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Multicast Sockets-David Makofske 2002-11-21 Multicast Sockets: Practical Guide for Programmers is a hands-on, application-centric approach to multicasting (as opposed to a network-centric one) that is filled with examples, ideas, and experimentation. Each example builds on the last to introduce multicast concepts, frameworks, and APIs in an engaging manner that does not burden the reader with lots of theory and jargon. The book is an introduction to multicasting but assumes that the reader has a background in network programming and is proficient in C or Java. After reading the book, you will have a firm grasp on how to write a multicast program. Author team of instructor and application programmer is reflected in this rich instructional and practical approach to the subject material Only book available that provides a clear, concise, application-centric approach to programming multicast applications and covers several languages—C, Java, and C# on the .NET platform Covers important topics like service models, testing reachability, and addressing and scoping Includes numerous examples and exercises for programmers and students to test what they have learned

TCP/IP Sockets in C#-David B. Makofske 2004 This volume focuses on the underlying sockets class, one of the basis for learning about networks in any programming language. By learning to write simple client and server programs that use TCP/IP, readers can then realize network routing, framing, error detection and correction, and performance.

Introduction to Network Simulator NS2-Teerawat Issariyakul 2011-12-02 Introduction to Network Simulator NS2 is a primer providing materials for NS2 beginners, whether students, professors, or researchers for understanding the architecture of Network Simulator 2 (NS2) and for incorporating simulation modules into NS2. The authors discuss the simulation architecture and the key components of NS2 including simulation-related objects, network objects, packet-related objects, and helper objects. The NS2 modules included within are nodes, links, SimpleLink objects, packets, agents, and applications. Further, the book covers three helper modules: timers, random number generators, and error models. Also included are chapters on summary of debugging, variable and packet tracing, result compilation, and examples for extending NS2. Two appendices provide the details of scripting language Tcl, OTcl and AWK, as well object oriented programming used extensively in NS2.

Modeling and Tools for Network Simulation-Klaus Wehrle 2010-09-22 A crucial step during the design and engineering of communication systems is the estimation of their performance and behavior; especially for mathematically complex or highly dynamic systems network simulation is particularly useful. This book focuses on tools, modeling principles and state-of-the art models for discrete-event based network simulations, the standard method applied today in academia and industry for performance evaluation of new network designs and architectures. The focus of the tools part is on two distinct simulations engines: OmNet++ and ns-3, while it also deals with issues like parallelization, software integration and hardware simulations. The parts dealing with modeling and models for network simulations are split into a wireless section and a section dealing with higher layers. The wireless section covers all essential modeling principles for dealing with physical layer, link layer and wireless channel behavior. In addition, detailed models for prominent wireless systems like IEEE 802.11 and IEEE 802.16 are presented. In the part on higher layers, classical modeling approaches for the network layer, the transport layer and the application layer are presented in addition to modeling approaches for peer-to-peer networks and topologies of networks. The modeling parts are accompanied with catalogues of model implementations for a large set of different simulation engines. The book is aimed at master students and PhD students of computer science and electrical engineering as well as at researchers and practitioners from academia and industry that are dealing with network simulation at any layer of the protocol stack.

Energy-Efficient Wireless Sensor Networks-Vidushi Sharma 2017-07-28 The advances in low-power electronic devices integrated with wireless communication capabilities are one of recent areas of research in the field of Wireless Sensor Networks (WSNs). One of the major challenges in WSNs is uniform and least energy dissipation while increasing the lifetime of the network. This is the first book that introduces the energy efficient wireless sensor network techniques and protocols. The text covers the theoretical as well as the practical requirements to conduct and trigger new experiments and project ideas. The advanced techniques will help in industrial problem solving for energy-hungry wireless sensor network applications.

Recent Advances in Network Simulation-Antonio Virdis 2019-05-21 This book provides a comprehensive introduction to the OMNeT++ simulation environment and an overview of its ecosystem of ever-growing frameworks, which provide simulation models for diverse communication systems, protocols, and standards. The book covers the most recent advances of the three key points in the OMNeT++ environment: (1) The latest features that are being added to OMNeT++ itself, including improvements in the visualization options, in data processing, etc. (2) A comprehensive description of the current state of development and the work in progress of the main simulation frameworks, covering several aspects of communication such as vehicular, cellular, and sensor networks. (3) The latest advances and novel developments coming from a large research community. The presentation is guided through use cases and examples, always keeping in mind the practical and research purposes of the simulation process. Includes an introduction to the OMNeT++ simulation framework and its main features; Gives a comprehensive overview of ongoing research topics that exploits OMNeT++ as the simulation environment; Provides examples and uses cases focusing on the practical aspects of simulation.

TCP/IP Illustrated, Volume 1-Kevin R. Fall 2011-11-08 "For an engineer determined to refine and secure Internet operation or to explore alternative solutions to persistent problems, the insights provided by this book will be invaluable." —Vint Cerf, Internet pioneer TCP/IP Illustrated, Volume 1, Second Edition, is a detailed and visual guide to today's TCP/IP protocol suite. Fully updated for the newest innovations, it demonstrates each protocol in action through realistic examples from modern Linux, Windows, and Mac OS environments. There's no better way to discover why TCP/IP works as it does, how it reacts to common conditions, and how to apply it in your own applications and networks. Building on the late W. Richard Stevens' classic first edition, author Kevin R. Fall adds his cutting-edge experience as a leader in TCP/IP protocol research, updating the book to fully reflect the latest protocols and best practices. He first introduces TCP/IP's core goals and architectural concepts, showing how they can robustly connect diverse networks and support multiple services running concurrently. Next, he carefully explains Internet addressing in both IPv4 and IPv6 networks. Then, he walks through TCP/IP's structure and function from the bottom up: from link layer protocols–such as Ethernet and Wi-Fi–through network, transport, and application layers. Fall thoroughly introduces ARP, DHCP, NAT, firewalls, ICMPv4/ICMPv6, broadcasting, multicasting, UDP, DNS, and much more. He offers extensive coverage of reliable transport and TCP, including connection management, timeout, retransmission, interactive data flow, and congestion control. Finally, he introduces the basics of security and cryptography, and illuminates the crucial modern protocols for protecting security and privacy, including EAP, IPsec, TLS, DNSSEC, and DKIM. Whatever your TCP/IP experience, this book will help you gain a deeper, more intuitive understanding of the entire protocol suite so you can build better applications and run more reliable, efficient networks.

Declarative Networking-Boon Thau Loo 2011-12-31 Declarative Networking is a programming methodology that enables developers to concisely specify network protocols and services, which are directly compiled to a dataflow framework that executes the specifications. Declarative networking proposes the use of a declarative query language for specifying and implementing network protocols, and employs a dataflow framework at runtime for communication and maintenance of network state. The primary goal of declarative networking is to greatly simplify the process of specifying, implementing, deploying and evolving a network design. In addition, declarative networking serves as an important step towards an extensible, evolvable network architecture that can support flexible, secure and efficient deployment of new network protocols. This book provides an introduction to basic issues in declarative networking, including language design, optimization and dataflow execution. The methodology behind declarative programming of networks is presented, including roots in Datalog, extensions for networked environments, and the semantics of long-running queries over network state. The book focuses on a representative declarative networking language called Network Datalog (NDlog), which is based on extensions to the Datalog recursive query language. An overview of declarative network protocols written in NDlog is provided, and its usage is illustrated using examples from routing protocols and overlay networks. This book also describes the implementation of a declarative networking engine and NDlog execution strategies that provide eventual consistency semantics with significant flexibility in execution. Two representative declarative networking systems (P2 and its successor RapidNet) are presented. Finally, the book highlights recent advances in declarative networking, and new declarative approaches to related problems. Table of Contents: Introduction / Declarative Networking Language / Declarative Networking Overview / Distributed Recursive Query Processing / Declarative Routing / Declarative Overlays / Optimization of NDlog / Recent Advances in Declarative Networking / Conclusion

Proceedings of the 6th International ICST Conference on Simulation Tools and Techniques-Jan Himmelspach 2013

Computer Network Simulation Using NS2-Ajit Kumar Nayak 2016-08-19 Computer Network Simulations Using NS2 provides a solid foundation of computer networking knowledge and skills, covering everything from simple operating system commands to the analysis of complex network performance metrics. The book begins with a discussion of the evolution of data communication techniques and the fundamental issues associated with performance evaluation. After presenting a preliminary overview of simulation and other performance evaluation techniques, the authors: Describe a number of computer network protocols and TCP/IP and OSI models, highlighting the networking devices used Explain a socket and its use in network programming, fostering the development of network applications using C and socket API Introduce the NS2 network simulator, exhibiting its internal architecture, constituent software packages, and installation in different operating systems Delve into simulation using NS2, elaborating on the use of Tcl and OTcl scripts as well as AWK scripting and plotting with Gnuplot Show how to simulate wired and wireless network protocols step by step, layer by layer Explore the idea of simulating very large networks, identifying the challenges associated with measuring and graphing the various network parameters Include nearly 90 example programs, scripts, and outputs, along with several exercises requiring application of the theory and programming Computer Network Simulations Using NS2 emphasizes the implementation and simulation of real-world computer network protocols, affording readers with valuable opportunities for hands-on practice while instilling a deeper understanding of how computer network protocols work.

Underwater Acoustic Sensor Networks-Yang Xiao 2010-05-19 A detailed review of underwater channel characteristics, Underwater Acoustic Sensor Networks investigates the fundamental aspects of underwater communication. Prominent researchers from around the world consider contemporary challenges in the development of underwater acoustic sensor networks (UW-ASNs) and introduce a cross-layer approach for effective integration of all communication functionalities. Discussing architectures for two- and three-dimensional sensor networks, this authoritative resource clearly delineates the main differences between terrestrial and underwater sensor networks—covering the wide range of topics related to UW-ASNs. It examines efficient distributed routing algorithms for delay-insensitive and delay-sensitive applications and introduces a realistic acoustic model characterized by channel utilization efficiency that enables proper setting of the optimal packet size for underwater communication. It also: Provides efficient sensor communication protocols for the underwater environment Addresses the topology control problem for sparse and dense 3D networks Presents a novel distributed MAC protocol that incorporates a unique closed-loop distributed algorithm for setting the optimal transmit power and code length The book includes coverage of routing, fault tolerance, time synchronization, optimal clustering, medium access control, software, hardware, and channel modeling. Exploring the need to design an energy-efficient cross-layer protocol suite, this resource provides the understanding required to achieve high-performance channel access, routing, event transport reliability, and data flow control with underwater acoustic sensors.

Hierarchical Topology Control for Wireless Networks-Jiguo Yu 2018-02-05 First Published in 2018. Routledge is an imprint of Taylor & Francis, an Informa company.

Ad Hoc Mobile Wireless Networks-Subir Kumar Sarkar 2007-10-26 Ad hoc mobile wireless networks have seen increased adaptation in a variety of disciplines because they can be deployed with simple infrastructures and virtually no central administration. In particular, the development of ad hoc wireless and sensor networks provides tremendous opportunities in areas including disaster recovery, defense, health car

Simulation Tools and Techniques-Houbing Song 2019-10-23 This volume constitutes the refereed post-conference proceedings of the 11th International Conference on Simulation Tools and Techniques, SIMUTools 2019, held in Chengdu, China, in August 2019. The 97 revised full papers were carefully selected from 156 submissions. The papers focus on simulation methods, simulation techniques, simulation software, simulation performance, modeling formalisms, simulation verification and widely used frameworks.

Computer Networks-Piotr Gaj 2018-07-04 This book constitutes the thoroughly refereed proceedings of the 25th International Conference on Computer Networks, CN 2018, held in Gliwice, Poland, in June 2018. The 34 full papers presented were carefully reviewed and selected from 86 submissions. They are organized in topical sections on computer networks; teleinformatics and telecommunications; queueing theory; cybersecurity and quality service.

Simulation, Modeling, and Programming for Autonomous Robots-Noriako Ando 2010-11-05 Why are the many highly capable autonomous robots that have been promised for novel applications driven by society, industry, and research not available - day despite the tremendous progress in robotics science and systems achieved during the last decades? Unfortunately, steady improvements in speci?c robot abilities and robot hardware have not been matched by corresponding robot performance in real world environments. This is mainly due to the lack of - vancements in robot software that master the development of robotic systems of ever increasing complexity. In addition, fundamental open problems are still awaiting sound answers while the development of new robotics applications s- fersfromthelackofwidelyusedtools,libraries,andalgorithmsthataredesigned in a modular and performant manner with standardized interfaces. Simulation environments are playing a major role not only in reducing development time and cost, e. g., by systematic software- or hardware-in-the-loop testing of robot performance, but also in exploring new types of robots and applications. H- ever,their use may still be regardedwith skepticism. Seamless migrationof code using robot simulators to real-world systems is still a rare circumstance, due to the complexity of robot, world, sensor, and actuator modeling. These challenges drive the quest for the next generation of methodologies and tools for robot development. The objective of the International Conference on Simulation, Modeling, and ProgrammingforAutonomous Robots (SIMPAR) is to o?er a unique forum for these topics and to bring together researchersfrom academia and industry to identify and solve the key issues necessary to ease the development of increasingly complex robot software.

Evolutionary Algorithms for Mobile Ad Hoc Networks-Bernabé Dorronsoro 2014-04-08 Describes how evolutionary algorithms (EAs) can be used to identify, model, and minimize day-to-day problems that arise for researchers in optimization and mobile networking Mobile ad hoc networks (MANETs), vehicular networks (VANETs), sensor networks (SNs), and hybrid networks—each of these require a designer's keen sense and knowledge of evolutionary algorithms in order to help with the common issues that plague professionals involved in optimization and mobile networking. This book introduces readers to both mobile ad hoc networks and evolutionary algorithms, presenting basic concepts as well as detailed descriptions of each. It demonstrates how metaheuristics and evolutionary algorithms (EAs) can be used to help provide low-cost operations in the optimization process—allowing designers to put some "intelligence" or sophistication into the design. It also offers efficient and accurate information on dissemination algorithms, topology management, and mobility models to address challenges in the field. Evolutionary Algorithms for Mobile Ad Hoc Networks: Instructs on how to identify, model, and optimize solutions to problems that arise in daily research Presents complete and up-to-date surveys on topics like network and mobility simulators Provides sample problems along with solutions/descriptions used to solve each, with performance comparisons Covers current, relevant issues in mobile networks, like energy use, broadcasting performance, device mobility, and more Evolutionary Algorithms for Mobile Ad Hoc Networks is an ideal book for researchers and students involved in mobile networks, optimization, advanced search techniques, and multi-objective optimization.

Soft Computing in Wireless Sensor Networks-Huynh Thi Thanh Binh 2018-09-27 This book focuses on the suitable methods to solve optimization problems in wireless network system utilizing digital sensors like Wireless Sensor Network. This kind of system has been emerging as the cornerstone technology for all new smart devices and its direct application in many fields in life.

Advanced Content Delivery, Streaming, and Cloud Services-Mukaddim Pathan 2014-09-19 While other books on the market provide limited coverage of advanced CDNs and streaming technologies, concentrating solely on the fundamentals, this book provides an up-to-date comprehensive coverage of the state-of-the-art advancements in CDNs, with a special focus on Cloud-based CDNs. The book includes CDN and media streaming basics, performance models, practical applications, and business analysis. It features industry case studies, CDN applications, and open research issues to aid practitioners and researchers, and a market analysis to provide a reference point for

commercial entities. The book covers Adaptive Bitrate Streaming (ABR), Content Delivery Cloud (CDC), Web Acceleration, Front End Optimization (FEO), Transparent Caching, Next Generation CDNs, CDN Business Intelligence and more. Provides an in-depth look at Cloud-based CDNs Includes CDN and streaming media basics and tutorials Aimed to instruct systems architects, practitioners, product developers, and researchers Material is divided into introductory subjects, advanced content, and specialist areas

Internetworking and Computing Over Satellite Networks-Yongguang Zhang 2012-12-06 The emphasis of this text is on data networking, internetworking and distributed computing issues. The material surveys recent work in the area of satellite networks, introduces certain state-of-the-art technologies, and presents recent research results in these areas.

Ant Colony Optimization-Marco Dorigo 2004 From real to artificial ants - The ant colony optimization metaheuristic - Ant colony optimization algorithms for the traveling salesman problem - Ant colony optimization theory - Ant colony optimization for NP-Hard problems - AntNet : an ACO algorithm for data network routing - Conclusions and prospects for the future.

Network Coding-Muriel Médard 2016-01-26 An introduction to network coding which avoids difficult mathematics and does not require a background in information theory. Emphasis is placed on how network coding techniques can be implemented, using a wide range of applications in communications and network engineering.

Wireless Power Transfer Algorithms, Technologies and Applications in Ad Hoc Communication Networks-Sotiris Nikoletseas 2016-11-18 This book is the first systematic exposition on the emerging domain of wireless power transfer in ad hoc communication networks. It selectively spans a coherent, large spectrum of fundamental aspects of wireless power transfer, such as mobility management in the network, combined wireless power and information transfer, energy flow among network devices, joint activities with wireless power transfer (routing, data gathering and solar energy harvesting), and safety provisioning through electromagnetic radiation control, as well as fundamental and novel circuits and technologies enabling the wide application of wireless powering. Comprising a total of 27 chapters, contributed by leading experts, the content is organized into six thematic sections: technologies, communication, mobility, energy flow, joint operations, and electromagnetic radiation awareness. It will be valuable for researchers, engineers, educators, and students, and it may also be used as a supplement to academic courses on algorithmic applications, wireless protocols, distributed computing, and networking.

End-to-end Qos Network Design-Tim Szigeti 2005 Best-practice QoS designs for protecting voice, video, and critical data while mitigating network denial-of-service attacks Understand the service-level requirements of voice, video, and data applications Examine strategic QoS best practices, including Scavenger-class QoS tactics for DoS/worm mitigation Learn about QoS tools and the various interdependencies and caveats of these tools that can impact design considerations Learn how to protect voice, video, and data traffic using various QoS mechanisms Evaluate design recommendations for protecting voice, video, and multiple classes of data while mitigating DoS/worm attacks for the following network infrastructure architectures: campus LAN, private WAN, MPLS VPN, and IPSec VPN Quality of Service (QoS) has already proven itself as the enabling technology for the convergence of voice, video, and data networks. As business needs evolve, so do the demands for QoS. The need to protect critical applications via QoS mechanisms in business networks has escalated over the past few years, primarily due to the increased frequency and sophistication of denial-of-service (DoS) and worm attacks. End-to-End QoS Network Design is a detailed handbook for planning and deploying QoS solutions to address current business needs. This book goes beyond discussing available QoS technologies and considers detailed design examples that illustrate where, when, and how to deploy various QoS features to provide validated and tested solutions for voice, video, and critical data over the LAN, WAN, and VPN. The book starts with a brief background of network infrastructure evolution and the subsequent need for QoS. It then goes on to cover the various QoS features and tools currently available and comments on their evolution and direction. The QoS requirements of voice, interactive and streaming video, and multiple classes of data applications are presented, along with an overview of the nature and effects of various types of DoS and worm attacks. QoS best-practice design principles are introduced to show how QoS mechanisms can be strategically deployed end-to-end to address application requirements while mitigating network attacks. The next section focuses on how these strategic design principles are applied to campus LAN QoS design. Considerations and detailed design recommendations specific to the access, distribution, and core layers of an enterprise campus network are presented. Private WAN QoS design is discussed in the following section, where WAN-specific considerations and detailed QoS designs are presented for leased-lines, Frame Relay, ATM, ATM-to-FR Service Interworking, and ISDN networks. Branch-specific designs include Cisco® SAFE recommendations for using Network-Based Application Recognition (NBAR) for known-worm identification and policing. The final section covers Layer 3 VPN QoS design-for both MPLS and IPSec VPNs. As businesses are migrating to VPNs to meet their wide-area networking needs at lower costs, considerations specific to these topologies are required to be reflected in their customer-edge QoS designs. MPLS VPN QoS design is examined from both the enterprise and service provider's perspectives. Additionally, IPSec VPN QoS designs cover site-to-site and teleworker contexts. Whether you are looking for an introduction to QoS principles and practices or a QoS planning and deployment guide, this book provides you with the expert advice you need to design and implement comprehensive QoS solutions.

Python Network Programming Cookbook-Pradeeban Kathiravelu 2017-08-09 Discover practical solutions for a wide range of real-world network programming tasks About This Book Solve real-world tasks in the area of network programming, system/networking administration, network monitoring, and more. Familiarize yourself with the fundamentals and functionalities of SDN Improve your skills to become the next-gen network engineer by learning the various facets of Python programming Who This Book Is For This book is for network engineers, system/network administrators, network programmers, and even web application developers who want to solve everyday network-related problems. If you are a novice, you will develop an understanding of the concepts as you progress with this book. What You Will Learn Develop TCP/IP networking client/server applications Administer local machines' IPv4/IPv6 network interfaces Write multi-purpose efficient web clients for HTTP and HTTPS protocols Perform remote system administration tasks over Telnet and SSH connections Interact with popular websites via web services such as XML-RPC, SOAP, and REST APIs Monitor and analyze major common network security vulnerabilities Develop Software-Defined Networks with Ryu, OpenDaylight, Floodlight, ONOS, and POX Controllers Emulate simple and complex networks with Mininet and its extensions for network and systems emulations Learn to configure and build network systems and Virtual Network Functions (VNF) in heterogeneous deployment environments Explore various Python modules to program the Internet In Detail Python Network Programming Cookbook - Second Edition highlights the major aspects of network programming in Python, starting from writing simple networking clients to developing and deploying complex Software-Defined Networking (SDN) and Network Functions Virtualization (NFV) systems. It creates the building blocks for many practical web and networking applications that rely on various networking protocols. It presents the power and beauty of Python to solve numerous real-world tasks in the area of network programming, network and system administration, network monitoring, and web-application development. In this edition, you will also be introduced to network modelling to build your own cloud network. You will learn about the concepts and fundamentals of SDN and then extend your network with Mininet. Next, you'll find recipes on Authentication, Authorization, and Accounting (AAA) and open and proprietary SDN approaches and frameworks. You will also learn to configure the Linux Foundation networking ecosystem and deploy and automate your networks with Python in the cloud and the Internet scale. By the end of this book, you will be able to analyze your network security vulnerabilities using advanced network packet capture and analysis techniques. Style and approach This book follows a practical approach and covers major aspects of network programming in Python. It provides hands-on recipes combined with short and concise explanations on code snippets. This book will serve as a supplementary material to develop hands-on skills in any academic course on network programming. This book further elaborates network softwarization, including Software-Defined Networking (SDN), Network Functions Virtualization (NFV), and orchestration. We learn to configure and deploy enterprise network platforms, develop applications on top of them with Python.

Network Troubleshooting Tools-Joseph D Sloan 2001-08-09 Over the years, thousands of tools have been developed for debugging TCP/IP networks. They range from very specialized tools that do one particular task, to generalized suites that do just about everything except replace bad Ethernet cables. Even better, many of them are absolutely free. There's only one problem: who has time to track them all down, sort through them for the best ones for a particular purpose, or figure out how to use them?Network Troubleshooting Tools does the work for you--by describing the best of the freely available tools for debugging and troubleshooting. You can start with a lesser-known version of ping that diagnoses connectivity problems, or take on a much more comprehensive program like MRTG for graphing traffic through network interfaces. There's tkined for mapping and automatically monitoring networks, and Ethereal for capturing packets and debugging low-level problems.This book isn't just about the tools available for troubleshooting common network problems. It also outlines a systematic approach to network troubleshooting: how to document your network so you know how it behaves under normal conditions, and how to think about problems when they arise, so you can solve them more effectively.The topics covered in this book include: Understanding your network Connectivity testing Evaluating the path between two network nodes Tools for capturing packets Tools for network discovery and mapping Tools for working with SNMP Performance monitoring Testing application layer protocols Software sources If you're involved with network operations, this book will save you time, money, and needless experimentation.

Advances on Broad-Band Wireless Computing, Communication and Applications-Leonard Barolli 2019-10-18 This proceedings book presents the latest research findings, innovative research results, methods and development techniques related to the emerging areas of broadband and wireless computing, from both theoretical and practical perspectives. Today's information networks are going through a rapid evolution. Different kinds of networks with different characteristics are emerging, and are being integrated into heterogeneous networks. As a result, there are numerous interconnection problems that can occur at different levels of the hardware and software design of communicating entities and communication networks. Such networks need to manage an increasing usage demand, provide support for a significant number of services, guarantee their QoS, and optimize the network resources. The success of all-IP networking and wireless technology has changed the way of living for people around the globe. Advances in electronic integration and wireless communications will pave the way to offering access to wireless networks on the fly, which in turn will allow electronic devices to share information with each other wherever and whenever necessary.

Quality, Reliability, Security and Robustness in Heterogeneous Networks-Karan Singh 2013-07-04 This book constitutes the thoroughly refereed post-conference proceedings of the 9th International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness, QShine 2013, which was held in National Capital Region (NCR) of India during January 2013. The 87 revised full papers were carefully selected from 169 submissions and present the recent technological developments in broadband high-speed networks, peer-to-peer networks, and wireless and mobile networks.

Access Networks-Xiao Jun Hei 2010-02-17 With the rapid growth of the Internet as well as the increasing demand for broadband services, access networks have been receiving growing investments in recent years. This has led to a massive network deployment with the goal of eliminating the ba- width bottleneck between end-users and the network core. Today many diverse te- nologies are being used to provide broadband access to end users. The architecture and performance of the access segment (local loop, wired and wireless access n- works, and even home networks) are getting increasing attention for ensuring quality of service of diverse broadband applications. Moreover, most access lines will no longer terminate on a single device, thus leading to the necessity of having a home network designed for applications that transcend simple Internet access sharing among multiple personal computers and enable multimedia support. Therefore, the access network and its home portion have become a hot investment pool from both a fin- cial as well as a research perspective. The aim of the annual International Conference on Access Networks (AccessNets) is to provide a forum that brings together scientists and researchers from academia as well as managers and engineers from the industry and government organizations to meet and exchange ideas and recent work on all aspects of access networks and how they integrate with their in-home counterparts. After Athens in 2006, Ottawa in 2007, and Las Vegas in 2008, this year AccessNets moved to Asia for the first time.

Ultra-Wideband Wireless Communications and Networks-Xuemin Shen 2007-01-11 Learn about Ultra-wideband (UWB) transmission - the most talked about application in wireless communications. UWB wireless communication is a revolutionary technology for transmitting large amounts of digital data over a wide spectrum of frequency bands with very low power for a short distance. This exciting new text covers the fundamental aspects of UWB wireless communications systems for short-range communications. It also focuses on more advanced information about networks and applications. Chapters include: Radio Propagation and Large Scale Variations, Pulse Propagation and Channel Modelling, MIMO (Multiple Input, Multiple Output) RF Subsystems and Ad Hoc Networks. Focuses on UWB wireless communications rather than UWB radar, which has been covered before. Provides long and short-term academic and technological value. Teaches readers the fundamentals, challenges and up-to-date technical processes in this field.

Building Wireless Sensor Networks-Nandini Mukherjee 2017-12-19 Building Wireless Sensor Networks: Theoretical and Practical Perspectives presents the state of the art of wireless sensor networks (WSNs) from fundamental concepts to cutting-edge technologies. Focusing on WSN topics ideal for undergraduate and postgraduate curricula, this book: Provides essential knowledge of the contemporary theory and practice of wireless sensor networking Describes WSN architectures, protocols, and operating systems Details the routing and data aggregation algorithms Addresses WSN security and energy efficiency Includes sample programs for experimentation The book offers overarching coverage of this exciting field, filling a critical gap in the existing literature.

VANET-Hannes Hartenstein 2009-11-04 This book provides an invaluable introduction to inter-vehicular communications, demonstrating the networking and communication technologies for reducing fatalities, improving transportation efficiency, and minimising environmental impact. This book addresses the applications and technical aspects of radio-based vehicle-to-vehicle and vehicle-to-infrastructure communication that can be established by short- and medium range communication based on wireless local area network technology (primarily IEEE 802.11). It contains a coherent treatment of the important topics and technologies contributed by leading experts in the field, covering the potential applications for and their requirements on the communications system. The authors cover physical and medium access control layer issues with focus on IEEE 802.11-based systems, and show how many of the applications benefit when information is efficiently disseminated, and the techniques that provide attractive data aggregation (also includes design of the corresponding middleware). The book also considers issues such as IT-security (means and fundamental trade-off between security and privacy), current standardization activities such as IEEE 802.11p, and the IEEE 1609 standard series. Key Features: Covers the state-of-the-art in the field of vehicular inter-networks such as safety and efficiency applications, physical and medium access control layer issues, middleware, and security Shows how vehicular networks differ from other mobile networks and illustrates the idea of vehicle-to-vehicle communications with application scenarios and with current proofs of concept worldwide Addresses current standardization activities such as IEEE 802.11p and the IEEE 1609 standard series Offers a chapter on mobility models and their use for simulation of vehicular inter-networks Provides a coherent treatment of the important topics and technologies contributed by leading academic and industry experts in the field This book provides a reference for professional automotive technologists (OEMS and suppliers), professionals in the area of Intelligent Transportation Systems, and researchers attracted to the field of wireless vehicular communications. Third and fourth year undergraduate and graduate students will also find this book of interest. For additional information please visit http://www.vanetbook.com

Advances in Computer Science and Information Technology. Networks and Communications-Natarajan Meghanathan 2012-04-23 The three volume set LNICST 84 - LNICST 86 constitute the refereed proceedings of the Second International Conference on Computer Science and Information Technology, CCSIT 2012, held in Bangalore, India, in January 2012. The 66 revised full papers presented in this volume were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on networks and communications; wireless and mobile networks; and network security.

Simulation, Modeling, and Programming for Autonomous Robots-Itsuki Noda 2012-09-19 This book constitutes the refereed proceedings of the Third International Conference on Simulation, Modeling, and Programming for Autonomous Robots, SIMPAR 2012, held in Tsukuba, Japan, in November 2012. The 33 revised full papers and presented together with 3 invited talks were carefully reviewed and selected from 46 submissions. Ten papers describe design of complex behaviors of autonomous robots, 9 address software layers, 8 papers refer to related modeling and learning. The papers are organized in topical sections on mobile robots, software modeling and architecture and humanoid and biped robots.

Network Congestion Control-Michael Welzl 2005-12-13 As the Internet becomes increasingly heterogeneous, the issue of congestion control becomes ever more important. In order to maintain good network performance, mechanisms must be provided to prevent the network from being congested for any significant period of time. Michael Welzl describes the background and concepts of Internet congestion control, in an accessible and easily comprehensible format. Throughout the book, not just the how, but the why of complex technologies including the Transmission Control Protocol (TCP) and Active Queue Management are explained. The text also gives an overview of the state-of-the-art in congestion control research and an insight into the future. Network Congestion Control: Presents comprehensive, easy-to-read documentation on the advanced topic of congestion control without heavy maths. Aims to give a thorough understanding of the evolution of Internet congestion control: how TCP works, why it works the way it does, and why some congestion control concepts failed for the Internet. Explains the Chiu/Jain vector diagrams and introduces a new method of using these diagrams for analysis, teaching & design. Elaborates on how the theory of congestion control impacts on the practicalities of service delivery. Includes an appendix with examples/problems to assist learning. Provides an accompanying website with Java tools for teaching congestion control, as well as examples, links to code and projects/bibliography. This invaluable text will provide academics and researchers in computer science, electrical engineering and communications networking, as well as students on advanced networking and Internet courses, with a thorough understanding of the current state and future evolution of Internet congestion control. Network administrators and Internet service and applications providers will also find Network Congestion Control a comprehensive, accessible self-teach tool.

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.

Innovations and Advances in Computing, Informatics, Systems Sciences, Networking and Engineering-Tarek Sobh 2014-11-07 Innovations and Advances in Computing, Informatics, Systems Sciences, Networking and Engineering This book includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art

research projects in the areas of Computer Science, Informatics, and Systems Sciences, and Engineering. It includes selected papers from the conference proceedings of the Eighth and some selected papers of the Ninth International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering (CISSE 2012 & CISSE 2013). Coverage includes topics in: Industrial Electronics, Technology & Automation, Telecommunications and Networking, Systems, Computing Sciences and Software Engineering, Engineering Education, Instructional Technology, Assessment, and E-learning. · Provides the latest in a series of books growing out of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering; · Includes chapters in the most advanced areas of Computing, Informatics, Systems Sciences, and Engineering; · Accessible to a wide range of readership, including professors, researchers, practitioners and students.

Fundamentals of Traffic Simulation-Jaume Barceló 2011-01-06 The increasing power of computer technologies, the evolution of software en- neering and the advent of the intelligent transport systems has prompted traf c simulation to become one of the most used approaches for traf c analysis in s- port of the design and evaluation of traf c systems. The ability of traf c simulation to emulate the time variability of traf c phenomena makes it a unique tool for capturing the complexity of traf c systems. In recent years, traf c simulation – and namely microscopic traf c simulation – has moved from the academic to the professional world. A wide variety of traf- c simulation software is currently available on the market and it is utilized by thousands of users, consultants, researchers and public agencies. Microscopic traf c simulation based on the emulation of traf c ows from the dynamics of individual vehicles is becoming one the most attractive approaches. However, traf c simulation still lacks a uni ed treatment. Dozens of papers on theory and applications are published in scienti c journals every year. A search of simulation-related papers and workshops through the proceedings of the last annual TRB meetings would support this assertion, as would a review of the minutes from speci cally dedicated meetings such as the International Symposiums on Traf c Simulation (Yokohama, 2002; Lausanne, 2006; Brisbane, 2008) or the International Workshops on Traf c Modeling and Simulation (Tucson, 2001; Barcelona, 2003; Sedona, 2005; Graz 2008). Yet, the only comprehensive treatment of the subject to be found so far is in the user's manuals of various software products.

The Hacker's Handbook-Susan Young 2003-11-24 The Hacker's Handbook: The Strategy Behind Breaking Into and Defending Networks, moves ahead of the pack of books about digital security by revealing the technical aspects of hacking that are least understood by network administrators. This is accomplished by analyzing subjects through a hacking/security dichotomy that details hacking maneuv

Advances on P2P, Parallel, Grid, Cloud and Internet Computing-Leonard Barolli 2019-10-19 This book presents the latest research findings, innovative research results, methods and development techniques related to P2P, grid, cloud and Internet computing from both theoretical and practical perspectives. It also reveals the synergies among such large-scale computing paradigms. P2P, grid, cloud and Internet computing technologies have rapidly become established as breakthrough paradigms for solving complex problems by enabling aggregation and sharing of an increasing variety of distributed computational resources at large scale. Grid computing originated as a paradigm for high-performance computing, as an alternative to expensive supercomputers through different forms of large-scale distributed computing. P2P computing emerged as a new paradigm after client–server and web-based computing and has proved useful in the development of social networking, B2B (business to business), B2C (business to consumer), B2G (business to government), and B2E (business to employee). Cloud computing has been defined as a "computing paradigm where the boundaries of computing are determined by economic rationale rather than technical limits," and it has fast become a computing paradigm with applicability and adoption in all application domains and which provides utility computing at a large scale. Lastly, Internet computing is the basis of any large-scale distributed computing paradigms; it has developed into a vast area of flourishing fields with enormous impact on today's information societies, and serving as a universal platform comprising a large variety of computing forms such as grid, P2P, cloud and mobile computing.

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