Gallager Information Theory And Reliable Communication

Information Theory and Reliable Communication Reliable Communications within Cyber-Physical Systems Using the Internet (RC4CPS) **Intelligent Cruise Control and Reliable Communication of Mobile Stations Security, Privacy and Reliability in Computer Communications and Networks Space Time Coding For Wireless Communication** Towards Reliable Communication in Low Power Wireless Body Area Networks **Contemporary Issues in Wireless Communications** Information Theory and Reliable Communication Reliable Communications for Short-Range Wireless Systems *Ultra-Wideband Pulse-based Radio Reliable Communications for Short-Range Wireless Systems Reliability and Statistics in Transportation and Communication* **Wireless Sensor Systems for Extreme Environments** Fundamentals of Wireless Communication *2022 18th International Conference on the Design of Reliable Communication Networks (DRCN)* Machine Learning for Reliable Communication Under Coarse Quantization Remote Powering and Data Communication for Implanted Biomedical Systems **Crystal Clear** Stabilization, Safety, and Security of Distributed Systems Guide to Reliable Internet Services and Applications **Reliable Communication in Distributed Sensor Networks** *Evolutionary Ecology* **Wireless Automation as an Enabler for the Next Industrial Revolution Smart Technologies for Emergency Response and Disaster Management** TCP/IP Network Administration *Fundamentals of Communications and Networking* Practical Guide to MIMO Radio Channel *Modulation and Coding Techniques in Wireless Communications* **Computer Safety, Reliability, and Security** *Wireless Connectivity* **Reliable Distributed Systems Regional Failure Events in Communication Networks** *Machine Learning and Intelligent Communications* Computers, Communication, and Mental Models Channel Coding Theory **The Evolution of Animal Communication: Reliability and Deception in Signaling Systems** *Advanced Trends in Wireless Communications* **"Reliable Networks for the Information Age"** *Green Communications* International Seminar on Coal Science & Technology

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Practical Guide to MIMO Radio Channel Aug 05 2020 This book provides an excellent reference to the MIMO radio channel In this book, the authors introduce the concept of the Multiple Input Multiple Output (MIMO) radio channel, which is an intelligent communication method based upon using multiple antennas. Moreover, the authors provide a summary of the current channel modeling approaches used by industry, academia, and standardisation bodies. Furthermore, the book is structured to allow the reader to easily progress through the chapters in order to gain an understanding of the fundamental and mathematical principles behind MIMO. It also provides examples (i.e. Kroenecker model, Weicheselberger model, geometric and deterministic models, and ray tracing), system scenarios, trade-offs, and visual explanations. The authors explain and demonstrate the use and application of these models at system level. Key Features: Provides a summary of the current channel modeling approaches used by industry, academia and standardisation bodies Contains experimental and measurement based results Provides a comprehensive down to earth approach with concise and visual explanations of MIMO Radio Channel Covers a variety of system scenarios and explains the trade-offs involved in each Accompanying website containing MATLAB code and solutions to related problems http://www.tim.brown76.name/MIMObook) Practical Guide to the MIMO Radio Channel with MATLAB examples is an invaluable reference for R&D engineers and professionals in industry requiring familiarisation with the concept, and engineers entering the field or working in related fields seeking an introduction to the topic. Postgraduate and graduate students will also find this book of interest.

Contemporary Issues in Wireless Communications Apr 24 2022 Wireless communications have a strong impact on improving the quality of life in this century. Smart phones industry is now considered one of the most attractive fields, so advanced research is conducted in order to improve the quality of service in wireless communication environments. Many design challenges such as power consumption, quality of service, low cost, high data rate and small size are being treated every day. This book aims to provide highlights of the current research in the field of wireless communications. The subjects discussed are very valuable to communication researchers as well as researchers in the wireless related areas. The book chapters cover a wide range of wireless communication topics that are considered key technologies for future applications.

Stabilization, Safety, and Security of Distributed Systems Apr 12 2021 This book constitutes the refereed proceedings of the 22nd International Symposium on Stabilization, Safety, and Security of Distributed Systems, SSS 2020, held in Austin, TX, USA, in November 2020. The 16 full papers, 7 short and 2 invited papers presented were carefully reviewed and selected from 44 submissions. The papers deal with the design and development of distributed systems with a focus on systems that are able to provide guarantees on their structure, performance, and/or security in the face of an adverse operational environment.

Security, Privacy and Reliability in Computer Communications and Networks Jul 28 2022 Future communication networks aim to build an intelligent and efficient living environment by connecting a variety of heterogeneous networks to fulfill complicated tasks. These communication networks bring significant challenges in building secure and reliable communication networks to address the numerous threat and privacy concerns. New research technologies are essential to preserve privacy, prevent attacks, and achieve the requisite reliability. Security, Privacy and Reliability in Computer Communications and Networks studies and presents recent advances reflecting the state-of-the-art research achievements in novel cryptographic algorithm design, intrusion detection, privacy preserving techniques and reliable routing protocols. Technical topics discussed in the book include: Vulnerabilities and Intrusion DetectionCryptographic Algorithms and EvaluationPrivacyReliable Routing ProtocolsThis book is ideal for personnel in computer communication and networking industries as well as academic staff and collegial, master, Ph.D. students in computer science, computer engineering, cyber security, information insurance and telecommunication systems.

Computer Safety, Reliability, and Security Jun 02 2020 This book constitutes the refereed proceedings of four workshops co-located with SAFECOMP 2016, the 35th International Conference on Computer Safety, Reliability, and Security, held in Trondheim, Norway, in September 2016. The 30 revised full papers presented together with 4 short and 5 invited papers were carefully reviewed and selected from numerous submissions. This year's workshop are: ASSURE 2016 - Assurance Cases for Software-intensive Systems; DECSoS 2016 - EWICS/ERCIM/ARTEMIS Dependable Cyber-physical Systems and Systems-of-Systems Workshop; SASSUR 2016 - Next Generation of System Assurance Approaches for Safety-Critical Systems; and TIPS 2016 – Timing Performance in Safety Engineering.

Reliability and Statistics in Transportation and Communication Nov 19 2021 This book reports on cutting-edge theories and methods for analyzing complex systems, such as transportation and communication networks and discusses multi-disciplinary approaches to dependability problems encountered when dealing with complex systems in practice. The book presents the most noteworthy methods and results discussed at the International Conference on Reliability and Statistics in Transportation and Communication (RelStat), which took place in Riga, Latvia on October 17 – 20, 2018. It spans a broad spectrum of topics, from mathematical models and design methodologies, to software engineering, data security and financial issues, as well as practical problems in technical systems, such as transportation and telecommunications, and in engineering education.

Reliable Distributed Systems Mar 31 2020 Explains fault tolerance in clear terms, with concrete examples drawn from real-world settings Highly practical focus aimed at building "mission-critical" networked applications that remain secure

Reliable Communications within Cyber-Physical Systems Using the Internet (RC4CPS) Sep 29 2022 This thesis describes the research done regarding communication reliability when using the Internet to realize the communications for cyber-physical systems (CPSs). In a nutshell, the book first presents the obtained results from real-world measurements describing the reliability of today's Internet in terms of the availability and diversity of a wide set of end-to-end paths in the Internet. After that, the book describes a new approach along with its realization as a transport protocol to improve reliability and enable the utilization of Internet within future CPSs. In the first chapters of the book, the need for reliable communication to realize CPSs and the challenges of using the Internet as a communication network for such systems are described. The existing literature is analyzed after that and the identified research gap is highlighted. The proposed approach along with conducted measurements to evaluate it are described in the remaining chapters of the book.

Wireless Sensor Systems for Extreme Environments Oct 19 2021 Provides unique coverage of wireless sensor system applications in space, underwater, underground, and extreme industrial environments in one volume This book covers the challenging aspects of wireless sensor systems and the problems and conditions encountered when applying them in outer space, under the water, below the ground, and in extreme industrial environments. It explores the unique aspects of designs and solutions that address those problems and challenges, and illuminates the connections, similarities, and differences between the challenges and solutions in those various environments. The creation of Wireless Sensor Systems for Extreme Environments is a response to the spread of wireless sensor technology into fields of health, safety, manufacturing, space, environmental, smart cities, advanced robotics, surveillance, and agriculture. It is the first of its kind to present, in a single reference, the unique aspects of wireless sensor system design, development, and deployment in such extreme environments—and to explore the similarities and possible synergies between them. The application of wireless sensor systems in these varied environments has been lagging dramatically behind their application in more conventional environments, making this an especially relevant book for investigators and practitioners in all of these areas. Wireless Sensor Systems for Extreme Environments is presented in five parts that cover: Wireless Sensor Systems for Extreme Environments—Generic Solutions Space WSS Solutions and Applications Underwater and Submerged WSS Solutions Underground and Confined Environments WSS Solutions Industrial and Other WSS Solutions This book is a welcome guide for researchers, post-graduate students, engineers and scientists who design and build operational and environmental control systems, emergency response systems, and situational awareness systems for unconventional environments.

Advanced Trends in Wireless Communications Sep 25 2019 Physical limitations on wireless communication channels impose huge challenges to reliable communication. Bandwidth limitations, propagation loss, noise and interference make the wireless channel a narrow pipe that does not readily accommodate rapid flow of data. Thus, researches aim to design systems that are suitable to operate in such channels, in order to have high performance quality of service. Also, the mobility of the communication systems requires further investigations to reduce the complexity and the power consumption of the receiver. This book aims to provide highlights of the current research in the field of wireless communications. The subjects discussed are very valuable to communication researchers rather than researchers in the wireless related areas. The book chapters cover a wide range of wireless communication topics.

Wireless Connectivity May 02 2020 Wireless Connectivity: An Intuitive and Fundamental Guide Wireless connectivity has become an indispensable part, a commodity associated with the way we work and play. The latest developments, the 5G, next-generation Wi-Fi and Internet of Things connectivity, are the key enablers for widespread digitalization of practically all industries and public sector segments. This immense development within the last three decades have been accompanied by a large number of ideas, articles, patents, and even myths. This book introduces the most important ideas and concepts in wireless connectivity and discusses how these are interconnected, whilst the mathematical content is kept minimal. The book does not follow the established, linear structure in which one starts from the propagation and channels and then climbs up the protocol layers. The structure is, rather, nonlinear, in an attempt to follow the intuition used when one creates a new technology to solve a certain problem. The target audience is: Students in electronics, communication, and networking Wireless engineers that are specialized in one area, but want to know how the whole system works, without going through all the details and math Computer scientists that want to understand the fundamentals of wireless connectivity, the requirements and, most importantly, the limitations Engineers in energy systems, logistics, transport and other vertical sectors that are increasingly reliant on wireless technology

Machine Learning and Intelligent Communications Jan 28 2020 This book constitutes the refereed post-conference proceedings of the International Conference on Machine Learning and Intelligent Communications, MLICOM 2016, held in Shanghai, China in August 2016. The 41 revised full papers were carefully reviewed and selected from 47 submissions. The papers are organized thematically: data mining in heterogeneous networks, decentralized learning for wireless communication systems, intelligent cooperative/distributed coding, intelligent cooperative networks, Intelligent massive MIMO, time coded multi-user MIMO System based on three dimensional complementary codes, intelligent positioning and navigation systems, intelligent spectrum allocation schemes, machine learning algorithm & cognitive radio networks, machine learning for multimedia.

Ultra-Wideband Pulse-based Radio Jan 22 2022 Today's booming expanse of personal wireless radio communications is a rich source of new challenges for the designer of the underlying enabling te- nologies. Personal communication networks are designed from a fundam- tally different perspective than broadcast service networks, such as radio and television. While the focus of the latter is on reliability and user comfort, the emphasis of personal communication devices is on throughput and mobility. However, because the wireless channel is a shared transmission medium with only very limited resources, a trade-off has to be made between mobility and the number of simultaneous users in a con?ned geographical area. Accord- 1 ing to Shannon's theorem on channel capacity, the overall data throughput of a communication channel bene?ts from either a linear increase of the tra- mission bandwidth, or an (equivalent) exponential increase in signal quality. Consequently, it is more bene?cial to think in terms of channel bandwidth than it is to pursue a high transmission power. All the above elements are embodied in the concept of spatial ef?ciency. By describing the throughput of a system 2 in terms of bits/s/Hz/m , spatial ef?ciency takes into account that the use of a low transmission power reduces the operational range of a radio transmission, and as such enables a higher reuse rate of the same frequency spectrum.

Reliable Communications for Short-Range Wireless Systems Dec 21 2021 Ensuring reliable communication is an important concern in short-range wireless communication systems with stringent quality of service requirements. Key characteristics of these systems, including data rate, communication range, channel profiles, network topologies and power efficiency, are very different from those in long-range systems. This comprehensive book classifies short-range wireless technologies as high and low data rate systems. It addresses major factors affecting reliability at different layers of the protocol stack, detailing the best ways to enhance the capacity and performance of short-range wireless systems. Particular emphasis is placed on reliable channel estimation, state-of-the-art interference mitigation techniques and cooperative communications for improved reliability. The book also provides detailed coverage of related international standards including UWB, ZigBee, and 60 GHz communications. With a balanced treatment of theoretical and practical aspects of short-range wireless communications and with a focus on reliability, this is an ideal resource for practitioners and researchers in wireless communications.

Evolutionary Ecology Jan 10 2021

Crystal Clear May 14 2021 Quartz crystal-a technology that changed the tide of World War II Some of the defining leaps in technology in the twentieth century occurred during the Second World War, from radar to nuclear energy. Often left out of historical discussions are quartz crystals, which proved to be just as pivotal to the Allied victory-and to post-war development-as other technologies. Quartz crystals provided the U.S. military, for the first time, with reliable communication on the front lines, and then went on to become the core of some of the most basic devices of the post-war era, from watches, clocks, and color televisions, to cell phones and computers. In Crystal Clear, Richard Thompson relates the story of the quartz crystal in World War II, from its early days as a curiosity for amateur radio enthusiasts, to its use by the United States Armed Forces. It follows the intrepid group of scientists and engineers from the Office of the Chief Signal Officer of the U.S. Army as they raced to create an effective quartz crystal unit. They had to find a reliable supply of radio-quality quartz; devise methods to reach, mine, and transport the quartz; find a way to manufacture quartz crystal oscillators rapidly; and then solve the puzzling "aging problem" that plagued the early units. Ultimately, the development of quartz oscillators became the second largest scientific undertaking in World War II after the Manhattan Project. Bringing to light a little-known aspect of World War II, Crystal Clear offers a glimpse inside one of the most significant efforts in the annals of engineering.

International Seminar on Coal Science & Technology Jun 22 2019

Machine Learning for Reliable Communication Under Coarse Quantization Jul 16 2021 This thesis addresses the use of machine learning methods for reliable transmission despite coarsely quantized soft information at the receiver. In particular, the design of powerful error correction algorithms under coarse quantization is presented. This requires an interdisciplinary approach based on the interplay of information theory, machine learning, and communications engineering. A particular focus is put on the information bottleneck method. Interestingly, the designed coarsely quantized signal processing units achieve almost the same performance in terms of reliability as conventional non-quantized methods.

TCP/IP Network Administration Oct 07 2020 This complete guide to setting up and running a TCP/IP network is essential for network administrators, and invaluable for users of home systems that access the Internet. The book starts with the fundamentals -- what protocols do and how they work, how addresses and routing are used to move data through the network, how to set up your network connection -- and then covers, in detail, everything you need to know to exchange information via the Internet.Included are discussions on advanced routing protocols (RIPv2, OSPF, and BGP) and the gated software package that implements them, a tutorial on configuring important network services -- including DNS, Apache, sendmail, Samba, PPP, and DHCP -- as well as expanded chapters on troubleshooting and security. TCP/IP Network Administration is also a command and syntax reference for important packages such as gated, pppd, named, dhcpd, and sendmail.With coverage that includes Linux, Solaris, BSD, and System V TCP/IP implementations, the third edition contains: Overview of TCP/IP Delivering the data Network services Getting startedM Basic configuration Configuring the interface Configuring routing Configuring DNS Configuring network servers Configuring sendmail Configuring Apache Network security Troubleshooting Appendices include dip, ppd, and chat reference, a gated reference, a dhcpd reference, and a sendmail reference This new edition includes ways of configuring Samba to provide file and print sharing on networks that integrate Unix and Windows, and a new chapter is dedicated to the important task of configuring the Apache web server. Coverage of network security now includes details on OpenSSH, stunnel, gpg, iptables, and the access control mechanism in xinetd. Plus, the book offers updated information about DNS, including details on BIND 8 and BIND 9, the role of classless IP addressing and network prefixes, and the changing role of registrars.Without a doubt, TCP/IP Network Administration, 3rd Edition is a must-have for all network administrators and anyone who deals with a network that transmits data over the Internet.

Reliable Communication in Distributed Sensor Networks Feb 08 2021 Sensor networks have gained considerable attention in the past due to their self-organized operation. In this PhD thesis, we target those heterogeneous sensor networks in which backbone (or ground) nodes establish a core network to deliver data to a sink, whereas mobile nodes transmit both localization and encounter information to this backbone network. In the case of errors, the transmitted information is lost and thus needs to be retransmitted. Considering extremely energy-constrained nodes (having weight of less than 2 g), such retransmissions are quite expensive. Hence, we focus on improving the energy-efficiency and communication reliability in such ultra-low power sensor networks. We begin this thesis by investigating the potential of using a square sub-carrier modulation alongside Binary Phase-Shift Keying (BPSK) to transmit localization and data information simultaneously at a single carrier. To assess the performance in both simulations and practical experiments, we develop the whole system in a Software Defined Radio (SDR)-based platform. Our results show that the sub-carrier modulation performs only marginally worse than the BPSK, however, using both of them together saves energy at the mobile node. We then turn our attention towards improved communication reliability. For that, we exploit the distributed nature of the ground network and use it as a distributed antenna array to apply diversity combining. In order to employ receive diversity efficiently, we propose the concept of selective sample forwarding. We build upon our SDR-based implementation and experimentally show that the proposed approach improves the Packet Delivery Rate (PDR) by more than 10 % in comparison to not using diversity combining at all. Finally, we address the cost of forwarding the received information through the ground network to a central sink, where diversity combining is ... ; eng

2022 18th International Conference on the Design of Reliable Communication Networks (DRCN) Aug 17 2021

Wireless Automation as an Enabler for the Next Industrial Revolution Dec 09 2020 Presents the components, challenges, and solutions of wireless automation as enablers for industry 4.0 This timely book introduces the state of the art in industrial automation techniques, concentrating on wireless methods for a variety of applications, ranging from simple smart homes to heavy-duty complex industrial setting with robotics accessibility. It covers a wide range of topics including the industrial revolution enablers, applications, challenges, their possible solutions, and future directions. Wireless Automation as an Enabler for the Next Industrial Revolution opens with an introduction to wireless sensor networks and their applications in various domains,

emphasizing industrial wireless networks and their future uses. It then takes a look at life-span extension for sensor networks in the industry, followed by a chapter on multiple access and resource sharing for low latency critical industrial networks. Industrial automation is covered next, as is the subject of ultra reliable low latency communications. Other topics include: self healing in wireless networks; cost efficiency optimization for industrial automation; a non event-based approach for non-intrusive load monitoring; wireless networked control; and caching at the edge in low latency wireless networks. The book finishes with a chapter on the application of terahertz sensing at nano-scale for precision agriculture. Introduces the future evolving dimension in industrial automation and discusses the enablers of the industrial revolution Places particular emphasis on wireless communication techniques which make industrial automation reliable, efficient, and cost-effective Covers many of the associated topics and concepts like robotics, AI, internet-of-things, telesurgery, and remote manufacturing Of great interest to researchers from academia and industry who are looking at the industrial development from various perspectives Wireless Automation as an Enabler for the Next Industrial Revolution is an excellent book for telecom engineers, IoT experts, and industry professionals. It would also greatly benefit researchers, professors, and doctorate and postgraduate students involved in automation and industry 4.0.

"Reliable Networks for the Information Age" Aug 24 2019

Information Theory and Reliable Communication Mar 24 2022

Regional Failure Events in Communication Networks Feb 29 2020 This book presents a comprehensive study covering the design and application of models and algorithms for assessing the joint device failures of telecommunication backbone networks caused by large-scale regional disasters. At first, failure models are developed to make use of the best data available; in turn, a set of fast algorithms for determining the resulting failure lists are described; further, a theoretical analysis of the complexity of the algorithms and the properties of the failure lists is presented, and relevant practical case studies are investigated. Merging concepts and tools from complexity theory, combinatorial and computational geometry, and probability theory, a comprehensive set of models is developed for translating the disaster hazard in informative yet concise data structures. The information available on the network topology and the disaster hazard is then used to calculate the possible (probabilistic) network failures. The resulting sets of resources that are expected to break down simultaneously are modeled as a collection of Shared Risk Link Groups (SRLGs), or Probabilistic SRLGs. Overall, this book presents improved theoretical methods that can help predicting disaster-caused network malfunctions, identifying vulnerable regions, and assessing precisely the availability of internet services, among other applications.

Guide to Reliable Internet Services and Applications Mar 12 2021 An oft-repeated adage among telecommunication providers goes, “There are ve things that matter: reliability, reliability, reliability, time to market, and cost. If you can’t do all ve, at least do the rst three. ” Yet, designing and operating reliable networks and services is a Herculean task. Building truly reliable components is unacceptably expensive, forcing us to c- struct reliable systems out of unreliable components. The resulting systems are inherently complex, consisting of many different kinds of components running a variety of different protocols that interact in subtle ways. Inter-networkssuch as the Internet span multiple regions of administrative control, from campus and cor- rate networks to Internet Service Providers, making good end-to-end performance a shared responsibility borne by sometimes uncooperative parties. Moreover, these networks consist not only of routers, but also lower-layer devices such as optical switches and higher-layer components such as rewalls and proxies. And, these components are highly con gurable, leaving ample room for operator error and buggy software. As if that were not dif cult enough, end users understandably care about the performance of their higher-level applications, which has a complicated relationship with the behavior of the underlying network. Despite these challenges, researchers and practitioners alike have made trem- dous strides in improving the reliability of modern networks and services.

The Evolution of Animal Communication: Reliability and Deception in Signaling Systems Oct 26 2019 Gull chicks beg for food from their parents. Peacocks spread their tails to attract potential mates. Meerkats alert family members of the approach of predators. But are these--and other animals--sometimes dishonest? That's what William Searcy and Stephen Nowicki ask in The Evolution of Animal Communication. They take on the fascinating yet perplexing question of the dependability of animal signaling systems. The book probes such phenomena as the begging of nesting birds, alarm calls in squirrels and primates, carotenoid coloration in fish and birds, the calls of frogs and toads, and weapon displays in crustaceans. Do these signals convey accurate information about the signaler, its future behavior, or its environment? Or do they mislead receivers in a way that benefits the signaler? For example, is the begging chick really hungry as its cries indicate or is it lobbying to get more food than its brothers and sisters? Searcy and Nowicki take on these and other questions by developing clear definitions of key issues, by reviewing the most relevant empirical data and game theory models available, and by asking how well theory matches data. They find that animal communication is largely reliable--but that this basic reliability also allows the clever deceiver to flourish. Well researched and clearly written, their book provides new insight into animal communication, behavior, and evolution.

Space Time Coding For Wireless Communication Jun 26 2022

Information Theory and Reliable Communication Oct 31 2022 Explore information theory as it relates to the fundamental aspects of communication systems Information theory is at work all around us, every day, and in all our communications. Information Theory and Reliable Communication delves into the mathematical models of sources and channels in communication systems and then explores the framework for constructing highly-detailed models of real-world sources and channels. The text then extends further into information theory by breaking encoders and decoders into two parts and studying the mechanisms that make more effective communication systems. Taken as a whole, the book provides exhaustive coverage of the practical use of information theory in developing communications systems.

Green Communications Jul 24 2019 Nowadays energy crisis and global warming problems are hanging over everyone's head, urging much research work on energy saving. In the ICT industry, which is becoming a major consumer of global energy triggered by the telecommunication network operators experiencing energy cost as a significant factor in profit calculations, researchers have start

Fundamentals of Communications and Networking Sep 05 2020 Today's networks are required to support an increasing array of real-time communication methods. Video chat, real-time messaging, and always-connected resources put demands on networks that were previously unimagined. The Second Edition of Fundamentals of Communications and Networking helps readers better understand today's networks and the way they support the evolving requirements of different types of organizations. It discusses the critical issues of designing a network that will meet an organization's performance needs and discusses how businesses use networks to solve business problems. Using numerous examples and exercises, this text incorporates hands-on activities to prepare readers to fully understand and design modern networks and their requirements. Key Features of the Second Edition: - Introduces network basics by describing how networks work - Discusses how networks support the increasing demands of advanced communications - Illustrates how to map the right technology to an organization's needs and business goals - Outlines how businesses use networks to solve business problems, both technically and operationally.

Computers, Communication, and Mental Models Dec 29 2019 Computers, Commmunication, and Mental Models is a far-ranging, focused treatment of the cognitive and behavioural issues in computer-mediated communication, knowledge representation and computer-supported co- operative work. It is also an argued development of the theoretical bases for treating computerized tools as intermediaries in the communication of mental maps between tool builders and users. Empirical trails are reported in detail sufficient for representation, in computer-based instruction, fractal dimensions of cognitive mapping and group decision support. The book is a collection of multidisciplinary papers which each shed light on the complex interactions between users and systems architects, via a common medium: computerized tools.

Channel Coding Theory Nov 27 2019

Modulation and Coding Techniques in Wireless Communications Jul 04 2020 The high level of technical detail included in standards specifications can make it difficult to find the correlation between the standard specifications and the theoretical results. This book aims to cover both of these elements to give accessible information and support to readers. It explains the current and future trends on communication theory and shows how these developments are implemented in contemporary wireless communication standards. Examining modulation, coding and multiple access techniques, the book is divided into two major sections to cover these functions. The two-stage approach first treats the basics of modulation and coding theory before highlighting how these concepts are defined and implemented in modern wireless communication systems. Part 1 is devoted to the presentation of main L1 procedures and methods including modulation, coding, channel equalization and multiple access techniques. In Part 2, the uses of these procedures and methods in the wide range of wireless communication standards including WLAN, WiMax, WCDMA, HSPA, LTE and cdma2000 are considered. An essential study of the implementation of modulation and coding techniques in modern standards of wireless communication Bridges the gap between the modulation coding theory and the wireless communications standards material Divided into two parts to systematically tackle the topic - the first part develops techniques which are then applied and tailored to real world systems in the second part Covers special aspects of coding theory and how these can be effectively applied to improve the performance of wireless communications systems

Towards Reliable Communication in Low Power Wireless Body Area Networks May 26 2022

Fundamentals of Wireless Communication Sep 17 2021 This textbook takes a unified view of the fundamentals of wireless communication and explains cutting-edge concepts in a simple and intuitive way. An abundant supply of exercises make it ideal for graduate courses in electrical and computer engineering and it will also be of great interest to practising engineers.

Reliable Communications for Short-Range Wireless Systems Feb 20 2022 Ensuring reliable communication is an important concern in short-range wireless communication systems with stringent quality of service requirements. Key characteristics of these systems, including data rate, communication range, channel profiles, network topologies and power efficiency, are very different from those in long-range systems. This comprehensive book classifies short-range wireless technologies as high and low data rate systems. It addresses major factors affecting reliability at different layers of the protocol stack, detailing the best ways to enhance the capacity and performance of short-range wireless systems. Particular emphasis is placed on reliable channel estimation, state-of-the-art interference mitigation techniques and cooperative communications for improved reliability. The book also provides detailed coverage of related international standards including UWB, ZigBee, and 60 GHz communications. With a balanced treatment of theoretical and practical aspects of short-range wireless communications and with a focus on reliability, this is an ideal resource for practitioners and researchers in wireless communications.

Remote Powering and Data Communication for Implanted Biomedical Systems Jun 14 2021 This book describes new circuits and systems for implantable biomedical applications and explains the design of a batteryless, remotely-powered implantable micro-system, designed for long-term patient monitoring. Following new trends in implantable biomedical applications, the authors demonstrate a system which is capable of efficient, remote powering and reliable data communication. Novel architecture and design methodologies are used to transfer power with a low-power, optimized inductive link and data is transmitted by a reliable communication link. Additionally, an electro-mechanical solution is presented for tracking and monitoring the implantable system, while the patient is mobile.

Intelligent Cruise Control and Reliable Communication of Mobile Stations Aug 29 2022

Smart Technologies for Emergency Response and Disaster Management Nov 07 2020 Disaster management is an imperative area of concern for society on a global scale. Understanding how to best utilize information and communication technology to help manage emergency and disaster situations will lead to more effective advances and innovations in this important field. Smart Technologies for Emergency Response and Disaster Management is a pivotal reference source that overviews current difficulties, challenges, and solutions that technology must adapt to in crisis situations. Highlighting pertinent topics such as network recovery, evacuation design, sensing technologies, and video technology, this publication is ideal for engineers, professionals, academicians, and researchers interested in discovering more about emerging technologies in crisis management.