

Wireless Communication Rappaport Solutions Manual

This book constitutes the refereed proceedings of the 22nd International Conference on Distributed and Computer and Communication Networks, DCCN 2019, held in Moscow, Russia, in September 2019. The 44 full papers and 2 short papers were carefully reviewed and selected from 174 submissions. The papers cover the following topics: Computer and Communication Networks, Analytical Modeling of Distributed Systems, and Distributed Systems Applications.

Publisher Description

Wireless technology is a truly revolutionary paradigm shift, enabling multimedia communications between people and devices from any location. It also underpins exciting applications such as sensor networks, smart homes, telemedicine, and automated highways. This book provides a comprehensive introduction to the underlying theory, design techniques and analytical tools of wireless communications, focusing primarily on the core principles of wireless system design. The book begins with an overview of wireless systems and standards. The characteristics of the wireless channel are then described, including their fundamental capacity limits. Various modulation, coding, and signal processing schemes are then discussed in detail, including state-of-the-art adaptive modulation, multicarrier, spread spectrum, and multiple antenna techniques. The concluding chapters deal with multiuser communications, cellular system design, and ad-hoc network design. Design insights and tradeoffs are emphasized throughout the book. It contains many worked examples, over 200 figures, almost 300 homework exercises, over 700 references, and is an ideal textbook for students.

In response to a request from the Defense Advanced Research Projects Agency, the committee studied a range of issues to help identify what strategies the Department of Defense might follow to meet its need for flexible, rapidly deployable communications systems. Taking into account the military's particular requirements for security, interoperability, and other capabilities as well as the extent to which commercial technology development can be expected to support these and related needs, the book recommends systems and component research as well as organizational changes to help the DOD field state-of-the-art, cost-effective untethered communications systems. In addition to advising DARPA on where its investment in information technology for mobile wireless communications systems can have the greatest impact, the book explores the evolution of wireless technology, the often fruitful synergy between commercial

and military research and development efforts, and the technical challenges still to be overcome in making the dream of "anytime, anywhere" communications a reality.

Fundamentals of Wireless Communication

Introduction to Wireless Systems

An Introduction

Theory and Design of Digital Communication Systems

Providing the underlying principles of digital communication and the design techniques of real-world systems, this textbook prepares senior undergraduate and graduate students for the engineering practices required in industry. Covering the core concepts, including modulation, demodulation, equalization, and channel coding, it provides step-by-step mathematical derivations to aid understanding of background material. In addition to describing the basic theory, the principles of system and subsystem design are introduced, enabling students to visualize the intricate connections between subsystems and understand how each aspect of the design supports the overall goal of achieving reliable communications. Throughout the book, theories are linked to practical applications with over 250 real-world examples, whilst 370 varied homework problems in three levels of difficulty enhance and extend the text material. With this textbook, students can understand how digital communication systems operate in the real world, learn how to design subsystems, and evaluate end-to-end performance with ease and confidence.

Presents main concepts of mobile communication systems, both analog and digital Introduces concepts of probability, random variables and stochastic processes and their applications to the analysis of linear systems Includes five appendices covering Fourier series and transforms, GSM cellular systems and more

Orthogonal frequency-division multiplexing (OFDM) access schemes are becoming more prevalent among cellular and wireless broadband systems, accelerating the need for smaller, more energy efficient receiver solutions. Up to now the majority of OFDM texts have dealt with signal processing aspects. To address the current gap in OFDM integrated circuit (IC) instruction, Chiueh and Tsai have produced this timely text on baseband design. OFDM Baseband Receiver Design for Wireless Communications covers the gamut of OFDM technology, from theories and algorithms to architectures and circuits. Chiueh and Tsai give a concise yet comprehensive look at digital communications fundamentals before explaining modulation and signal processing algorithms in OFDM receivers. Moreover, the authors give detailed treatment of hardware issues -- from design methodology to physical IC implementation. Closes the gap between OFDM theory and implementation Enables the reader to transfer communication receiver concepts into hardware design wireless receivers with acceptable implementation loss achieve low-power designs Contains numerous figures to illustrate techniques Features concrete design examples of MC-CDMA systems and cognitive radio applications Presents

theoretical discussions that focus on concepts rather than mathematical derivation Provides a much-needed single source of material from numerous papers Based on course materials for a class in digital communication IC design, this book is ideal for advanced undergraduate or post-graduate students from either VLSI design or signal processing backgrounds. New and experienced engineers in industry working on algorithms or hardware for wireless communications devices will also find this book to be a key reference.

The Accessible Guide to Modern Wireless Communication for Undergraduates, Graduates, and Practicing Electrical Engineers Wireless communication is a critical discipline of electrical engineering and computer science, yet the concepts have remained elusive for students who are not specialists in the area. This text makes digital communication and receiver algorithms for wireless communication broadly accessible to undergraduates, graduates, and practicing electrical engineers. Notably, the book builds on a signal processing foundation and does not require prior courses on analog or digital communication. Introduction to Wireless Digital Communication establishes the principles of communication, from a digital signal processing perspective, including key mathematical background, transmitter and receiver signal processing algorithms, channel models, and generalizations to multiple antennas. Robert Heath's "less is more" approach focuses on typical solutions to common problems in wireless engineering. Heath presents digital communication fundamentals from a signal processing perspective, focusing on the complex pulse amplitude modulation approach used in most commercial wireless systems. He describes specific receiver algorithms for implementing wireless communication links, including synchronization, carrier frequency offset estimation, channel estimation, and equalization. While most concepts are presented for systems with single transmit and receive antennas, Heath concludes by extending those concepts to contemporary MIMO systems. To promote learning, each chapter includes previews, bullet-point summaries, examples, and numerous homework problems to help readers test their knowledge. Basics of wireless communication: applications, history, and the central role of signal processing Digital communication essentials: components, channels, distortion, coding/decoding, encryption, and modulation/demodulation Signal processing: linear time invariant systems, probability/random processes, Fourier transforms, derivation of complex baseband signal representation and equivalent channels, and multi-rate signal processing Least-squared estimation techniques that build on the linear algebra typically taught to electrical engineering undergraduates Complex pulse amplitude modulation: symbol mapping, constellations, signal bandwidth, and noise Synchronization, including symbol, frame, and carrier frequency offset Frequency selective channel estimation and equalization MIMO techniques using multiple transmit and/or receive antennas, including SIMO, MISO, and MIMO-OFDM Register your product at informit.com/register for convenient access to downloads, updates, and corrections as they become available.

Wireless Communications

Applied Optimization Methods for Wireless Networks
Channel Coding Techniques for Wireless Communications
Introduction to Wireless and Mobile Systems
High-performance Communication Networks

In this book, the state-of-the-art and future vision of wireless communications is presented in the form of a number of new services. Wireless personal communications is clearly a different service than today's cellular radio or cordless telephone, but there is an evolutionary connection between the three services. This book addresses questions about what features of personal communication services (PCS) will be met by existing or enhanced digital cellular radio technology. The regulatory and standards aspects of wireless communications are currently in a crucial stage of their formulation. A section of the book is devoted to the opinions of representatives from regulatory agencies and standards organizations on the future of this critical area. One of the most intriguing questions about the future of wireless communications has to do with the choice of multiple access technique. The trade offs between time division multiple access (TDMA) and code division multiple access (CDMA) have been the topic of many a heated discussion amongst members of the wireless community. This book presents a thorough discussion of a number of the topics which are instrumental in making a fair comparison of TDMA and CDMA; these topics include: analytical performance evaluation techniques, capacity studies, equalization requirements, and shared spectrum comparisons. Many of the technologies associated with wireless personal communications are reaching the design stages. This book presents a number of alternatives for designs of both base stations and user terminals. Some of the key questions of equalization, control channel requirements, multi-path diversity and channel allocation strategies have been addressed. Invariably, system designs and performance are tied to the characteristics of the radio channel. This book introduces several novel techniques for predicting propagation and system performance in a variety of indoor and outdoor environments. These techniques include analytical as well as computer simulation algorithms for predicting signal strengths and other channel parameters based on the local topographical features. This book serves as an excellent reference source and may be used as a text for advanced courses on wireless communications, cellular radio, or digital mobile radio.

"Professor Andreas F. Molisch, renowned researcher and educator, has put together the comprehensive book, Wireless Communications. The second edition, which includes a wealth of new material on important topics, ensures the role of the text as the key resource for every student, researcher, and practitioner in the field." –Professor Moe Win, MIT, USA Wireless communications has grown rapidly over the past decade from a niche market into one of the most important, fast moving industries. Fully updated to incorporate the latest research and developments, *Wireless Communications, Second Edition* provides an

authoritative overview of the principles and applications of mobile communication technology. The author provides an in-depth analysis of current treatment of the area, addressing both the traditional elements, such as Rayleigh fading, BER in flat fading channels, and equalisation, and more recently emerging topics such as multi-user detection in CDMA systems, MIMO systems, and cognitive radio. The dominant wireless standards; including cellular, cordless and wireless LANs; are discussed. Topics featured include: wireless propagation channels, transceivers and signal processing, multiple access and advanced transceiver schemes, and standardised wireless systems. Combines mathematical descriptions with intuitive explanations of the physical facts, enabling readers to acquire a deep understanding of the subject. Includes new chapters on cognitive radio, cooperative communications and relaying, video coding, 3GPP Long Term Evolution, and WiMax; plus significant new sections on multi-user MIMO, 802.11n, and information theory. Companion website featuring: supplementary material on 'DECT', solutions manual and presentation slides for instructors, appendices, list of abbreviations and other useful resources. The Definitive, Comprehensive Guide to Cutting-Edge Millimeter Wave Wireless Design "This is a great book on mmWave systems that covers many aspects of the technology targeted for beginners all the way to the advanced users. The authors are some of the most credible scholars I know of who are well respected by the industry. I highly recommend studying this book in detail." –Ali Sadri, Ph.D., Sr. Director, Intel Corporation, MCG mmWave Standards and Advanced Technologies Millimeter wave (mmWave) is today's breakthrough frontier for emerging wireless mobile cellular networks, wireless local area networks, personal area networks, and vehicular communications. In the near future, mmWave products, systems, theories, and devices will come together to deliver mobile data rates thousands of times faster than today's existing cellular and WiFi networks. In Millimeter Wave Wireless Communications, four of the field's pioneers draw on their immense experience as researchers, entrepreneurs, inventors, and consultants, empowering engineers at all levels to succeed with mmWave. They deliver exceptionally clear and useful guidance for newcomers, as well as the first complete desk reference for design experts. The authors explain mmWave signal propagation, mmWave circuit design, antenna designs, communication theory, and current standards (including IEEE 802.15.3c, Wireless HD, and ECMA/WiMedia). They cover comprehensive mmWave wireless design issues, for 60 GHz and other mmWave bands, from channel to antenna to receiver, introducing emerging design techniques that will be invaluable for research engineers in both industry and academia. Topics include Fundamentals: communication theory, channel propagation, circuits, antennas, architectures, capabilities, and applications Digital communication: baseband signal/channel models, modulation, equalization, error control coding, multiple input multiple output (MIMO) principles, and hardware architectures Radio wave propagation characteristics: indoor and outdoor applications Antennas/antenna arrays, including on-chip and in-package antennas, fabrication, and packaging Analog circuit design: mmWave transistors, fabrication, and transceiver design approaches

Baseband circuit design: multi-gigabit-per-second, high-fidelity DAC and ADC converters Physical layer: algorithmic choices, design considerations, and impairment solutions; and how to overcome clipping, quantization, and nonlinearity Higher-layer design: beam adaptation protocols, relaying, multimedia transmission, and multiband considerations 60 GHz standardization: IEEE 802.15.3c for WPAN, Wireless HD, ECMA-387, IEEE 802.11ad, Wireless Gigabit Alliance (WiGig)

For cellular radio engineers and technicians. The leading book on wireless communications offers a wealth of practical information on the implementation realities of wireless communications. This book also contains up-to-date information on the major wireless communications standards from around the world. Covers every fundamental aspect of wireless communications, from cellular system design to networking, plus world-wide standards, including ETACS, GSM, and PDC. .

2nd Edition

Wireless Communications and Networking

Human Centred Intelligent Systems

Mobile Communications

A Signal Processing Perspective

Market_Desc: Students - senior undergraduate and postgraduate Wireless communications engineers and antenna designers

University lecturers Special Features: This authoritative second edition features the following updates, enabling this reference to remain a leading text in the area: · New chapter entitled Channel Measurements for Mobile Radio Systems· Fully revised and expanded exercises in each chapter· Solutions manual for access by course tutors· Presentation slides for revised contents will also be available online About The Book: Antennas and propagation are the key factors influencing the robustness and quality of the wireless communication channel. This book introduces the basic concepts and specific applications of antennas and propagation to wireless systems, covering terrestrial and satellite radio systems in both mobile and fixed contexts. It is a vital source of information for wireless communication engineers as well as for students at postgraduate or senior undergraduate levels.

Wireless Communications Principles and Practice Institute of Electrical & Electronics Engineers(IEEE)

An accessible undergraduate textbook introducing key fundamental principles behind modern communication systems, supported by exercises, software problems and lab exercises.

. This book is designed for introductory one-semester or one-year courses in communications networks in upper-level undergraduate programs. The second half of the book can be used in more advanced courses. As pre-requisites the book assumes a general knowledge of computer systems and programming, and elementary calculus. The second edition expands on the success of the first edition by updating on technological changes in networks and responding to comprehensive market feedback..

Distributed Computer and Communication Networks

Wireless Communications Systems Design

ANTENNAS AND PROPAGATION FOR WIRELESS COMMUNICATION SYSTEMS, 2ND ED

OFDM Baseband Receiver Design for Wireless Communications

The Proceedings of the 4th International Conference on Smart City Applications

Provides a variety of practical optimization techniques and modeling tips for solving challenging wireless networking problems. Case studies show how the techniques can be applied in practice, homework exercises are given at the end of each chapter, and PowerPoint slides are available online, together with a solutions manual for instructors.

Focusing on the fundamentals of wireless communications and networking, this book introduces readers to an overview of the salient features of first and second generation wireless cellular systems, and those perceived for the third generation, with a road map. It identifies the problems that cause information loss in point-to-point signal transmission through the wireless channel, and discusses techniques suitable for minimizing the information loss. With an acceptable transmission quality, the text proceeds to cover wireless communications in a cellular setting, treating the ramifications in terms of capacity maximization, support for multi-user transmissions, mobility management to facilitate user roaming, and global information delivery through wireless/wireline interworking. For individuals beginning their study of electrical and computer engineering. This book highlights new trends and challenges in intelligent systems, which play an essential part in the digital transformation of many areas of science and practice. It includes papers offering a deeper understanding of the human-centred perspective on artificial intelligence, of intelligent value co-creation, ethics, value-oriented digital models, transparency, and intelligent digital architectures and engineering to support digital services and intelligent systems, the transformation of structures in digital business and intelligent systems based on human practices, as well as the study of interaction and co-adaptation of humans and systems. All papers were originally presented at the International KES Conference on Human Centred Intelligent Systems 2021 (KES HCIS 2021) held on June 14–16, 2021 in the KES Virtual Conference Centre.

A comprehensive introduction to the fundamentals of design and applications of wireless communications Wireless Communications Systems starts by explaining the fundamentals needed to understand, design, and deploy wireless communications systems. The author, a noted expert on the topic, explores the basic concepts of signals, modulation, antennas, and propagation with a MATLAB emphasis. The book emphasizes practical applications and concepts needed by wireless engineers. The author introduces applications of wireless communications and includes information on satellite communications, radio frequency identification, and offers an overview with practical insights into the topic of multiple input multiple output (MIMO). The book also explains the security and health effects of wireless systems concerns on users and designers. Designed as a practical resource, the text contains a range of examples and pictures that illustrate many different aspects of wireless technology. The book relies on MATLAB for most of the computations and graphics. This important text: Reviews the basic information needed to understand and design wireless communications systems Covers topics such as MIMO

systems, adaptive antennas, direction finding, wireless security, internet of things (IoT), radio frequency identification (RFID), and software defined radio (SDR) Provides examples with a MATLAB emphasis to aid comprehension Includes an online solutions manual and video lectures on selected topics Written for students of engineering and physics and practicing engineers and scientists, Wireless Communications Systems covers the fundamentals of wireless engineering in a clear and concise manner and contains many illustrative examples.

Principles of Communication Systems Simulation with Wireless Applications

Proceedings of KES-HCIS 2021 Conference

Wireless Communications Systems

Communication Networks

The Evolution of Untethered Communications

Provides necessary training in the field of mobile communications.

This volume presents an overview of computer-based simulation models and methodologies for communication systems. Topics covered include probability, random, process, and estimation theory and roles in the design of computer-based simulations.

This book highlights original research and recent advances in various fields related to smart cities and their applications. It gathers papers presented at the Fourth International Conference on Smart City Applications (SCA19), held on October 2–4, 2019, in Casablanca, Morocco. Bringing together contributions by prominent researchers from around the globe, the book offers an invaluable instructional and research tool for courses on computer science, electrical engineering, and urban sciences. It is also an excellent reference guide for professionals, researchers, and academics in the field of smart cities. This book covers topics including: • Smart Citizenship • Smart Education • Digital Business and Smart Governance • Smart Health Care • New Generation of Networks and Systems for Smart Cities • Smart Grids and Electrical Engineering • Smart Mobility • Smart Security • Sustainable Building • Sustainable Environment

This publication represents the best thinking and solutions to a myriad of contemporary issues in wireless networks. Coverage includes wireless LANs, multihop wireless networks, and sensor networks. Readers are provided with insightful guidance in tackling such issues as architecture, protocols, modeling, analysis, and solutions. The book also highlights economic issues, market trends, emerging, cutting-edge applications, and new paradigms, such as middleware for RFID, smart home design, and "on-demand business" in the context of pervasive computing. Mobile, Wireless, and Sensor Networks is divided into three distinct parts: * Recent Advances in Wireless LANs and Multihop Wireless Networks * Recent Advances and Research in Sensor Networks * Middleware, Applications, and New Paradigms

In developing this collected work, the editors have emphasized two objectives: * Helping readers bridge the gap and understand the relationship between practice and theory * Helping readers bridge the gap and understand the relationships and common links among different types of wireless networks Chapters are written by an international team of researchers and practitioners who are experts and trendsetters in their fields. Contributions represent both industry and academia, including IBM, National University of Singapore, Panasonic, Intel, and Seoul National University. Students, researchers, and practitioners who need to stay abreast of new research and take advantage of the latest techniques in wireless communications will find this publication indispensable. Mobile, Wireless, and Sensor Networks provides a clear sense of where the industry is now, what challenges it faces, and where it is heading.

Systems, Modulation, and Noise : Solutions Manual

22nd International Conference, DCCN 2019, Moscow, Russia, September 23–27, 2019, Revised Selected Papers

Mobile Wireless Communications

Solutions Manual Wireless Communications

Principles of Communications

The Second Edition of OFDM Baseband Receiver Design for Wireless Communications, this book expands on the earlier edition with enhanced coverage of MIMO techniques, additional baseband algorithms, and more IC design examples. The authors cover the full range of OFDM technology, from theories and algorithms to architectures and circuits. The book provides a concise yet comprehensive look at digital communication fundamentals before explaining signal processing algorithms for receivers. The authors give detailed treatment of hardware issues - from architecture to IC implementation. Links OFDM and MIMO theory with hardware implementation Enables the reader to transfer communication received concepts to hardware; design wireless receivers with acceptable implementation loss; achieve low-power designs Covers the latest standards, such as DVB-T2, WiMax, LTE and LTE-A Includes more baseband algorithms, like soft-decoding algorithms such as BCJR and SOVA Expanded treatment of channel models, detection algorithms and MIMO techniques Features comprehensive design examples of WiMAX systems and cognitive radio applications Companion website with lecture slides for instructors Based on materials developed for a course in digital communication IC design, this book is ideal for graduate students, researchers in VLSI design, wireless communications, and communications signal processing. Practicing engineers working on algorithms or hardware for wireless communications devices will also find this to be a key reference.

Wireless Communications Systems Design provides the basic knowledge and methodology for wireless communications design. The book mainly focuses on a broadband wireless communication system based on OFDM/OFDMA system because it is widely used in the modern wireless communication system. It is divided into three parts: wireless communication theory (part I), wireless communication block design (part II), and wireless communication block integration (part III). Written by an expert with various experience in system design (standardization, research and development)

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.

Building on his classic edition, Rappaport covers the fundamental issues impacting all wireless networks and reviews every important new wireless standard and technological development. He illustrates each key concept with practical examples, thoroughly explained and solved step by step.

Introduction to Wireless Digital Communication

Fundamental Concepts and Key Architectures

Communication Systems

Microwave Devices and Circuits

Innovations in Smart Cities Applications Edition 3

This text explains the general principles of how wireless systems work, how mobility is supported, what the underlying infrastructure is and what interactions are needed among different functional components. Designed as a textbook appropriate for undergraduate or graduate courses in Computer Science (CS), Computer Engineering (CE), and Electrical Engineering (EE), Introduction to Wireless and Mobile Systems third edition focuses on qualitative descriptions and the realistic explanations of relationships between wireless systems and performance parameters. Rather than offering a thorough history behind the development of wireless technologies or an exhaustive list of work being carried out, the authors help CS, CE, and EE students learn this exciting technology through relevant examples such as understanding how a cell phone starts working as soon as they get out of an airplane. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This book will provide a comprehensive technical guide covering fundamentals, recent advances and open issues in wireless communications and networks to the readers. The objective of the book is to serve as a valuable reference for students, educators, scientists, faculty members, researchers, engineers and research strategists in these rapidly evolving fields and to encourage them to actively explore these broad, exciting and rapidly evolving research areas.

STEEL DESIGN covers the fundamentals of structural steel design with an emphasis on the design of members and their connections, rather than the integrated design of buildings. The book is designed so that instructors can easily teach LRFD, ASD, or both, time-permitting. The application of fundamental principles is encouraged for design procedures as well as for practical design, but a theoretical approach is also provided to enhance student development. While the book is intended for junior-and senior-level engineering students, some of the later chapters can be used in graduate courses and practicing engineers will find this text to be an essential reference tool for reviewing current practices. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This book discusses the latest channel coding techniques, MIMO systems, and 5G channel coding evolution. It provides a comprehensive overview of channel coding, covering modern techniques such as turbo codes, low-density parity-check (LDPC) codes, space-time coding, polar codes, LT codes, and Raptor codes as well as the traditional codes such as cyclic codes, BCH, RS codes, and convolutional codes. It also explores MIMO communications, which is an effective method for high-speed or high-reliability wireless communications. It also examines the evolution of 5G channel coding techniques. Each of the 13 chapters features numerous illustrative examples for easy understanding of the coding techniques, and MATLAB-based programs are integrated in the text to enhance readers' grasp of the underlying theories. Further, PC-based MATLAB m-files for illustrative examples are included for students and researchers involved in advanced and current concepts of coding theory.

Principles and Practice

Modern Wireless Communications

Wireless Communications and Networks

Baseband Receiver Design for Wireless MIMO-OFDM Communications

Introduction to Communication Systems

Antennas and propagation are of fundamental importance to the coverage, capacity and quality of all wireless communication systems. This book provides a solid grounding in antennas and propagation, covering terrestrial and satellite radio systems in both mobile and fixed contexts. Building on the highly successful first edition, this fully updated text features significant new material and brand new exercises and supplementary materials to support course tutors. A vital source of information for practising and aspiring wireless communication engineers as well as for students at postgraduate and senior undergraduate levels, this book provides a fundamental grounding in the principles of antennas and propagation without excessive recourse to mathematics. It also equips the reader with practical prediction techniques for the design and analysis of a very wide range of common wireless communication systems. Including: Overview of the fundamental electromagnetic principles underlying propagation and antennas. Basic concepts of antennas and their application to specific wireless systems. Propagation measurement, modelling and prediction for fixed links, macrocells, microcells, picocells and megacells Narrowband and wideband channel modelling and the effect of the channel on communication system performance. Methods that overcome and transform channel impairments to enhance performance using diversity, adaptive antennas and equalisers. Key second edition updates: New chapters on Antennas for Mobile Systems and Channel Measurements for Mobile Radio Systems. Coverage of new technologies, including MIMO antenna systems, Ultra Wideband (UWB) and the OFDM technology used in Wi-Fi and WiMax systems. Many new propagation models for macrocells, microcells and picocells. Fully revised and expanded end-of-chapter exercises. The Solutions Manual can be requested from

http://www.wiley.com/go/saunders_antennas_2e

Rapid advances in networking technology have promoted a fully revised second edition of this successful introduction to communication networks.

Data and Computer Communications

Mobile, Wireless, and Sensor Networks

Computer Organization

Recent Advances

Wireless Personal Communications