how to build these networks, from the layers of the

Wireless Sensor Networks - Siva Yellampalli 2021-09-15

Wireless sensor networks (WSNs) consist of tiny sensors capable of sensing, computing, and communicating. Due to advances in semiconductors, networking, and material science technologies, it is now possible to deploy large-scale WSNs. The advancement in these technologies has not only decreased the deployment and maintenance costs of networks but has also increased the life of networks and made them more rugged. As WSNs become more reliable with lower maintenance costs, they are being deployed and used across various sectors for multiple applications. This book discusses the applications, challenges, and design and deployment techniques of WSNs.

Handbook of Research on Developments and Trends in Wireless Sensor Networks: From Principle to Practice - Jin, Hai 2010-02-28

"This book showcases the work many devoted wireless sensor network researchers all over world, and exhibits the up-to-date developments of WSNs from various perspectives"--Provided by publisher.

Wireless Sensor Networks - Utz Rödig 2009-01-26

This volume contains the proceedingsof EWSN 2009,the 6th European Conf- ence on Wireless Sensor Networks. The conference took place in Cork, Ireland during February11–13,2009. The aim ofthe conferencewasto discussthe latest research results and developments in the ?eld of wireless sensor networks. EWSN received a total of 145 full paper submissions of which 23 were - lectedfor publicationandpresentation,yielding anacceptancerateofjust under 16%. Paper submissions were received from 36 di?erent countries in all parts of the world. EWSN adopted a double-blind review process, where the identities of the paper authors were also withheld from the reviewers. The selection process involved well over 400 reviews with all papers being evaluated by at least three independent reviewers. In addition, the reviews were discussed by the Technical Program Committee after collecting all reviews and prior to making ?nal - cisions. The ?nal program covered a wide range of topics which were grouped into six sessions: performance and quality of service, routing, coordination and synchronization, data collection, security, evaluation and management. It - cluded theoretical and analytical approaches, together with empirical research and protocol/system design and implementation. The conference included a demo and poster session,co-chairedby Dirk Pesch andSajalDas,forwhichseparateproceedingsareav ailable.

Energy-Efficient Wireless Sensor Networks - Vidushi Sharma 2020-06-30

Energy-Efficient Wireless Sensor Networks, Energy-Efficient Wireless Sensor Networks is ideal to deal with the energy aspects of WSNs. It covers all the aspects of sensor networks with respect to energy conservation and optimization. It outlines the mechanisms, techniques, and algorithms of the physical layer, the media access control (MAC) layer, and the network layer in context with energy efficiency. It delves into energy-efficient security mechanisms and gives special attention to MAC protocols while presenting the current state of the art. This book discusses advances in energy-efficient algorithms using soft computing techniques and comparative analysis of these with traditional

techniques. It also discusses the hierarchical network that improves the WSN lifetime and explores operational-level power management and energy harvesting. In addition to presenting other operational processes such as data aggregation, localization, time synchronization, and coverage, this book also discusses open research issues and considers the application and future trends of WSNs. Written primarily for students who are striving to understand the concepts of WSNs, Energy-Efficient Wireless Sensor Networks provides direction for budding researchers to explore a new area of research in WSNs. Industry experts and technical managers will also benefit from learning new business ideas and models as well as technological know-how. Book jacket.