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Multicast Sockets TCP/IP Sockets in C Introduction to Network Simulator NS2 Modern C++ Design Ant Colony Optimization Innovations and Advances in Computing, Informatics, Systems Sciences, Networking and Engineering Wireless Network Simulation NS Simulator for Beginners System Design, Modeling, and Simulation Recent Advances in Network Simulation The Art of Debugging with GDB, DDD, and Eclipse TCP/IP Illustrated, Volume 1 Quality, Reliability, Security and Robustness in Heterogeneous Networks Ad Hoc and Sensor Networks Reliability, Safety, and Security of Railway Systems. Modelling, Analysis, Verification, and Certification Tools for Teaching Computer Networking and Hardware Concepts Security in Vehicular Networks Network Congestion Control Computer Network Simulation Using NS2 Python Network Programming Cookbook Multimedia over IP and Wireless Networks Network Troubleshooting Tools Emerging Research in Data Engineering Systems and Computer Communications Building Wireless Sensor Networks NS Simulator for Beginners Emerging Technologies for Health and Medicine Innovations in Smart Cities Applications Edition 2 Advances in Information and Communication Mobile Ad Hoc Networking Digital Technologies and Applications High-Performance IT Services Handbook of Wireless Sensor Networks: Issues and Challenges in Current Scenario's Decentralised Internet of Things Simulation Tools and Techniques Networked RFID Content Delivery

Networks Simulation in Computer Network Design and Modeling: Use and Analysis Principles of Mobile Communication VANET Security of Information and Networks

Network Congestion Control Nov 18 2021 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.

Principles of Mobile Communication Feb 28 2020
Principles of Mobile Communication provides an authoritative treatment of the fundamentals of mobile communications, one of the fastest growing areas of the modern telecommunications industry. The book stresses the fundamentals of mobile communications engineering that are important for the design of any mobile system. Less emphasis is placed on the description of existing and proposed wireless standards. This focus on fundamental issues should be of benefit not only to students taking formal instruction but also to practising engineers who are likely to already have a detailed familiarity with the standards and are seeking to deepen their knowledge of this important field. The book stresses mathematical modeling and analysis, rather than providing a qualitative overview. It has been specifically developed as a textbook for graduate level instruction and a reference book for practising engineers and those seeking to pursue research in the area. The book contains sufficient background material for the novice, yet enough advanced material for a sequence of graduate level

courses. Principles of Mobile Communication treats a variety of contemporary issues, many of which have been treated before only in the journals. Some material in the book has never appeared before in the literature. The book provides an up-to-date treatment of the subject area at a level of detail that is not available in other books. Also, the book is unique in that the whole range of topics covered is not presently available in any other book. Throughout the book, detailed derivations are provided and extensive references to the literature are made. This is of value to the reader wishing to gain detailed knowledge of a particular topic.

System Design, Modeling, and Simulation Aug 28 2022 This book is a definitive introduction to models of computation for the design of complex, heterogeneous systems. It has a particular focus on cyber-physical systems, which integrate computing, networking, and physical dynamics. The book captures more than twenty years of experience in the Ptolemy Project at UC Berkeley, which pioneered many design, modeling, and simulation techniques that are now in widespread use. All of the methods covered in the book are realized in the open source Ptolemy II modeling framework and are available for experimentation through links provided in the book. The book is suitable for engineers, scientists, researchers, and managers who wish to understand the rich possibilities offered by modern modeling techniques. The goal of the book is to equip the reader with a breadth of experience that will help in understanding the role that such techniques can play in design.

Tools for Teaching Computer Networking and Hardware

Concepts Jan 21 2022 "This book offers concepts of the teaching and learning of computer networking and hardware by offering fundamental theoretical concepts illustrated with the use of interactive practical exercises"--Provided by publisher.

Advances in Information and Communication Jan 09 2021 This book presents high-quality research on the concepts and developments in the field of information and communication technologies, and their applications. It features 134 rigorously selected papers (including 10 poster papers) from the Future of Information and Communication Conference 2020 (FICC 2020), held in San Francisco, USA, from March 5 to 6, 2020, addressing state-of-the-art intelligent methods and techniques for solving real-world problems along with a vision of future research. Discussing various aspects of communication, data science, ambient intelligence, networking, computing, security and Internet of Things, the book offers researchers, scientists, industrial engineers and students valuable insights into the current research and next generation information science and communication technologies.

Ad Hoc and Sensor Networks Mar 23 2022 This book provides a comprehensive yet easy coverage of ad hoc and sensor networks and fills the gap of existing literature in this growing field. It emphasizes that there is a major interdependence among various layers of the network protocol stack. Contrary to wired or even one-hop cellular networks, the lack of a fixed infrastructure, the inherent mobility, the wireless channel, and the underlying routing mechanism by ad hoc and sensor networks introduce a number of technological challenges that are

difficult to address within the boundaries of a single protocol layer. All existing textbooks on the subject often focus on a specific aspect of the technology, and fail to provide critical insights on cross-layer interdependencies. To fully understand these intriguing networks, one need to grasp specific solutions individually, and also the many interdependencies and cross-layer interactions.

Networked RFID Jun 01 2020 This book introduces the technologies and techniques of large-scale RFID-enabled mobile computing systems. The discussion is set in the context of specific system case studies where RFID has been the core enabling technology in retail, metropolitan transportation, logistics and e-passport applications. RFID technology fundamentals are covered including operating principles, core system components and performance trade-offs involved in the selection of specific RFID platforms.

Ant Colony Optimization Jan 01 2023 An overview of the rapidly growing field of ant colony optimization that describes theoretical findings, the major algorithms, and current applications. The complex social behaviors of ants have been much studied by science, and computer scientists are now finding that these behavior patterns can provide models for solving difficult combinatorial optimization problems. The attempt to develop algorithms inspired by one aspect of ant behavior, the ability to find what computer scientists would call shortest paths, has become the field of ant colony optimization (ACO), the most successful and widely recognized algorithmic technique based on ant behavior. This book presents an overview of this rapidly growing

field, from its theoretical inception to practical applications, including descriptions of many available ACO algorithms and their uses. The book first describes the translation of observed ant behavior into working optimization algorithms. The ant colony metaheuristic is then introduced and viewed in the general context of combinatorial optimization. This is followed by a detailed description and guide to all major ACO algorithms and a report on current theoretical findings. The book surveys ACO applications now in use, including routing, assignment, scheduling, subset, machine learning, and bioinformatics problems. AntNet, an ACO algorithm designed for the network routing problem, is described in detail. The authors conclude by summarizing the progress in the field and outlining future research directions. Each chapter ends with bibliographic material, bullet points setting out important ideas covered in the chapter, and exercises. Ant Colony Optimization will be of interest to academic and industry researchers, graduate students, and practitioners who wish to learn how to implement ACO algorithms.

TCP/IP Sockets in C Apr 04 2023 TCP/IP Sockets in C: Practical Guide for Programmers, Second Edition is a quick and affordable way to gain the knowledge and skills needed to develop sophisticated and powerful web-based applications. The book's focused, tutorial-based approach enables the reader to master the tasks and techniques essential to virtually all client-server projects using sockets in C. This edition has been expanded to include new advancements such as support for IPv6 as well as detailed defensive programming strategies. If you

program using Java, be sure to check out this book's companion, *TCP/IP Sockets in Java: Practical Guide for Programmers*, 2nd Edition. Includes completely new and expanded sections that address the IPv6 network environment, defensive programming, and the `select()` system call, thereby allowing the reader to program in accordance with the most current standards for internetworking. Streamlined and concise tutelage in conjunction with line-by-line code commentary allows readers to quickly program web-based applications without having to wade through unrelated and discursive networking tenets.

TCP/IP Illustrated, Volume 1 May 25 2022 "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.

Computer Network Simulation Using NS2 Oct 18 2021
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.

The Art of Debugging with GDB, DDD, and Eclipse Jun 25 2022 Debugging is crucial to successful software development, but even many experienced programmers find it challenging. Sophisticated debugging tools are available, yet it may be difficult to determine which features are useful in which situations. The Art of Debugging is your guide to making the debugging process more efficient and effective. The Art of Debugging illustrates the use three of the most popular debugging tools on Linux/Unix platforms: GDB, DDD, and Eclipse. The text-command based GDB (the GNU Project Debugger) is included with most distributions. DDD is a popular GUI front

end for GDB, while Eclipse provides a complete integrated development environment. In addition to offering specific advice for debugging with each tool, authors Norm Matloff and Pete Salzman cover general strategies for improving the process of finding and fixing coding errors, including how to:

- Inspect variables and data structures
- Understand segmentation faults and core dumps
- Know why your program crashes or throws exceptions
- Use features like catchpoints, convenience variables, and artificial arrays
- Avoid common debugging pitfalls

Real world examples of coding errors help to clarify the authors' guiding principles, and coverage of complex topics like thread, client-server, GUI, and parallel programming debugging will make you even more proficient. You'll also learn how to prevent errors in the first place with text editors, compilers, error reporting, and static code checkers. Whether you dread the thought of debugging your programs or simply want to improve your current debugging efforts, you'll find a valuable ally in *The Art of Debugging*.

Multicast Sockets May 05 2023 *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

Wireless Network Simulation Oct 30 2022 Learn to run your own simulation by working with model analysis, mathematical background, simulation output data, and most importantly, a network simulator for wireless technology. This book introduces the best practices of simulator use, the techniques for analyzing simulations with artificial agents and the integration with other technologies such as Power Line Communications (PLC). Network simulation is a key technique used to test the future behavior of a network. It's a vital development component for the development of 5G, IoT, wireless sensor networks, and many more. This book explains the scope and evolution of the technology that has led to the development of dynamic systems such as Internet of Things and fog computing. You'll focus on the ad hoc networks with stochastic behavior and dynamic nature, and the ns-3 simulator. These are useful open source tools for academics, researchers, students and engineers to deploy telecommunications experiments, proofs and new scenarios with a high degree of similarity with reality. You'll also

benefit from a detailed explanation of the examples and the theoretical components needed to deploy wireless simulations or wired, if necessary. What You'll Learn Review best practices of simulator uses Understand techniques for analyzing simulations with artificial agents Apply simulation techniques and experiment design Program on ns-3 simulator Analyze simulation results Create new modules or protocols for wired and wireless networks Who This Book Is For Undergraduate and postgraduate students, researchers and professors interested in network simulations. This book also includes theoretical components about simulation, which are useful for those interested in discrete event simulation DES, general theory of simulation, wireless simulation and ns-3 simulator.

Decentralised Internet of Things Aug 04 2020 This book presents practical as well as conceptual insights into the latest trends, tools, techniques and methodologies of blockchains for the Internet of Things. The decentralised Internet of Things (IoT) not only reduces infrastructure costs, but also provides a standardised peer-to-peer communication model for billions of transactions. However, there are significant security challenges associated with peer-to-peer communication. The decentralised concept of blockchain technology ensures transparent interactions between different parties, which are more secure and reliable thanks to distributed ledger and proof-of-work consensus algorithms. Blockchains allow trustless, peer-to-peer communication and have already proven their worth in the world of financial services. The blockchain can be implanted in IoT systems to deal with the issues of scale, trustworthiness and decentralisation,

allowing billions of devices to share the same network without the need for additional resources. This book discusses the latest tools and methodology and concepts in the decentralised Internet of Things. Each chapter presents an in-depth investigation of the potential of blockchains in the Internet of Things, addressing the state-of-the-art in and future perspectives of the decentralised Internet of Things. Further, industry experts, researchers and academicians share their ideas and experiences relating to frontier technologies, breakthrough and innovative solutions and applications.

Emerging Research in Data Engineering Systems and Computer Communications Jun 13 2021 This book gathers selected papers presented at the 2nd International Conference on Computing, Communications and Data Engineering, held at Sri Padmavati Mahila Visvavidyalayam, Tirupati, India from 1 to 2 Feb 2019. Chiefly discussing major issues and challenges in data engineering systems and computer communications, the topics covered include wireless systems and IoT, machine learning, optimization, control, statistics, and social computing.

Innovations in Smart Cities Applications Edition 2 Feb 07 2021 This book highlights cutting-edge research presented at the third installment of the International Conference on Smart City Applications (SCA2018), held in Tétouan, Morocco on October 10-11, 2018. It presents original research results, new ideas, and practical lessons learned that touch on all aspects of smart city applications. The respective papers share new and highly original

results by leading experts on IoT, Big Data, and Cloud technologies, and address a broad range of key challenges in smart cities, including Smart Education and Intelligent Learning Systems, Smart Healthcare, Smart Building and Home Automation, Smart Environment and Smart Agriculture, Smart Economy and Digital Business, and Information Technologies and Computer Science, among others. In addition, various novel proposals regarding smart cities are discussed. Gathering peer-reviewed chapters written by prominent researchers from around the globe, the book offers an invaluable instructional and research tool for courses on computer and urban sciences; students and practitioners in computer science, information science, technology studies and urban management studies will find it particularly useful. Further, the book is an excellent reference guide for professionals and researchers working in mobility, education, governance, energy, the environment and computer sciences.

Modern C++ Design Feb 02 2023 This title documents a convergence of programming techniques - generic programming, template metaprogramming, object-oriented programming and design patterns. It describes the C++ techniques used in generic programming and implements a number of industrial strength components.

Security of Information and Networks Dec 28 2019 This book is a select collection of edited papers from the International Conference on Security of Information and Networks (SIN 2007) on the main theme of Information Assurance, Security, and Public Policy. SIN 2007 was hosted by the Eastern

Mediterranean University in Gazimagusa, North Cyprus and co-organized by the Istanbul Technical University, Turkey. While SIN 2007 covered all areas of information and network security, the papers included here focused on the following topics: - cryptology: design and analysis of cryptographic algorithms, hardware and software implementations of cryptographic algorithms, and steganography; - network security: authentication, authorization and access control, privacy, intrusion detection, grid security, and mobile and personal area networks; - IT governance: information security management systems, risk and threat analysis, and information security policies. They represent an interesting mix of innovative academic research and experience reports from practitioners. This is further complemented by a number of invited papers providing excellent overviews: - Elisabeth Oswald, University of Bristol, Bristol, UK: Power Analysis Attack: A Very Brief Introduction; - Marc Joye, Thomson R&D, France: On White-Box Cryptography; - Bart Preneel, Katholieke Universiteit Leuven, Leuven, Belgium: Research Challenges in Cryptology; - Mehmet Ufuk Caglayan, Bogazici University, Turkey: Secure Routing in Ad Hoc Networks and Model Checking. The papers are organized in a logical sequence covering Ciphers; Mobile Agents & Networks; Access Control and Security Assurance; Attacks, Intrusion Detection, and Security Recommendations; and, Security Software, Performance, and Experience.

NS Simulator for Beginners Apr 11 2021 NS-2 is an open-source discrete event network simulator which is widely used by both the research community as well as by the people involved in the

standardization protocols of IETF. The goal of this book is twofold: on one hand to learn how to use the NS-2 simulator, and on the other hand, to become acquainted with and to understand the operation of some of the simulated objects using NS-2 simulations. The book is intended to help students, engineers or researchers who need not have much background in programming or who want to learn through simple examples how to analyse some simulated objects using NS-2. Simulations may differ from each other in many aspects: the applications, topologies, parameters of network objects (links, nodes) and protocols used, etc. The first chapter is a general introduction to the book, where the importance of NS-2 as a tool for a good comprehension of networks and protocols is stated. In the next chapters we present special topics as TCP, RED, etc., using NS-2 as a tool for better understanding the protocols. We provide in the appendices a review of Random Variables and Confidence Intervals, as well as a first sketch for using the new NS-3 simulator. Table of Contents: Introduction / NS-2 Simulator Preliminaries / How to work with trace files / Description and simulation of TCP/IP / Routing and network dynamics / RED: Random Early Discard / Differentiated Services / Mobile Networks and Wireless Local Area Networks / Classical queueing models / Tcl and C++ linkage

Multimedia over IP and Wireless Networks Aug 16 2021 Multimedia over IP and Wireless Networks is an indispensable guide for professionals or researchers working in areas such as networking, communications, data compression, multimedia processing, streaming architectures, and computer graphics. Beginning with

a concise overview of the fundamental principles and challenges of multimedia communication and networking, this book then branches off organically to tackle compression and networking next before moving on to systems, wireless multimedia and more advanced topics. The Compression section advises on the best means and methodology to ensure multimedia signal (images, text, audio and data) integrity for transmissions on wireless and wired systems. The Networking section addresses channel protection and performance. In the Systems section, the focus is on streaming media on demand, live broadcast and video and voice's role in real-time communication. Wireless multimedia transmission and Quality of Service issues are discussed in the Wireless Multimedia section. An Advanced Topics section concludes the book with an assortment of topics including Peer-to-Peer multimedia communication and multipath networks. Up-to-date coverage of existing standards for multimedia networking Synergistic tutorial approach reinforces knowledge gained in previous chapters Balanced treatment of audio and video with coverage of end-to-end systems

Handbook of Wireless Sensor Networks: Issues and Challenges in Current Scenario's Sep 04 2020 This book explores various challenging problems and applications areas of wireless sensor networks (WSNs), and identifies the current issues and future research challenges. Discussing the latest developments and advances, it covers all aspects of in WSNs, from architecture to protocols design, and from algorithm development to synchronization issues. As such the book is an essential reference resource for undergraduate and postgraduate students

as well as scholars and academics working in the field.

Mobile Ad Hoc Networking Dec 08 2020 "An excellent book for those who are interested in learning the current status of research and development . . . [and] who want to get a comprehensive overview of the current state-of-the-art." -E-Streams This book provides up-to-date information on research and development in the rapidly growing area of networks based on the multi-hop ad hoc networking paradigm. It reviews all classes of networks that have successfully adopted this paradigm, pointing out how they penetrated the mass market and sparked breakthrough research. Covering both physical issues and applications, *Mobile Ad Hoc Networking: Cutting Edge Directions* offers useful tools for professionals and researchers in diverse areas wishing to learn about the latest trends in sensor, actuator, and robot networking, mesh networks, delay tolerant and opportunistic networking, and vehicular networks. Chapter coverage includes: Multi-hop ad hoc networking Enabling technologies and standards for mobile multi-hop wireless networking Resource optimization in multi-radio multi-channel wireless mesh networks QoS in mesh networks Routing and data dissemination in opportunistic networks Task farming in crowd computing Mobility models, topology, and simulations in VANET MAC protocols for VANET Wireless sensor networks with energy harvesting nodes Robot-assisted wireless sensor networks: recent applications and future challenges Advances in underwater acoustic networking Security in wireless ad hoc networks *Mobile Ad Hoc Networking* will appeal to researchers, developers, and students interested

in computer science, electrical engineering, and telecommunications.

Network Troubleshooting Tools Jul 15 2021 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.

High-Performance IT Services Oct 06 2020 This book on performance fundamentals covers UNIX, OpenVMS, Linux, Windows, and MVS. Most of the theory and systems design principles can be applied to other operating systems, as can some of the benchmarks. The book equips professionals with the ability to assess performance characteristics in unfamiliar environments. It is suitable for practitioners, especially those whose responsibilities include performance management, tuning, and capacity planning. IT managers with a technical outlook also benefit from the book as well as consultants and students in the world of systems for the first time in a professional capacity.

Security in Vehicular Networks Dec 20 2021 Vehicular networks were first developed to ensure safe driving and to extend the Internet to the road. However, we can now see that the ability of vehicles to engage in cyber-activity may result in tracking and privacy violations through the interception of messages, which are frequently exchanged on road. This book serves as a guide for students, developers and researchers who are interested in vehicular networks and the associated security and privacy issues. It facilitates the understanding of the technologies used and their various types, highlighting the importance of privacy and security issues and the direct impact they have on the safety of their users. It also explains various solutions and proposals to protect location and identity privacy, including two anonymous authentication

methods that preserve identity privacy and a total of five schemes that preserve location privacy in the vehicular ad hoc networks and the cloud-enabled internet of vehicles, respectively. This book also presents a new privacy-aware blockchain-based pseudonym management framework. Vehicular networks were first developed to ensure safe driving and to extend the Internet to the road. However, we can now see that the ability of vehicles to engage in cyber-activity may result in tracking and privacy violations through the interception of messages, which are frequently exchanged on road. This book serves as a guide for students, developers and researchers who are interested in vehicular networks and the associated security and privacy issues. It facilitates the understanding of the technologies used and their various types, highlighting the importance of privacy and security issues and the direct impact they have on the safety of their users. It also explains various solutions and proposals to protect location and identity privacy, including two anonymous authentication methods that preserve identity privacy and a total of five schemes that preserve location privacy in the vehicular ad hoc networks and the cloud-enabled internet of vehicles, respectively. This book also presents a new privacy-aware blockchain-based pseudonym management framework. Leila

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Building Wireless Sensor Networks May 13 2021

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.

Content Delivery Networks May 01 2020 "Content Delivery Networks" enables the readers to understand the basics, to identify the underlying technology, to summarize their knowledge on concepts, ideas, principles and various paradigms which span on broad CDNs areas. Therefore, aspects of CDNs in terms of basics, design process, practice, techniques, performances, platforms, applications, and experimental results have been presented in a proper order. Fundamental methods, initiatives, significant research results, as well as references for further study have also been provided. Comparison of different design and development approaches are described at the appropriate places so that new researchers as well as advanced practitioners can use the CDNs evaluation as a research roadmap. All the contributions have been reviewed, edited, processed, and placed in the appropriate order to maintain consistency so that any reader irrespective of their level of knowledge and technological skills in CDNs would get the most out of it. The book is organized into three parts, namely, Part I: CDN Fundamentals; Part II: CDN Modeling and Performance; and Part III: Advanced CDN Platforms and Applications. The organization ensures the smooth flow of material as successive chapters build on prior ones.

Digital Technologies and Applications Nov 06 2020

This book gathers selected research papers presented at the First International Conference on Digital Technologies and Applications (ICDTA 21), held at Sidi Mohamed Ben Abdellah University, Fez, Morocco, on 29-30 January 2021. highlighting the latest innovations in digital technologies as: artificial intelligence, Internet of things, embedded systems, network technology, information processing, and their applications in several areas such as hybrid vehicles, renewable energy, robotic, and COVID-19. The respective papers encourage and inspire researchers, industry professionals, and policymakers to put these methods into practice.

Recent Advances in Network Simulation Jul 27 2022

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.

Emerging Technologies for Health and Medicine Mar 11 2021 With the current advances in technology innovation, the field of medicine and healthcare is rapidly expanding and, as a result, many different areas of human health diagnostics, treatment and care are emerging. Wireless technology is getting faster and 5G mobile technology allows the Internet of Medical Things (IoMT) to greatly improve patient care and more effectively prevent illness from developing. This book provides an overview and review of the current and anticipated changes in medicine and healthcare due to new technologies and faster communication between users and devices. This groundbreaking book presents state-of-the-art chapters on many subjects including: A review of the implications of VR and AR healthcare applications A review of current augmenting dental care An overview of typical human-computer interaction (HCI) that can help inform the development of user interface designs and novel ways to evaluate human behavior to responses in virtual reality (VR) and other new technologies A review of telemedicine technologies Building empathy in young children using augmented reality AI technologies for mobile health of stroke monitoring & rehabilitation robotics control Mobile doctor brain AI App An artificial intelligence mobile cloud computing tool Development of a robotic teaching aid for disabled children Training system design of lower limb rehabilitation robot based on

virtual reality

Reliability, Safety, and Security of Railway Systems. Modelling, Analysis, Verification, and Certification Feb 19 2022 This volume constitutes the proceedings of the Second International Conference on Reliability, Safety and Security of Railway Systems, RRSRail 2017, held in Pistoia, Italy, in November 2017. The 16 papers presented in this volume were carefully reviewed and selected from 34 submissions. They are organized in topical sections named: communication challenges in railway systems; formal modeling and verification for safety; light rail and urban transit; and engineering techniques and standards. The book also contains one keynote talk in full-paper length.

Simulation in Computer Network Design and Modeling: Use and Analysis Mar 30 2020 "This book reviews methodologies in computer network simulation and modeling, illustrates the benefits of simulation in computer networks design, modeling, and analysis, and identifies the main issues that face efficient and effective computer network simulation"--Provided by publisher.

Quality, Reliability, Security and Robustness in Heterogeneous Networks Apr 23 2022 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.

Introduction to Network Simulator NS2 Mar 03 2023
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.

Simulation Tools and Techniques Jul 03 2020 This two-volume set constitutes the refereed post-conference proceedings of the 12th International Conference on Simulation Tools and Techniques, SIMUTools 2020, held in Guiyang, China, in August 2020. Due to COVID-19 pandemic the conference was held virtually. The 125 revised full papers were carefully selected from 354 submissions. The papers focus on simulation methods, simulation techniques, simulation software, simulation performance, modeling formalisms, simulation verification and widely used frameworks.

Innovations and Advances in Computing, Informatics, Systems Sciences, Networking and Engineering Nov 30

2022 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.

VANET Jan 27 2020 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>

Python Network Programming Cookbook Sep 16 2021
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.

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