

Design And Simulation Of Orthogonal Frequency Division

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Proceedings of the 4th International Conference on Telecommunications and Communication Engineering - Maode Ma 2021-09-02

The book is presents the papers presented at the 4th International Conference on Telecommunications and Communication Engineering (ICTCE 2020) held on 4 -6 December, in Singapore. It covers advanced research topics in the field of computer communication and networking organized into the topics of emerging technologies of wireless communication and networks, 5G wireless communication and networks, information and network security, internet of things and fog computing. These advanced research topics are taking the lead and representing the trend of the recent academic research in the field of computer communication and networking. It is expected that the collection and publication of the research papers with the advanced topics listed in this book will further promote high standard academic research in the field and make a significant contribution to the development of economics and human society.

Cyber Security Intelligence and Analytics - Zheng Xu 2022-03-22

This book presents the outcomes of the 2022 4th International Conference on Cyber Security Intelligence and Analytics (CSIA 2022), an international conference dedicated to promoting novel theoretical and applied research advances in the interdisciplinary field of cyber-security, particularly focusing on threat intelligence, analytics, and countering cyber-crime. The conference provides a forum for presenting and discussing innovative ideas, cutting-edge research findings and novel techniques, methods and applications on all aspects of cyber-security intelligence and analytics. Due to COVID-19, authors, keynote speakers and PC committees will attend the conference online.

Cross-Layer Design for Ofdma Wireless System - Shui-Wing David Hui 2017-01-27

This dissertation, "Cross-layer Design for OFDMA Wireless System" by Shui-wing, David, Hui, 胡水翼, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. Abstract: Abstract of the Thesis Entitled Cross-Layer Design for OFDMA Wireless Systems submitted by Hui Shui Wing David for the degree of Master of Philosophy at The University of Hong Kong in February 2007 High spectral efficiency support and Quality of Service (QoS) provision are two of the most important requirements in the next-generation wireless network design. Traditional layered network architecture has been unable to satisfy these wireless system requirements effectively due to its time varying characteristic. Cross-Layer Design has been proposed to enhance system spectral efficiency by considering multiuser diversity gain, and the QoS using the adaptive scheduler design over both the Physical (PHY) and Medium Access Control (MAC) layers. Orthogonal Frequency Division Multiple Access (OFDMA) with cross-layer scheduling further enhances the spectral efficiency by exploiting temporal diversity and spectral diversity while providing robust performance over frequency selective channels. This thesis focuses on Cross-Layer Scheduler Design for OFDMA wireless systems with heterogeneous delay requirements. Traditional Cross-Layer Design for OFDMA has neglected higher layer dynamics and delay requirements, assuming that perfect Channel State Information at the Transmitter (CSIT) is available. However, users may be delay sensitive with heterogeneous delay requirements and therefore CSIT can never be perfect, especially when the number of carriers is large. Without considering the CSIT imperfection, packet transmission outage occurs due to improper rate adaptation on imperfect CSIT, resulting in a significant degradation to the delay performance of heterogeneous users. This thesis focuses on combining information theory and queuing theory in modeling system dynamics, and proposes a novel analytical Cross-Layer Design framework

for OFDMA systems with heterogeneous delay requirements and imperfect CSIT. The proposed cross-layer scheduling algorithm dynamically allocates the radio resource based on users' CSIT, source statistics and delay requirements. The delay-sensitive power allocation adopts the multilevel water-filling approach in which urgent users have higher water-filling levels. The delay-sensitive subcarrier allocation strategy has linear complexity with respect to the number of users and the number of subcarriers. Water-filling levels are obtained by an efficient Lagrange multiplier finding algorithms. The asymptotic multiuser diversity gain and the minimum power requirement saving of the proposed schedules are also obtained analytically. Simulation results show that substantial throughput gain is obtained while satisfying the delay constraints and target outage probability using the proposed scheduler regardless of the variation of traffic loadings and the CSIT imperfection. DOI: 10.5353/th_b3742717 Subjects: Orthogonal frequency division multiplexing Wireless communication systems - Design and construction **Progress in Industrial Mathematics at ECMI 2014** - Giovanni Russo 2017-09-04

This book presents a collection of papers emphasizing applications of mathematical models and methods to real-world problems of relevance for industry, life science, environment, finance and so on. The biannual Conference of ECMI (the European Consortium of Mathematics in Industry) held in 2014 focused on various aspects of industrial and applied mathematics. The five main topics addressed at the conference were mathematical models in life science, material science and semiconductors, mathematical methods in the environment, design automation and industrial applications, and computational finance. Several other topics have been treated, such as, among others, optimization and inverse problems, education, numerical methods for stiff pdes, model reduction, imaging processing, multi physics simulation, mathematical models in textile industry. The conference, which brought together applied mathematicians and experts from industry, provided a unique opportunity to exchange ideas, problems and methodologies, bridging the gap between mathematics and industry and contributing to the advancement of science and technology. The conference has included a presentation of EU-Maths-In (European Network of Mathematics for Industry and Innovation), a recent joint initiative of ECMI and EMS. The proceedings from this conference represent a snapshot of the current activity in industrial mathematics in Europe, and are highly relevant to anybody interested in the latest applications of mathematics to industrial problems.

Orthogonal Frequency Division Multiplexing with Diversity for Future Wireless Systems - Khoa N. Le 2012

"The book examines several aspects of Orthogonal Frequency Division Multiplexing (OFDM) employing linear diversity techniques such as inter-carrier interference, bit error rate, peak to average power and inter-block interference. It should be a useful refe"

The Mathematical Theory of Orthogonal Frequency Division Multiplexing - Michael G. Heath 2002

Simulation and Design of a Rate-adaptive Orthogonal Frequency Division Multiplexing System - Jerry Tung 2001

System-Level Design Methodologies for Telecommunication - Nicolas Sklavos 2013-09-13

This book provides a comprehensive overview of modern networks design, from specifications and modeling to implementations and test procedures, including the design and implementation of modern networks on chip, in both wireless and mobile applications. Topical coverage includes algorithms and methodologies, telecommunications, hardware (including networks on chip), security and privacy, wireless and mobile networks and a variety of modern applications, such as VoLTE and the internet of things.

Optical Fiber Communication Systems with MATLAB® and Simulink® Models, Second Edition - Le Nguyen Binh 2014-12-01

Carefully structured to instill practical knowledge of fundamental issues, *Optical Fiber Communication Systems with MATLAB® and Simulink® Models* describes the modeling of optically amplified fiber communications systems using MATLAB® and Simulink®. This lecture-based book focuses on concepts and interpretation, mathematical procedures, and engineering applications, shedding light on device behavior and dynamics through computer modeling. Supplying a deeper understanding of the current and future state of optical systems and networks, this Second Edition: Reflects the latest developments in optical fiber communications technology Includes new and updated case studies, examples, end-of-chapter problems, and MATLAB® and Simulink® models Emphasizes DSP-based coherent reception techniques essential to advancement in short- and long-term optical transmission networks *Optical Fiber Communication Systems with MATLAB® and Simulink® Models, Second Edition* is intended for use in university and professional training courses in the specialized field of optical communications. This text should also appeal to students of engineering and science who have already taken courses in electromagnetic theory, signal processing, and digital communications, as well as to optical engineers, designers, and practitioners in industry.

Wireless Internet - Jiann-Liang Chen 2019-01-05

This book constitutes the refereed post-conference proceedings of the 11th International Conference on Wireless Internet, WiCON 2018, held in Taipei, Taiwan, in October 2018. The 36 full papers were selected from 79 submissions and are grouped into the following topics: wireless network, artificial intelligence, security, IoT, location-based services, financial applications, vehicular ad hoc network, services and applications.

Design Methodology for RF CMOS Phase Locked Loops - Carlos Quemada 2008

After a review of PLL essentials, this uniquely comprehensive workbench guide takes you step-by-step through operation principles, design procedures, phase noise analysis, layout considerations, and CMOS realizations for each PLL building block. You get full details on LC tank oscillators including modeling and optimization techniques, followed by design options for CMOS frequency dividers covering flip-flop implementation, the divider by 2 component, and other key factors. The book includes design alternatives for phase detectors that feature methods to minimize jitter caused by the dead zone effect. You also find a sample design of a fully integrated PLL for WLAN applications that demonstrates every step and detail right down to the circuit schematics and layout diagrams. Supported by over 150 diagrams and photos, this one-stop toolkit helps you produce superior PLL designs faster, and deliver more effective solutions for low-cost integrated circuits in all RF applications.

Orthogonal Frequency Division Multiple Access Fundamentals and Applications - Tao Jiang 2010-04-21

Supported by the expert-level advice of pioneering researchers, *Orthogonal Frequency Division Multiple Access Fundamentals and Applications* provides a comprehensive and accessible introduction to the foundations and applications of one of the most promising access technologies for current and future wireless networks. It includes authoritative coverage of the history, fundamental principles, key techniques, and critical design issues of OFDM systems. Covering various techniques of effective resource management for OFDM/OFDMA-based wireless communication systems, this cutting-edge reference: Addresses open problems and supplies possible solutions Provides a concise overview of key techniques for adaptive modulation Investigates radio channel modeling in OFDMA-based wireless communication systems Details detection strategies of frequency-domain equalization for broadband communications Introduces a novel combination of OFDM and the orbital angular momentum of the electromagnetic field to improve performance Contains extensive treatment of adaptive MIMO beamforming suitable for multiuser access This valuable resource supplies readers with a macro-level understanding of OFDMA and its key issues, while providing a systematic manual for those whose work is directly related to practical OFDMA and other multiuser communication systems projects.

3D Imaging Technologies—Multidimensional Signal Processing and Deep Learning - Lakhmi C. Jain 2021-08-29

This book presents high-quality research in the field of 3D imaging technology. The second edition of International Conference on 3D Imaging Technology (3DDIT-MSP&DL) continues the good traditions already established by the first 3DIT conference (IC3DIT2019) to provide a wide

scientific forum for researchers, academia and practitioners to exchange newest ideas and recent achievements in all aspects of image processing and analysis, together with their contemporary applications. The conference proceedings are published in 2 volumes. The main topics of the papers comprise famous trends as: 3D image representation, 3D image technology, 3D images and graphics, and computing and 3D information technology. In these proceedings, special attention is paid at the 3D tensor image representation, the 3D content generation technologies, big data analysis, and also deep learning, artificial intelligence, the 3D image analysis and video understanding, the 3D virtual and augmented reality, and many related areas. The first volume contains papers in 3D image processing, transforms and technologies. The second volume is about computing and information technologies, computer images and graphics and related applications. The two volumes of the book cover a wide area of the aspects of the contemporary multidimensional imaging and the related future trends from data acquisition to real-world applications based on various techniques and theoretical approaches.

Embedded Computer Systems: Architectures, Modeling, and Simulation - Stamatis Vassiliadis 2007-08-30

Researchers and professionals in the appropriate subject areas will find this book an essential update on where research has got to in what is, after all, a hugely important area. It constitutes the refereed proceedings of the 7th International Workshop on Systems, Architectures, Modeling, and Simulation, held in Samos, Greece, in July 2007. The 44 revised full papers presented together with 2 keynote talks were thoroughly reviewed and selected from 116 submissions

Global Applications of Pervasive and Ubiquitous Computing - Gao, Tao 2012-12-31

As technology continues to play a vital role in our everyday lives, advancements in human-computer interaction studies embrace ubiquitous computing as a tool for information processing to evolve into the human environment. *Global Applications of Pervasive and Ubiquitous Computing* provides the global applications and efforts in building and applying pervasive and ubiquitous computer technology. This book provides an essential collection of research on information technology for educators, researchers, and practitioners aiming to advance the practice and understanding of pervasive and ubiquitous applications.

Antennas and Propagation for Body-Centric Wireless Communications, Second Edition - Peter S. Hall 2012

Now in a newly updated and revised edition, this timely resource provides you with complete and current details on the theory, design, and applications of wireless antennas for on-body electronic systems. The Second Edition offers readers brand new material on advances in physical phantom design and production, recent developments in simulation methods and numerical phantoms, descriptions of methods for simulation of moving bodies, and the use of the body as a transmission channel. You also find a completely revised chapter on channel characterization and antenna design at microwave frequencies. This cutting-edge volume brings you the state-of-the-art in existing applications like Bluetooth headsets together with detailed treatment of techniques, tools, and challenges in developing on-body antennas for an array of medical, emergency response, law enforcement, personal entertainment, and military applications on the horizon. The book briefs you on energy propagation around and into the body and how to estimate performance of on-body wireless links, and then dives into the nuts-and-bolts of designing antenna systems that deliver the goods. It covers on-body communication channels at microwave frequency bands and at low frequency bands, as well as ultra wideband systems for WPANs and WBANs. You get details on body-centric UWB antennas and channels, as well as advances in wearable mobile, EBG, and "smart fabric" antennas for cellular and WLAN communications. Chapters on telemedicine applications, such as remote diagnoses, and implantable medical devices cover crucial propagation issues and other obstacles that need to be addressed. Rounding out the coverage is a section on antenna design for body-sensor networks and their emerging military and space applications. Packed with hands-on guidance from noted experts, this volume will be indispensable for your efforts in designing and improving body-centric communication systems.

Design and FPGA Implementation of OFDM System with Channel Estimation and Synchronization - Hongyan Zhou 2013

Long-Term Evolution of Optical Avionic Networks - José Manuel Estarán 2012

The performance of a predefined optical avionic point-to-point link was

evaluated across the harsh environmental conditions typically found in airborne systems. Worst-case error rates, power margins and maximum attainable bit rates were obtained at -40oC, 25oC and 90oC. Vibrations and shocks were statistically analyzed through radial, angular and distance offsets in the connectors. The test was conducted for Non-Return-to-Zero (NRZ). Optical Orthogonal Frequency-Division Multiplexing (OOFDM) with Quadrature Amplitude Modulation per subcarrier (4-QAM, 16-QAM and 32-QAM) was suggested as a plausible and reliable option to cope with future bandwidth demands. Its performance was also evaluated for each of the three reference temperatures.

Embedded Computer Systems: Architectures, Modeling, and Simulation - Mladen Berekovic 2008-07-18

This book constitutes the refereed proceedings of the 8th International Workshop on Systems, Architectures, Modeling, and Simulation, SAMOS 2008, held in Samos, Greece, in July 2008. The 24 revised full papers presented together with a contemplative keynote and additional papers of two special workshop sessions were carefully reviewed and selected from 62 submissions. The papers are organized in topical sections on architecture, new frontiers, SoC, application specific contributions, system level design for heterogeneous systems, programming multicores, sensors and sensor networks; and systems modeling and design.

The Design and Simulation of an Orthogonal Frequency Division Multiplexing Communication System - Kuyler Neable 2004

Introduction to OFDM Receiver Design and Simulation - Y.J. Liu 2019-11-30

This practical book is an accessible introduction to Orthogonal frequency-division multiplexing (OFDM) receiver design, a technology that allows digitized data to be carried by multiple carriers. It offers a detailed simulation study of an OFDM algorithm for Wi-Fi and 4G cellular that can be used to understand other OFDM waveforms. Extensive simulation studies are included using the transmission waveform given by the IEEE 802.11 standard. Scrambler, error-correcting codes, interleaver and radio-wave propagation model are included. OFDM waveform characteristics, signal acquisition, synchronization issues, channel estimation and tracking, hard and soft decision decoding are all covered. Detailed derivations leading to the final formula for any algorithm are given, which allows the reader to clearly understand the approximations and conditions behind the formulas and apply them appropriately. The algorithms are selected not just for the best performance from simulation study but also for easy implementation. An example is a unique algorithm for signal acquisition using the principle of maximum likelihood detection.

The Best of the Best - William H. Tranter 2007-01-09

The Best of the Best: Fifty Years of Communications and Networking Research consists of a group of 50 papers selected as the best published by ComSoc in its various journals in the Society's 50-year history. The editors of the collection have written an essay to introduce the papers and discuss the historical significance of the collection and how they were selected for the collection. The book divides the papers into two major categories (Communications and Networking) and groups them by decade within these major subdivisions.

Silicon Systems For Wireless Lan - Zoran Stamenkovic 2020-11-27

Today's integrated silicon circuits and systems for wireless communications are of a huge complexity. This unique compendium covers all the steps (from the system-level to the transistor-level) necessary to design, model, verify, implement, and test a silicon system. It bridges the gap between the system-world and the transistor-world (between communication, system, circuit, device, and test engineers). It is extremely important nowadays (and will be more important in the future) for communication, system, and circuit engineers to understand the physical implications of system and circuit solutions based on hardware/software co-design as well as for device and test engineers to cope with the system and circuit requirements in terms of power, speed, and data throughput. Related Link(s)

Nonlinear Modeling Analysis and Predistortion Algorithm Research of Radio Frequency Power Amplifiers - Jingchang Nan 2021-07-30

This book is a summary of a series of achievements made by the authors and colleagues in the areas of radio frequency power amplifier modeling (including neural Volterra series modeling, neural network modeling, X-parameter modeling), nonlinear analysis methods, and power amplifier predistortion technology over the past 10 years. The book is organized into ten chapters, which respectively describe an overview of research of power amplifier behavioral models and predistortion technology, nonlinear characteristics of power amplifiers, power amplifier behavioral models and the basis of nonlinear analysis, an overview of power

amplifier predistortion, Volterra series modeling of power amplifiers, power amplifier modeling based on neural networks, power amplifier modeling with X-parameters, the modeling of other power amplifiers, nonlinear circuit analysis methods, and predistortion algorithms and applications. Blending theory with analysis, this book will provide researchers and RF/microwave engineering students with a valuable resource.

Modeling, Simulation and Performance Analysis of Multiple-Input Multiple-Output (MIMO) Systems with Multicarrier Time Delay Diversity Modulation - 2005

This thesis investigates the fundamentals of multiple-input single-output (MISO) and multiple-input multiple-output (MIMO) radio communication systems with space-time codes. A MISO system and MIMO systems were designed using multicarrier delay diversity modulation (MDDM). MDDM was incorporated with orthogonal frequency division multiplexing (OFDM). The design was implemented with binary phase shift keying (BPSK). Matlab was used to simulate the design, which was tested in both an additive white Gaussian noise (AWGN) channel and in a slow fading frequency nonselective multipath channel with AWGN. The receiver design was incorporated with the maximal ratio combiner (MRC) receiving technique with perfect knowledge of channel state information (CSI). The theoretical performance was derived for both channels and was compared with the simulated results.

SystemC Kernel Extensions for Heterogeneous System Modeling - Hiren Patel 2006-01-16

SystemC Kernel Extensions for Heterogeneous System Modeling is a result of an almost two year endeavour on our part to understand how SystemC can be made useful for system level modeling at higher levels of abstraction. Making it a truly heterogeneous modeling language and platform, for hardware/software co-design as well as complex embedded hardware designs has been our focus in the work reported in this book.

Evaluation of HSDPA and LTE - Markus Rupp 2011-12-12

This book explains how the performance of modern cellular wireless networks can be evaluated by measurements and simulations. With the roll-out of LTE, high data throughput is promised to be available to cellular users. In case you have ever wondered how high this throughput really is, this book is the right read for you: At first, it presents results from experimental research and simulations of the physical layer of HSDPA, WiMAX, and LTE. Next, it explains in detail how measurements on such systems need to be performed in order to achieve reproducible and repeatable results. The book further addresses how wireless links can be evaluated by means of standard-compliant link-level simulation. The major challenge in this context is their complexity when investigating complete wireless cellular networks. Consequently, it is shown how system-level simulators with a higher abstraction level can be designed such that their results still match link-level simulations. Exemplarily, the book finally presents optimizations of wireless systems over several cells. This book: Explains how the performance of modern cellular wireless networks can be evaluated by measurements and simulations. Discusses the concept of testbeds, highlighting the challenges and expectations when building them. Explains measurement techniques, including the evaluation of the measurement quality by statistical inference techniques. Presents throughput results for HSDPA, WiMAX, and LTE. Demonstrates simulators at both, link-level and system-level. Provides system-level and link-level simulators (for WiMAX and LTE) on an accompanying website (<https://www.nt.tuwien.ac.at/downloads/featured-downloads>). This book is an insightful guide for researchers and engineers working in the field of mobile radio communication as well as network planning. Advanced students studying related courses will also find the book interesting.

WiMAX - Syed A. Ahson 2018-10-08

As the demand for broadband services continues to grow worldwide, traditional solutions, such as digital cable and fiber optics, are often difficult and expensive to implement, especially in rural and remote areas. The emerging WiMAX system satisfies the growing need for high data-rate applications such as voiceover IP, video conferencing, interactive gaming, and multimedia streaming. WiMAX deployments not only serve residential and enterprise users but can also be deployed as a backhaul for Wi-Fi hotspots or 3G cellular towers. By providing affordable wireless broadband access, the technology of WiMAX will revolutionize broadband communications in the developed world and bridge the digital divide in developing countries. Part of the WiMAX Handbook, this volume focuses on the technologies behind WiMAX, its performance capabilities, and its control mechanisms. The book introduces programmable baseband processors suited for WiMAX systems, describes an innovative methodology for the design of multi-band WiMAX antennas, addresses

space-time block codes, and reviews space-frequency/space-time-frequency code design criteria. It also proposes a combined call admission control and scheduling scheme, focuses on the performance analysis of the IEEE 802.16 mesh mode, and analyzes the performance of both single-input-single-output and space-time-block-coded OFDM systems in mobile environments. The final section establishes a framework of an ideal reservation period controller, examines the ecosystem in which scheduling for IEEE 802.16e systems must be performed, and presents a fuzzy logic controller for admission control. With the revolutionary technology of WiMAX, the lives of many will undoubtedly improve, thereby leading to greater economic empowerment.

Orthogonal Frequency Division Multiplexing in Optical

Communication Systems. - Dr. Ashad Ullah Qureshi 2022-06-01

Optical fiber communication has emerged as a high potential substitute for communication methods such as twisted pair and coaxial wire. The main advantage of optical fiber over previous methods is to have higher capacity of data rate transmission. The conventional types of modulation and demodulation technique, which have been used through optical fiber communication system are Wavelength Division Multiplexing (WDM) technique and Dense Wavelength Division Multiplexing (DWDM) technique so far.

Wireless and Satellite Systems - Qing Guo 2022-01-21

This book constitutes the refereed post-conference proceedings of the 12th International Conference on Wireless and Satellite Services, WiSATS 2021, held in Nanjing, China, in September 2020. Due to COVID-19 pandemic the conference was held virtually. The 79 full papers were carefully reviewed and selected from 140 submissions. The conference's central theme is the means of using the wireless and satellite services directly to the user for personal communications, multimedia and location identification. The services enabled by WiSATS not only cover the requirements of an ordinary citizen but also provide personal and public services for global coverage communications as the applications of internet of things.

Wireless Communication Signals - Huseyin Arslan 2021-04-06

WIRELESS COMMUNICATION SIGNALS A practical guide to wireless communication systems and concepts Wireless technologies and services have evolved significantly over the last couple of decades, and Wireless Communication Signals offers an important guide to the most recent advances in wireless communication systems and concepts grounded in a practical and laboratory perspective. Written by a noted expert on the topic, the book provides the information needed to model, simulate, test, and analyze wireless system and wireless circuits using modern instrumentation and computer aided design software. Designed as a practical resource, the book provides a clear understanding of the basic theory, software simulation, hardware test, and modeling, system component testing, software and hardware interactions and co-simulations. This important book: Provides organic and harmonized coverage of wireless communication systems Covers a range of systems from radio hardware to digital baseband signal processing Presents information on testing and measurement of wireless communication systems and subsystems Includes MATLAB file codes Written for professionals in the communications industry, technical managers, and researchers in both academia and industry. Wireless Communication Signals introduces wireless communication systems and concepts from both a practical and laboratory perspective.

Circuits and Systems for Future Generations of Wireless

Communications - Aleksandar Tasic 2009-05-16

The idea for this book originated from a Special Session on Circuits and Systems for Future Generations of Wireless Communications that was presented at the 2005 International Symposium on Circuits and Systems, which was then followed by two Special Issues bearing the same title that appeared in the March and April 2008 issues of the IEEE Transactions on Circuits and Systems - Part II: Express Briefs. Out of a large number of great contributions, we have selected those being best the book format based on their quality. We would like to thank all the authors, the reviewers of the Transactions on Circuits and Systems - Part II, and the reviewers of the final book material for their efforts in creating this manuscript. We also thank the Springer Editorial Staff for their support in putting together all the good work. We hope that this book will provide you, the reader, with new insights into Circuits and Systems for Future Generations of Wireless Communications.

Nanoscale Networking and Communications Handbook - John R. Vacca 2019-07-05

This comprehensive handbook serves as a professional reference as well as a practitioner's guide to today's most complete and concise view of

nanoscale networking and communications. It offers in-depth coverage of theory, technology, and practice as they relate to established technologies and recent advancements. It explores practical solutions to a wide range of nanoscale networking and communications issues. Individual chapters, authored by leading experts in the field, address the immediate and long-term challenges in the authors' respective areas of expertise.

Design Space Exploration and Resource Management of Multi/Many-Core Systems - Amit Kumar Singh 2021-05-10

The increasing demand of processing a higher number of applications and related data on computing platforms has resulted in reliance on multi-/many-core chips as they facilitate parallel processing. However, there is a desire for these platforms to be energy-efficient and reliable, and they need to perform secure computations for the interest of the whole community. This book provides perspectives on the aforementioned aspects from leading researchers in terms of state-of-the-art contributions and upcoming trends.

RF Analog Impairments Modeling for Communication Systems Simulation - Lydi Smaini 2012-10-04

With the growing complexity of personal mobile communication systems demanding higher data-rates and high levels of integration using low-cost CMOS technology, overall system performance has become more sensitive to RF analog front-end impairments. Designing integrated transceivers requires a thorough understanding of the whole transceiver chain including RF analog front-end and digital baseband. Communication system engineers have to include RF analog imperfections in their simulation benches in order to study and quantify their impact on the system performance. Here the author explores key RF analog impairments in a transceiver and demonstrates how to model their impact from a communication system design view-point. He discusses the design aspects of the front end of transceivers (both receivers and transmitters) and provides the reader with a way to optimize a complex mixed-signal platform by taking into account the characteristics of the RF/analog front-end. Key features of this book include: Practical examples illustrated by system simulation results based on WiFi and mobile WiMAX OFDM transceivers An overview of the digital estimation and compensation of the RF analog impairments such as power amplifier distortion, quadrature imbalance, and carrier and sampling frequency offsets An exposition of the challenges involved in the design of both RF analog circuits and DSP communication circuits in deep submicron CMOS technology MATLAB® codes for RF analog impairments models hosted on the companion website Uniquely the book bridges the gap between RFIC design specification needs and communication systems simulation, offering readers RF analog impairments modeling knowledge and a comprehensive approach to unifying theory and practice in system modelling. It is of great value to communication systems and DSP engineers and graduate students who design communication processing engines, RF/analog systems and IC design engineers involved in the design of communication platforms.

Advances in Gabor Analysis - Hans G. Feichtinger 2012-12-06

The Applied and Numerical Harmonic Analysis (ANHA) book series aims to provide the engineering, mathematical, and scientific communities with significant developments in harmonic analysis, ranging from abstract harmonic analysis to basic applications. The title of the series reflects the importance of applications and numerical implementation, but richness and relevance of applications and implementation depend fundamentally on the structure and depth of theoretical underpinnings. Thus, from our point of view, the interleaving of theory and applications and their creative symbiotic evolution is axiomatic. Harmonic analysis is a wellspring of ideas and applicability that has flourished, developed, and deepened over time within many disciplines and by means of creative cross-fertilization with diverse areas. The intricate and fundamental relationship between harmonic analysis and fields such as signal processing, partial differential equations (PDEs), and image processing is reflected in our state of the art ANHA series. Our vision of modern harmonic analysis includes mathematical areas such as wavelet theory, Banach algebras, classical Fourier analysis, time frequency analysis, and fractal geometry, as well as the diverse topics that impinge on them.

Journal of Research of the National Institute of Standards and Technology - 1997

Reports NIST research and development in the physical and engineering sciences in which the Institute is active. These include physics, chemistry, engineering, mathematics, and computer sciences. Emphasis on measurement methodology and the basic technology underlying standardization.

Design of Channel Estimation and Equalization for OFDM Systems

- Ali Salah Mahdi 2015-01-20

Orthogonal Frequency Division Multiplexing (OFDM) system is one of the multicarrier techniques which is robust against Inter-symbol-Interference, multipath fading and very easy to apply in transmitters by using inverse fast Fourier transform IFFT and at the receivers by using fast Fourier transform FFT. In a communication system, channel estimation is very important issue for the data detection. In coherent detection, one of the popular techniques is to use pilot tones as a reference signal in OFDM symbols. In the comb-type pilot tones insertion, pilot tones are inserted into each OFDM symbols, but inserting a large number of pilot tones will lead to channel capacity reduction or bandwidth expansion [1-2]. In this work, to overcome this transmission loss, a modified least square (ModLS) algorithm for fast time varying wireless channel at comb-type pilot arrangement in QAM signals for OFDM system is proposed. The simulation results obtained from the proposed algorithm showed a good performance in noisy wireless channels. In addition, it has been compared with least square (LS) algorithm in different signal to noise ratios and different channel tabs.

Power Line Communications - Lutz Lampe 2016-04-14

This second edition of *Power Line Communications* will show some adjustments in content including new material on PLC for home and industry, PLC for multimedia, PLC for smart grid and PLC for vehicles. Additional chapters include coverage of Channel Characterization, Electromagnetic Compatibility, Coupling, and Digital Transmission Techniques. This book will provide the reader with a wide coverage of the major developments within the field. With contributions from some of the most active researchers on PLC, the book brings together a wealth of

international experts on specific PLC topics.

Wireless Technologies - Krzysztof Iniewski 2017-12-19

Advanced concepts for wireless technologies present a vision of technology that is embedded in our surroundings and practically invisible. From established radio techniques like GSM, 802.11 or Bluetooth to more emerging technologies, such as Ultra Wide Band and smart dust motes, a common denominator for future progress is the underlying integrated circuit technology. *Wireless Technologies* responds to the explosive growth of standard cellular radios and radically different wireless applications by presenting new architectural and circuit solutions engineers can use to solve modern design problems. This reference addresses state-of-the art CMOS design in the context of emerging wireless applications, including 3G/4G cellular telephony, wireless sensor networks, and wireless medical application. Written by top international experts specializing in both the IC industry and academia, this carefully edited work uncovers new design opportunities in body area networks, medical implants, satellite communications, automobile radar detection, and wearable electronics. The book is divided into three sections: wireless system perspectives, chip architecture and implementation issues, and devices and technologies used to fabricate wireless integrated circuits. Contributors address key issues in the development of future silicon-based systems, such as scale of integration, ultra-low power dissipation, and the integration of heterogeneous circuit design style and processes onto one substrate. Wireless sensor network systems are now being applied in critical applications in commerce, healthcare, and security. This reference, which contains 25 practical and scientifically rigorous articles, provides the knowledge communications engineers need to design innovative methodologies at the circuit and system level.