Telecommunication Networks And Computer Systems

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Computer-communication Networks - Norman Abramson 1973
Planning computer - communication networks; System design for computer networks; Optimal file allocation in a computer network; Scheduling, queueing, and delays in time-shared systems and computer networks; Common-carrier data communication; Interfacing and data concentration; Asynchronous time-division multiplexing systems; Multiple-access communications for computer nets; Regulatory policy and future date-transmission services; Economic considerations in computer-communication systems; The dartmounth time sharing network; Exploratory research on netting at IBM; The ARPA network.
Communication Networks and Computer Systems - Javier A Barria 2006-06-19
Communication networks and computer systems research is entering a new phase in which many of the established models and techniques of the last twenty years are being challenged. The research community is continuing to free itself from past intellectual constraints so that it may fully exploit the convergence of computing and communications. Evaluating the performance of emerging communications and computer systems constitutes a huge challenge. Thus, current research provides a set of heterogeneous tools and techniques embracing the uncertainties of time and space varying environments when the requests for diverse services are made in real time, and with very different quality of service expectations. These novel techniques will lead to fast and economic service deployment and effective dynamic resource management, and hence to new business strategies and infrastructures that will facilitate the emergence of future services and applications. This volume contains contributions and presentations made by leading international researchers at a workshop which was held in April 2004 to honour Professor Erol Gelenbe on the occasion of his inaugural lecture as the Dennis Gabor Chair at Imperial College London. Contents:Erol Gelenbe's Contributions to Computer and Networks Performance (A Bensoussan)Rethinking Incentives for Mobile Ad Hoc Networks (E Huang et al.)Fair and Efficient Allocation of Resources in the Internet (R M Salles & J A Barria)The Locality Principle (P J Denning)A Simulation-Based Performance Analysis of Epoch Task Scheduling in Distributed Processors (H Karatza)Counter Intuitive Aspects of Statistical Independence in Steady State Distributions (J P Buzen)The Non-Stationary Loss Queue: A Survey (K A Alnowibet & H Perros)Stabilization Techniques for Load-Dependent Queueing Networks Algorithms (G Casale & G Serazzi)Modelling and Simulation of Interdependent Critical Infrastructure: The Road Ahead (E Casalicchio et al.)Stochastic Automata Networks and Lumpable Stochastic Bounds: Bounding Availability (J M

Fourneau et al.)Aggregation Methods for Cross-Layer Simulations (M Becker et al.)Space and Time Capacity in Dense Mobile Ad Hoc Networks (P Jacquet)Stochastic Properties of Peer-to-Peer Communication Architecture in a Military Setting (D P Gaver & P A Jacobs)Quantifying the Quality of Audio and Video Transmissions over the Internet: The PSQA Approach (G Rubino)A Study of the Dynamic Behavior of a Web Site (M C Calzarossa & D Tessera) Readership: Postgraduate and graduate students in computing and electrical & electronic engineering; computer and communication systems engineers. Keywords:Resource Management;Modeling;Simulation;Computer and Communication NetworksKey Features:A selection of outstanding research contributions by international experts in the field of networks and computer systemsUseful for graduate students, researchers and experts

Communication, Networks and Computing - Shekhar Verma 2018-10-10
This book (CCIS 839) constitutes the refereed proceedings of the First International Conference on Communication, Networks and Computings, CNC 2018, held in Gwalior, India, in March 2018. The 70 full papers were carefully reviewed and selected from 182 submissions. The papers are organized in topical sections on wired and wireless communication systems, high dimensional data representation and processing, networks and information security, computing techniques for efficient networks design, electronic circuits for communication system.

Distributed Computer and Communication Networks: Control, Computation, Communications - Vladimir M. Vishnevskiy 2021
This book constitutes the refereed post-conference proceedings of the 24th International Conference on Distributed and Computer and Communication Networks, DCCN 2021, held in Moscow, Russia, in September 2021. The 26 revised full papers and 3 revised short papers were carefully reviewed and selected from 151 submissions. The papers cover the following topics: computer and communication networks; analytical modeling of distributed systems; and distributed systems applications.

Computer Networking and Communication Systems - Connor Butler 2020-09-08
A computer network is defined as a digital telecommunications network in which computing devices share resources using data links between nodes. Data links can be established over cable media or wireless media. Computer networks support a number of services and applications, such as digital audio, digital video and access to the World Wide Web. In a computer network, data is transmitted or received in the form of packets between nodes. Local Area Network, Wide Area Network and Metropolitan Area Network are the three main types of networks. The chief components of computer networks are servers, transmission media, clients, network interface card, network operating system, etc. A communication system is a collection of communication networks, relay stations, transmission systems, tributary stations, and data terminal equipment that are able to interoperate and interconnect. Communication systems can be of different types, depending on the type of media and technology used, and application area, such as optical communication system, radio communication system, tactical communications system, etc. This book discusses the fundamentals as well as modern approaches of computer networking. Also included in it is a detailed explanation of the various concepts and applications of communication systems. This book on computer networking and communication systems is a collective contribution of a renowned group of international experts.

Telecommunications and Networking - Udo W. Pooch 2018-05-04
As the dividing line between traditional computing science and telecommunications quickly becomes blurred or disappears in today's rapidly changing environment, there is an increasing need for computer professionals to possess knowledge of telecommunications principles. Telecommunications and Networking presents a comprehensive overview of the interaction and relationship between telecommunications and data processing. The book's early chapters cover basic telecommunications vocabulary, common nomenclature, telecommunications fundamentals, as well as the important relationships among coding, error detection and correction, and noise. Later chapters discuss such topics as switching, timing, topological structures, routing algorithms, and teleprocessing.

Other topics covered in detail include specific concerns inherent to computer communications, such as protocols, error detection and correction, network monitoring and security, and system validation. System designers and programmers can no longer be effective simply by understanding the tradeoffs between hardware and software. Telecommunications and Networking provides both computing professionals and students the fundamental computer communications concepts necessary to function in today's computer industry.

Modeling and Simulation of Computer Networks and Systems - Mohammad S. Obaidat 2015-04-21

Modeling and Simulation of Computer Networks and Systems: Methodologies and Applications introduces you to a broad array of modeling and simulation issues related to computer networks and systems. It focuses on the theories, tools, applications and uses of modeling and simulation in order to effectively optimize networks. It describes methodologies for modeling and simulation of new generations of wireless and mobiles networks and cloud and grid computing systems. Drawing upon years of practical experience and using numerous examples and illustrative applications recognized experts in both academia and industry, discuss: Important and emerging topics in computer networks and systems including but not limited to; modeling, simulation, analysis and security of wireless and mobiles networks especially as they relate to next generation wireless networks Methodologies, strategies and tools, and strategies needed to build computer networks and systems modeling and simulation from the bottom up Different network performance metrics including, mobility, congestion, quality of service, security and more... Modeling and Simulation of Computer Networks and Systems is a must have resource for network architects, engineers and researchers who want to gain insight into optimizing network performance through the use of modeling and simulation. Discusses important and emerging topics in computer networks and Systems including but not limited to; modeling, simulation, analysis and security of wireless and mobiles networks especially as they relate to next generation wireless networks Provides the necessary methodologies, strategies and tools needed to build computer networks and systems modeling and simulation from the bottom up Includes comprehensive review and evaluation of simulation tools and methodologies and different network performance metrics including mobility, congestion, quality of service, security and more

Computer Networks & Communications (NetCom) - Nabendu Chaki 2013-02-26

Computer Networks & Communications (NetCom) is the proceedings from the Fourth International Conference on Networks & Communications. This book covers theory, methodology and applications of computer networks, network protocols and wireless networks, data communication technologies, and network security. The proceedings will feature peer-reviewed papers that illustrate research results, projects, surveys and industrial experiences that describe significant advances in the diverse areas of computer networks & communications.

Communication Systems and Networks - Nishanth Sastry 2017-09-29

This book constitutes the refereed post-conference proceedings of the 9th International Conference on Communication Systems and Networks, COMSNETS 2017, held in Bengaluru, India, in January 2017.The 9 invited and 10 selected best papers have been carefully reviewed and selected from 192 submissions. They cover various topics in networking and communications systems.

Security in Computing and Communications - Sabu M. Thampi 2020-04-25

This book constitutes the refereed proceedings of the 7th International Symposium on Security in Computing and Communications, SSCC 2019, held in Trivandrum, India, in December 2019. The 22 revised full papers and 7 revised short papers presented were carefully reviewed and selected from 61 submissions. The papers cover wide research fields including cryptography, database and storage security, human and societal aspects of security and privacy.

Modelling, Analysis, and Simulation of Computer and Telecommunication Systems - Maria Carla Calzarossa 2021-03-01

This book constitutes the post proceedings of the 28th International

Symposium on Modelling, Analysis, and Simulation of Computer and Telecommunication Systems, MASCOTS 2020, held online -due to COVID -19- in Nice, France, in November 2020. The 17 full papers presented were carefully reviewed and selected from 124 submissions. The symposium collected the most relevant papers describing state-of-the-art research in the areas of the performance evaluation of computer systems and networks as well as in related areas.

Telecommunication Networks - Mischa Schwartz 1987

Here is the first book to present a unified discussion of protocols that treats both voice and data networks. It emphasizes quantitative performance education of telecommunication network systems. Of interest to electrical engineers and computer science professionals working with networks, data communication and distributed systems.

Performance Guarantees in Communication Networks - Cheng-Shang Chang 2000

Providing performance guarantees is one of the most important issues for future telecommunication networks. This book describes theoretical developments in performance guarantees for telecommunication networks from the last decade. Written for the benefit of graduate students and scientists interested in telecommunications-network performance this book consists of two parts. The first introduces the recently-developed filtering theory for providing deterministic (hard) guarantees, such as bounded delay and queue length. The filtering theory is developed under the min-plus algebra, where one replaces the usual addition with the min operator and the usual multiplication with the addition operator. As in the classical linear system theory, the filtering theory treats an arrival process (or a departure process) as a signal and a network element as a system. Network elements, including traffic regulators and servers, can be modelled as linear filters under the min-plus algebra, and they can be joined by concatenation, "filter bank summation", and feedback to form a composite network element. The problem of providing deterministic guarantees is equivalent to finding the impulse response of composite network elements. This section contains material on: - (s, r)-calculus - Filtering theory for deterministic traffic regulation, service guarantees and networks with variable-length packets - Traffic specification - Networks with multiple inputs and outputs - Constrained traffic regulation The second part of the book addresses stochastic (soft) guarantees, focusing mainly on tail distributions of queue lengths and packet loss probabilities and contains material on: - (s(q), r(q))-calculus and q-envelope rates - The large deviation principle - The theory of effective bandwidth The mathematical theory for stochastic guarantees is the theory of effective bandwidth. Based on the large deviation principle, the theory of effective bandwidth provides approximations for the bandwidths required to meet stochastic guarantees for both short-range dependent inputs and long-range dependent inputs.

System Design for Telecommunication Gateways - Alexander Bachmutsky 2011-06-20

System Design for Telecommunication Gateways provides a thorough review of designing telecommunication network equipment based on the latest hardware designs and software methods available on the market. Focusing on high-end efficient designs that challenge all aspects of the system architecture, this book helps readers to understand a broader view of the system design, analyze all its most critical components, and select the parts that best fit a particular application. In many cases new technology trends, potential future developments, system flexibility and capability extensions are outlined in preparation for the longevity typical for products in the industry. Key features: Combines software and hardware aspects of the system design. Defines components and services supported by open-source and commercial basic and extended software platforms, including operating systems, middleware, security, routing, management layer and more. Focuses on disruptive technologies. Provides guidelines for developing software architectures based on multi-threaded, multi-process, multi-instance, multi-core, multi-chip, multi-blade and multi-chassis designs. Covers a number of advanced high-speed interconnect and fabric interface technologies and their commercial implementations. Presents different system form factors from compact pizza-box styles to medium and large bladed systems,

including IBM BladeCenter, ATCA and microTCA-based chassis. Describes different mezzanine cards, such as PMC, PrPMC, XMC, AMC and others.

Computer Networks - Larry L. Peterson 2011-03-02

Computer Networks: A Systems Approach, Fifth Edition, explores the key principles of computer networking, with examples drawn from the real world of network and protocol design. Using the Internet as the primary example, this best-selling and classic textbook explains various protocols and networking technologies. The systems-oriented approach encourages students to think about how individual network components fit into a larger, complex system of interactions. This book has a completely updated content with expanded coverage of the topics of utmost importance to networking professionals and students, including P2P, wireless, network security, and network applications such as e-mail and the Web, IP telephony and video streaming, and peer-to-peer file sharing. There is now increased focus on application layer issues where innovative and exciting research and design is currently the center of attention. Other topics include network design and architecture; the ways users can connect to a network; the concepts of switching, routing, and internetworking; end-to-end protocols; congestion control and resource allocation; and end-to-end data. Each chapter includes a problem statement, which introduces issues to be examined; shaded sidebars that elaborate on a topic or introduce a related advanced topic; What's Next? discussions that deal with emerging issues in research, the commercial world, or society; and exercises. This book is written for graduate or upper-division undergraduate classes in computer networking. It will also be useful for industry professionals retraining for network-related assignments, as well as for network practitioners seeking to understand the workings of network protocols and the big picture of networking. Completely updated content with expanded coverage of the topics of utmost importance to networking professionals and students, including P2P, wireless, security, and applications Increased focus on application layer issues where innovative and exciting research and design is currently the center of attention Free downloadable network simulation software and lab experiments manual available

Optimal Load Balancing in Distributed Computer Systems - Hisao Kameda 2011-09-30

An important consideration in improving the performance of a distributed computer system is the balancing of the load between the host computers. Load balancing may be either static or dynamic; static balancing strategies are generally based on information about the system's average behavior rather than its actual current state, while dynamic strategies react to the current state when making transfer decisions. Although it is often conjectured that dynamic load balancing outperforms static, careful investigation shows that this view is not always valid. Recent research on the problem of optimal static load balancing is clearly and intuitively presented, with coverage of distributed computer system models, problem formulation in load balancing, and effective algorithms for implementing optimization. Providing a thorough understanding of both static and dynamic strategies, this book will be of interest to all researchers and practitioners working to optimize performance in distributed computer systems.

Scrambling Techniques for Digital Transmission - Byeong G. Lee 2012-01-19

Scramblers and shift register generators (SRG) have been used for decades in the shaping of digital transmission signals and in generating pseudo-random binary sequences for transmission applications. In recent years more attention has been paid to this area than ever before due to the change of today's telecommunication environment. This publication presents the theory and applications of three scrambling techniques - Frame Synchronous Scrambling (FSS), Distributed Sample Scrambling (DSS) and Self Synchronous Scrambling (SSS) with an emphasis on their application in digital transmission. Based on the authors' research over the past ten years, this is the first book of its kind.

OSS for Telecom Networks - Kundan Misra 2012-12-06

Places OSS software in the context of telecommunications as a business

Gives a concrete understanding of what OSS is, what it does and how it does it, avoiding deep technical details Frequently relates OSS software to business drivers of telecom service providers

Distributed Computer and Communication Networks - Vladimir M. Vishnevskiy 2017-09-06

This book constitutes the refereed proceedings of the 20th International Conference on Distributed and Computer and Communication Networks, DCCN 2017, held in Moscow, Russia, in September 2017. The 39 full papers and the two short papers were carefully reviewed and selected from 176 submissions. The papers cover the following topics: computer and communication networks architecture optimization; control in computer and communication networks; performance and QoS/QoE evaluation in wireless networks; analytical modeling and simulation of next-generation communications systems; queueing theory and reliability theory applications in computer networks; wireless 4G/5G networks, cm- and mm-wave radio technologies; RFID technology and its application in intellectual transportation networks; Internet of Things, wearables, and applications of distributed information systems; probabilistic and statistical models in information systems; mathematical modeling of high-tech systems; mathematical modeling and control problems; distributed and cloud computing systems, big data analytics.

Teletraffic - Haruo Akimaru 2011-09-16

Contemporary information networks are developing to meet social demands, and as a result new technologies and systems are being introduced. The fundamental problem in this process is the optimization of system dimensions and configuration for a particular level of performance. In the second edition of this innovative text, basic teletraffic theories and their applications are described in detail and practical formulae for advanced models, with references for further reading, are provided. Examples and exercises illustrate the theories' application to real systems. The revised and expanded text includes sections on ATM (asynchronous transfer mode) with the latest performance evaluations for mixed bursty traffic and bursty traffic with finite buffers, and LANs (local area networks) with an improved performance evaluation method for CSMD/CD (Ethernet). Explanations throughout the book have also been refined. The second edition of Teletraffic is a translation and expansion of the original Japanese text by two leading authors. It enables researchers, engineers and telecommunication and computer network managers, even those not experts in teletraffic, to put the latest theories and engineering into practice.

Communication Networks and Computer Systems - Javier A. Barria 2006

Evaluating the performance of communications and computer systems constitutes a challenge. This volume contains contributions and presentations made by international researchers at a workshop which was held in April 2004 to honour Professor Erol Gelenbe on the occasion of his inaugural lecture as the Dennis Gabor Chair at Imperial College London.

Introduction to Telecommunications Networks - Gordon F. Snyder 2003

Part of Delmar Learningâ€™s new National Center for Telecommunications Technologies series, this book begins with the history of the public switched telephone network (PSTN). Descriptions of public and private telecommunications networks, plus a basic electronics refresher, are provided. Subsequent chapters offer a complete overview of existing network infrastructure, with discussion of analog and digital signals concepts, frequency spectra, plus modulating and multiplexing techniques. System hardware is also introduced, including transmission and reception technology, switching systems and more.

Fundamentals of Performance Evaluation of Computer and Telecommunication Systems - Mohammed S. Obaidat 2010-01-26

The only singular, all-encompassing textbook on state-of-the-art technical performance evaluation Fundamentals of Performance Evaluation of Computer and Telecommunication Systems uniquely presents all techniques of performance evaluation of computers systems, communication networks, and telecommunications in a balanced manner. Written by the renowned Professor Mohammad S. Obaidat and his coauthor Professor Noureddine Boudriga, it is also the only resource to

treat computer and telecommunication systems as inseparable issues. The authors explain the basic concepts of performance evaluation, applications, performance evaluation metrics, workload types, benchmarking, and characterization of workload. This is followed by a review of the basics of probability theory, and then, the main techniques for performance evaluation—namely measurement, simulation, and analytic modeling—with case studies and examples. Contains the practical and applicable knowledge necessary for a successful performance evaluation in a balanced approach Reviews measurement tools, benchmark programs, design of experiments, traffic models, basics of queueing theory, and operational and mean value analysis Covers the techniques for validation and verification of simulation as well as random number generation, random variate generation, and testing with examples Features numerous examples and case studies, as well as exercises and problems for use as homework or programming assignments Fundamentals of Performance Evaluation of Computer and Telecommunication Systems is an ideal textbook for graduate students in computer science, electrical engineering, computer engineering, and information sciences, technology, and systems. It is also an excellent reference for practicing engineers and scientists.

Multiple Access Protocols - Raphael Rom 2012-12-06

Computer communication networks have come of age. Today, there is hardly any professional, particularly in engineering, that has not been the user of such a network. This proliferation requires the thorough understanding of the behavior of networks by those who are responsible for their operation as well as by those whose task it is to design such networks. This is probably the reason for the large number of books, monographs, and articles treating relevant issues, problems, and solutions in this field. Among all computer network architectures, those based on broadcast mul tiple access channels stand out in their uniqueness. These networks appear naturally in environments requiring user mobility where the use of any fixed wiring is impossible and a wireless channel is the only available option. Because of their desirable characteristics multiple access networks are now used even in environments where a wired point-to-point network could have been installed. The understanding of the operation of multiple access network through their performance analysis is the focus of this book.

Multiple Access Protocols - Refā'ēl Rom 1990-04-23

A unified analysis of multiaccess communication systems including both local area and radio networks. Each subsection presents a communication system that differs in nature from the others in system characteristic, the purpose of the system, or the method of analysis. Assumes some knowledge of probabilistic modeling of systems, stochastic processes, and elementary queueing systems. Annotation copyrighted by Book News, Inc., Portland, OR

Blockchain Systems and Communication Networks: From Concepts to Implementation - Mubashir Husain Rehmani 2021-05-19

This book provides extensive insights on blockchain systems, starting from a historical perspective and moving towards building foundational knowledge, with focus on communication networks. It covers blockchain applications, algorithms, architectures, design and implementation, and security and privacy issues, providing the reader with a comprehensive overview. Further, it discusses blockchain systems and its integration to communication networks. The book includes hands-on, practical tutorials, self-assessment exercises, and review questions; tips and sample programs are also provided throughout. Complementary supporting material for instructors, including open source programming code for practical tutorials and exercises, is also available. The target audience includes graduate students, professionals, and researchers working in the areas of blockchain systems, distributed ledger technology, computer networks and communications, artificial intelligence, and cybersecurity.

Multiservice Loss Models for Broadband Telecommunication Networks - Keith W. Ross 1995-07-04

Loss networks ensure that sufficient resources are available when a call arrives. However, traditional loss network models for telephone networks cannot cope with today's heterogeneous demands, the central attribute of Asynchronous Transfer Mode (ATM) networks. This requires

multiservice loss models. This publication presents mathematical tools for the analysis, optimization and design of multiservice loss networks. These tools are relevant to modern broadband networks, including ATM networks. Addressed are networks with both fixed and alternative routing, and with discrete and continuous bandwidth requirements. Multiservice interconnection networks for switches and contiguous slot assignment for synchronous transfer mode are also presented.

Performance Modelling of Communication Networks and Computer Architectures - Peter G. Harrison 1993

With the growing need for effective communication networks in telecommunications and distributed computer systems, system designers need to be aware of the developments of sophisticated models for evaluating system performance. This book is ideally designed for performance engineers and system designers with the main focus of the text on queueing network models.

Industrial Networks and Intelligent Systems - Nguyen-Son Vo 2021-05-27

This book constitutes the refereed proceedings of the 7th EAI International Conference on Industrial Networks and Intelligent Systems, INISCOM 2021, held in Hanoi, Vietnam, in April 2021. The 39 full papers were selected from XX submissions and are organized thematically in tracks on telecommunications systems and networks; hardware, software and application designs; information processing and data analysis; industrial networks and intelligent systems; security and privacy.

Broadband Communications, Networks, and Systems - Honghao Gao 2021-02-05

This book constitutes the refereed post-conference proceedings of the 11th International Conference on Broadband Communications, Networks, and Systems, Broadnets 2020, which took place in Qingdao, China, in December 2020. The 13 full papers presented were carefully reviewed and selected from 32 submissions. The papers are thematically grouped as a session on wireless network and security and a session on communication quality.

Computer Networks and Systems - Thomas G. Robertazzi 2012-12-06

Intended for a first course in performance evaluation, this is a self-contained treatment covering all aspects of queuing theory. It starts by introducing readers to the terminology and usefulness of queueing theory and continues by considering Markovian queues in equilibrium, Littles law, reversibility, transient analysis, and computation, plus the M/G/1 queuing system. It then moves on to cover networks of queues, and concludes with techniques for numerical solutions, a discussion of the PANACEA technique, discrete time queueing systems and simulation, and stochastic Petri networks. The whole is backed by case studies of distributed queueing networks arising in industrial applications. This third edition includes a new chapter on self-similar traffic, many new problems, and solutions for many exercises.

Distributed Computer and Communication Networks - Vladimir M. Vishnevskiy 2018-09-03

This book constitutes the refereed proceedings of the 21th International Conference on Distributed and Computer and Communication Networks, DCCN 2018, held in Moscow, Russia, in September 2018. The 50 full papers and the 9 short papers were carefully reviewed and selected from 168 submissions. The papers cover the following topics: computer and communication networks architecture optimization; control in computer and communication networks; performance and QoS/QoE evaluation in wireless networks; analytical modeling and simulation of next-generation communications systems; queueing theory and reliability theory applications in computer networks; wireless 4G/5G networks, cm- and mm-wave radio technologies; RFID technology and its application in intellectual transportation networks; Internet of Things, wearables, and applications of distributed information systems; probabilistic and statistical models in information systems; mathematical modeling of high-tech systems; mathematical modeling and control problems; distributed and cloud computing systems, big data analytics.

Security for Telecommunications Networks - Patrick Traynor 2008-07-12

This book responds to the growing need to secure critical infrastructure by creating a starting place for new researchers in secure

telecommunications networks. It is the first book to discuss securing current and next generation telecommunications networks by the security community. The book not only discusses emerging threats and systems vulnerability, but also presents the open questions posed by network evolution and defense mechanisms. It is designed for professionals and researchers in telecommunications. The book is also recommended as a secondary text for graduate-level students in computer science and electrical engineering.

Communications and Networking - Jun Peng 2010-09-28

This book "Communications and Networking" focuses on the issues at the lowest two layers of communications and networking and provides recent research results on some of these issues. In particular, it first introduces recent research results on many important issues at the physical layer and data link layer of communications and networking and then briefly shows some results on some other important topics such as security and the application of wireless networks. In summary, this book covers a wide range of interesting topics of communications and networking. The introductions, data, and references in this book will help the readers know more abut this topic and help them explore this exciting and fast-evolving field.

Telecommunications and Data Communications Handbook - Ray Horak 2012-11-19

For an accessible and comprehensive survey of telecommunications and data communications technologies and services, consult the Telecommunications and Data Communications Handbook, which includes information on origins, evolution and meaningful contemporary applications. Find discussions of technologies set in context, with details on fiber optics, cellular radio, digital carrier systems, TCP/IP, and the Internet. Explore topics like Voice over Internet Protocol (VoIP); 802.16 & WiMAX; Passive Optical Network (PON); 802.11g & Multiple Input Multiple Output (MIMO) in this easily accessible guide without the burden of technical jargon.

At the Nexus of Cybersecurity and Public Policy - National Research Council 2014-06-16

We depend on information and information technology (IT) to make many of our day-to-day tasks easier and more convenient. Computers play key roles in transportation, health care, banking, and energy. Businesses use IT for payroll and accounting, inventory and sales, and research and development. Modern military forces use weapons that are increasingly coordinated through computer-based networks. Cybersecurity is vital to protecting all of these functions. Cyberspace is vulnerable to a broad spectrum of hackers, criminals, terrorists, and state actors. Working in cyberspace, these malevolent actors can steal money, intellectual property, or classified information; impersonate law-abiding parties for their own purposes; damage important data; or deny the availability of normally accessible services. Cybersecurity issues arise because of three factors taken together - the presence of malevolent actors in cyberspace, societal reliance on IT for many important functions, and the presence of vulnerabilities in IT systems. What steps can policy makers take to protect our government, businesses, and the public from those would take advantage of system vulnerabilities? At the Nexus of Cybersecurity and Public Policy offers a wealth of information on practical measures, technical and nontechnical challenges, and potential policy responses. According to this report, cybersecurity is a never-ending battle; threats will evolve as adversaries adopt new tools and techniques to compromise security. Cybersecurity is therefore an ongoing process that needs to evolve as new threats are identified. At the Nexus of Cybersecurity and Public Policy is a call for action to make cybersecurity a public safety priority. For a number of years, the cybersecurity issue has received increasing public attention; however, most policy focus has been on the short-term costs of improving systems. In its explanation of the fundamentals of cybersecurity and the discussion of potential policy responses, this book will be a resource for policy makers, cybersecurity and IT professionals, and anyone who wants to understand threats to cyberspace.

Distributed Computer and Communication Networks - Vladimir M. Vishnevskiy 2021-01-01

This book constitutes the refereed post-conference proceedings of the

23rd International Conference on Distributed and Computer and Communication Networks, DCCN 2020, held in Moscow, Russia, in September 2020. The 54 revised full papers and 1 revised short paper were carefully reviewed and selected from 167 submissions. The papers cover the following topics: computer and communication networks; analytical modeling of distributed systems; and distributed systems applications.

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Teletraffic - Haruo Akimaru 2012-12-06

Contemporary information networks are developing to meet social demands, and as a result new technologies and systems are being introduced. The fundamental problem in this process is the optimization of system dimensions and configuration for a particular level of performance. In the second edition of this innovative text, basic teletraffic theories and their applications are described in detail and practical formulae for advanced models, with references for further reading, are provided. Examples and exercises illustrate the theories' application to real systems. The revised and expanded text includes sections on ATM (asynchronous transfer mode) with the latest performance evaluations for mixed bursty traffic and bursty traffic with finite buffers, and LANs (local area networks) with an improved performance evaluation method for CSMD/CD (Ethernet). Explanations throughout the book have also been refined. The second edition of Teletraffic is a translation and expansion of the original Japanese text by two leading authors. It enables researchers, engineers and telecommunication and computer network managers, even those not experts in teletraffic, to put the latest theories and engineering into practice.

Computing in Communication Networks - Frank Fitzek 2020-05-20

Computing in Communication Networks: From Theory to Practice provides comprehensive details and practical implementation tactics on the novel concepts and enabling technologies at the core of the paradigm shift from store and forward (dumb) to compute and forward (intelligent) in future communication networks and systems. The book explains how to create virtualized large scale testbeds using well-established open source software, such as Mininet and Docker. It shows how and where to place disruptive techniques, such as machine learning, compressed sensing, or network coding in a newly built testbed. In addition, it presents a comprehensive overview of current standardization activities. Specific chapters explore upcoming communication networks that support verticals in transportation, industry, construction, agriculture, health care and energy grids, underlying concepts, such as network slicing and mobile edge cloud, enabling technologies, such as SDN/NFV/ICN, disruptive innovations, such as network coding, compressed sensing and machine learning, how to build a virtualized network infrastructure testbed on one’s own computer, and more. Provides a uniquely comprehensive overview on the individual building blocks that comprise the concept of computing in future networks Gives practical hands-on activities to bridge theory and implementation Includes software and examples that are not only employed throughout the book, but also hosted on a dedicated website