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HATFIELD RIVERS

Optical Fiber Communications Systems CRC Press

The first edition of the Encyclopedia of Optical and Photonic Engineering provided a valuable reference concerning devices or systems that generate, transmit, measure, or detect light, and to a lesser degree, the basic interaction of light and matter. This Second Edition not only reflects the changes in optical and photonic engineering that have occurred since the first edition was published, but also: Boasts a wealth of new material, expanding the encyclopedia's length by 25 percent Contains extensive updates, with significant revisions made throughout the text Features contributions from engineers and scientists leading the fields of optics and photonics today With the addition of a second editor, the Encyclopedia of Optical and Photonic Engineering, Second Edition offers a balanced and up-to-date look at the fundamentals of a diverse portfolio of technologies and discoveries in areas ranging from x-ray optics to photon entanglement and beyond. This edition's release corresponds nicely with the United Nations General Assembly's declaration of 2015 as the International Year of Light, working in tandem to raise awareness about light's important role in the modern world. Also Available Online This Taylor & Francis encyclopedia is also available through online subscription, offering a variety of extra benefits for researchers, students, and librarians, including: Citation tracking and alerts Active reference linking Saved searches and marked lists HTML and PDF format options Contact Taylor and Francis for more information or to inquire about subscription options and print/online combination packages. US: (Tel) 1.888.318.2367; (E-mail) e-reference@taylorandfrancis.com International: (Tel) +44 (0) 20 7017 6062; (E-mail) online.sales@tandf.co.uk

Introduction to CDMA Wireless Communications John Wiley & Sons

The Industrial Information Technology Handbook focuses on existing and emerging industrial applications of IT, and on evolving trends that are driven by the needs of companies and by industry-led consortia and organizations. Emphasizing fast growing areas that have major impacts on industrial automation and enterprise integration, the Handbook covers topics such as industrial communication technology, sensors, and embedded systems. The book is organized into two parts. Part 1 presents material covering new and quickly evolving aspects of IT. Part 2 introduces cutting-edge areas of industrial IT. The Handbook presents material in the form of tutorials, surveys, and technology overviews, combining fundamentals and advanced issues, with articles grouped into sections for a cohesive and comprehensive presentation. The text contains 112 contributed reports by industry experts from government, companies at the forefront of development, and some of the most renowned academic and research institutions worldwide. Several of the reports on recent developments, actual deployments, and trends cover subject matter presented to the public for the first time.

Visible Light Communication John Wiley & Sons

This concise text, first published in 2003, is for a one-semester course for upper-level undergraduates and beginning graduate students in engineering, science, and mathematics, and can also serve as a quick reference for professionals. The major topics in ordinary differential equations, initial value problems, boundary value problems, and delay differential equations, are usually taught in three separate semester-long courses. This single book provides a sound treatment of all three in fewer than 300 pages. Each chapter begins with a discussion of the 'facts of life' for the problem, mainly by means of examples. Numerical methods for the problem are then developed, but only those methods most widely used. The treatment of each method is brief and technical issues are minimized, but all the issues important in practice and for understanding the codes are discussed. The last part of each chapter is a tutorial that shows how to solve problems by means of small, but realistic, examples.

Introduction to Digital Communications Springer Nature

Designed to provide comprehensive coverage of the field of digital systems in a concise but authoritative form. For ease of access the book has been divided into five parts: fundamentals; devices for digital systems; system design and techniques; system development; and applications.

Optical Wireless Communications CRC Press

Detailing a systems approach, Optical Wireless Communications: System and Channel Modelling with MATLAB®, is a self-contained volume that concisely and comprehensively covers the theory and technology of optical wireless communications systems (OWC) in a way that is suitable for undergraduate and graduate-level students, as well as researchers and professional engineers. Incorporating MATLAB® throughout, the authors highlight past and current research activities to illustrate optical sources, transmitters, detectors, receivers, and other devices used in optical wireless communications. They also discuss both indoor and outdoor environments, discussing how different factors—including various channel models—affect system performance and mitigation techniques. In addition, this book broadly covers crucial aspects of OWC systems: Fundamental principles of OWC Devices and systems Modulation techniques and schemes (including polarization shift keying) Channel models and system performance analysis Emerging visible light communications Terrestrial free space optics communication Use of infrared in indoor OWC One entire chapter explores the emerging field of visible light communications, and others describe techniques for using theoretical analysis and simulation to mitigate channel impact on system performance. Additional topics include wavelet denoising, artificial neural networks, and spatial diversity. Content also covers different challenges encountered in OWC, as well as outlining possible solutions and current research trends. A major attraction of the book is the presentation of MATLAB simulations and codes, which enable readers to execute extensive simulations and better understand OWC in general.

Data Engineering John Wiley & Sons

The book gives an in-depth study of the principles of the spread spectrum techniques and their applications in mobile communications. It starts with solid foundations in the digital communications that are essential to unequivocal understanding of the CDMA technology, and guides the reader through the fundamentals and characteristics of cellular CDMA communications. Features include: * A very clear and thorough description of the principles and applications of spread spectrum techniques in multi-user mobile communications. * Matlab-based worked examples, exercises and practical sessions to clearly explain the theoretical concepts. * An easy-to-read explanation of the air interface standards used in IS-95 A/B, cdma2000, and 3G WCDMA. * Clear presentations of the high speed downlink and uplink packet access (HSDPA/HSUPA) techniques used in 3G WCDMA. The book is a very suitable introduction to the principles of CDMA communications for senior undergraduate and graduate students, as well researchers and engineers in industry who are looking to develop their expertise. A very clear and thorough description of the principles and applications of spread spectrum techniques in multi-user mobile communications. Matlab-based worked examples, exercises and practical sessions to clearly explain the theoretical concepts. An easy-to-read explanation of the air interface standards used in IS-95 A/B, cdma2000, and 3G WCDMA. Clear presentations of the high speed downlink and uplink packet access (HSDPA/HSUPA) techniques used in 3G WCDMA.

The Industrial Information Technology Handbook John Wiley & Sons

"Digital Communications" presents the theory and application of the philosophy of Digital Communication systems in a unique but lucid form. The book inserts equal importance to the theory and application aspect of the subject whereby the authors selected a wide class of problems. The Salient features of the book are: 1. The foundation of Fourier series, Transform and wavelets are introduced in a unique way but in lucid language. 2. The application area is rich and resembles the present trend of research, as we are attached with those areas professionally. 3. Elegant exercise section is designed in such a way that, the readers can get the flavor of the subject and get attracted towards the future scopes of the subject. 4. Unparallel tabular, flow chart based and pictorial methodology description will be there for sustained impression of the proposed design/algorithms in mind.

Algebraic Coding Theory and Applications Springer

This is a concise presentation of the concepts underlying the design of digital communication systems, without the detail that can overwhelm students. Many examples, from the basic to the cutting-edge, show how the theory is used in the design of modern systems and the relevance of this theory will motivate students. The theory is supported by practical algorithms so that the student can perform computations and simulations. Leading edge topics in coding and wireless communication make this an ideal text for students taking just one course on the subject. *Fundamentals of Digital Communications* has coverage of turbo and LDPC codes in sufficient detail and clarity to enable hands-on implementation and performance evaluation, as well as 'just enough' information theory to enable computation of performance benchmarks to compare them against. Other unique features include space-time communication and geometric insights into noncoherent communication and equalization.

Solving ODEs with MATLAB John Wiley & Sons

Takes a fresh look at basic digital design. From definition, to example, to graphic illustration, to simulation result, the book progresses through the main themes of digital design. Technically up-to-date, this book covers all the latest topics: Field

programmable gate arrays, PALs and ROMs. The latest memory chips for SRAM and DRAM are shown. Software for creating the excitation equations of FSM are covered, as well as LogicWorks and Beige Bag PC and more.

Fundamentals of Digital Communication Academic Press

This textbook forms an introduction to codes, cryptography and information theory as it has developed since Shannon's original papers.

Optical Wireless Communications Academic Press

Although data engineering is a multi-disciplinary field with applications in control, decision theory, and the emerging hot area of bioinformatics, there are no books on the market that make the subject accessible to non-experts. This book fills the gap in the field, offering a clear, user-friendly introduction to the main theoretical and practical tools for analyzing complex systems. An ftp site features the corresponding MATLAB and Mathematical tools and simulations. Market: Researchers in data management, electrical engineering, computer science, and life sciences.

Principles of Communications Springer Science & Business Visible Light Communications, written by leading researchers, provides a comprehensive overview of theory, stimulation, design, implementation, and applications. The book is divided into two parts - the first devoted to the underlying theoretical concepts of the VLC and the second part covers VLC applications. Visible Light Communications is an emerging topic with multiple functionalities including data communication, indoor localization, 5G wireless communication networks, security, and small cell optimization. This concise book will be of valuable interest from beginners to researchers in the field.

Artificial Computation in Biology and Medicine Morgan & Claypool

Software history has a deep impact on current software designers, computer scientists, and technologists. System constraints imposed in the past and the designs that responded to them are often unknown or poorly understood by students and practitioners, yet modern software systems often include "old" software and "historical" programming techniques. This work looks at software history through specific software areas to develop student-consumable practices, design principles, lessons learned, and trends useful in current and future software design. It also exposes key areas that are widely used in modern software, yet infrequently taught in computing programs. Written as a textbook, this book uses specific cases from the past and present to explore the impact of software trends and techniques. Building on concepts from the history of science and technology, software history examines such areas as fundamentals, operating systems, programming languages, programming environments, networking, and databases. These topics are covered from their earliest beginnings to their modern variants. There are focused case studies on UNIX, APL, SAGE, GNU Emacs, Autoflow, internet protocols, System R, and others. Extensive problems and suggested projects enable readers to deeply delve into the history of software in areas that interest them most.

Data and Computer Communications World Scientific

This paperback is a color edition. Link to the black & white edition: <https://www.amazon.com/gp/product/152149388X> *Digital Modulations using Matlab* is a learner-friendly, practical and example driven book, that gives you a solid background in building simulation models for digital modulation systems in Matlab. This book, an essential guide for understanding the implementation aspects of a digital modulation system, shows how to simulate and model a digital modulation system from scratch. The implemented simulation models shown in this book, mostly will not use any of the inbuilt communication toolbox functions and hence provide an opportunity for an engineer to

understand the basic implementation aspects of modeling various building blocks of a digital modulation system. It presents the following key topics with required theoretical background along with the implementation details in the form of Matlab scripts. * Basics of signal processing essential for implementing digital modulation techniques - generation of test signals, interpreting FFT results, power and energy of a signal, methods to compute convolution, analytic signal and applications. * Waveform and complex equivalent baseband simulation models. * Digital modulation techniques covered: BPSK and its variants, QPSK and its variants, M-ary PSK, M-ary QAM, M-ary PAM, CPM, MSK, GMSK, M-ary FSK. * Monte Carlo simulation for ascertaining performance of digital modulation techniques in AWGN and fading channels - E_b/N_0 Vs BER curves. * Design and implementation of linear equalizers - zero forcing and MMSE equalizers, using them in a communication link. * Simulation and performance of modulation systems with receiver impairments. *Encyclopedia of Optical and Photonic Engineering (Print) - Five Volume Set* CRC Press

The field of visible light communication (VLC) has diverse applications to the end user including streaming audio, video, high-speed data browsing, voice over internet and online gaming. This comprehensive textbook discusses fundamental aspects, research activities and modulation techniques in the field of VLC. Visible Light Communication: A Comprehensive Theory and Applications with MATLAB® discusses topics including line of sight (LOS) propagation model, non-line of sight (NLOS) propagation model, carrier less amplitude and phase modulation, multiple-input-multiple-output (MIMO), non-linearities of optical sources, orthogonal frequency-division multiple access, non-orthogonal multiple access and single-carrier frequency-division multiple access in depth. Primarily written for senior undergraduate and graduate students in the field of electronics and communication engineering for courses on optical wireless communication and VLC, this book: Provides up-to-date literature in the field of VLC Presents MATLAB codes and simulations to help readers understand simulations Discusses applications of VLC in enabling vehicle to vehicle (V2V) communication Covers topics including radio frequency (RF) based wireless communications and VLC Presents modulation formats along with the derivations of probability of error expressions pertaining to different variants of optical OFDM

Nonnegative Matrix and Tensor Factorizations PHI Learning Pvt. Ltd.

This book provides a broad survey of models and efficient algorithms for Nonnegative Matrix Factorization (NMF). This includes NMF's various extensions and modifications, especially Nonnegative Tensor Factorizations (NTF) and Nonnegative Tucker Decompositions (NTD). NMF/NTF and their extensions are increasingly used as tools in signal and image processing, and data analysis, having garnered interest due to their capability to provide new insights and relevant information about the complex latent relationships in experimental data sets. It is suggested that NMF can provide meaningful components with physical interpretations; for example, in bioinformatics, NMF and its extensions have been successfully applied to gene expression, sequence analysis, the functional characterization of genes, clustering and text mining. As such, the authors focus on the algorithms that are most useful in practice, looking at the fastest, most robust, and suitable for large-scale models. Key features: Acts as a single source reference guide to NMF, collating information that is widely dispersed in current literature, including the authors' own recently developed techniques in the subject area. Uses generalized cost functions such as Bregman, Alpha and Beta divergences, to present practical

implementations of several types of robust algorithms, in particular Multiplicative, Alternating Least Squares, Projected Gradient and Quasi Newton algorithms. Provides a comparative analysis of the different methods in order to identify approximation error and complexity. Includes pseudo codes and optimized MATLAB source codes for almost all algorithms presented in the book. The increasing interest in nonnegative matrix and tensor factorizations, as well as decompositions and sparse representation of data, will ensure that this book is essential reading for engineers, scientists, researchers, industry practitioners and graduate students across signal and image processing; neuroscience; data mining and data analysis; computer science; bioinformatics; speech processing; biomedical engineering; and multimedia.

Communication Systems Principles Using MATLAB Springer

This introduction to digital data transmission, modulation, and error-correction coding, together with the underlying communication and information theory is an all-inclusive text suitable for all those connected with Mechanical Engineering or Computer Science. Equal emphasis is given to underlying mathematical theory and engineering practice. Not meant to be an encyclopedic treatise, the book offers strong, accessible pedagogy. This Second Edition presents enhanced explanations of key ideas as well as additional examples and problems. It also provides greatly expanded coverage of wireless communication, which has seen exponential growth since the release of the first edition. A pedagogical approach aimed at the 5th year EE student A balance of theory with engineering and design Integration of important topics such as synchronization, radio channels, and wireless communication, which are left out of competing books, or lost in more lengthy formats.

DIGITAL IMAGE PROCESSING John Wiley & Sons

The 2nd Edition of Optical Wireless Communications: System and Channel Modelling with MATLAB® with additional new materials, is a self-contained volume that provides a concise and comprehensive coverage of the theory and technology of optical wireless communication systems (OWC). The delivery method makes the book appropriate for students studying at undergraduate and graduate levels as well as researchers and professional engineers working in the field of OWC. The book gives a detailed description of OWC, focusing mainly on the infrared and visible bands, for indoor and outdoor applications. A major attraction of the book is the inclusion of Matlab codes and simulations results as well as experimental test-beds for free space optics and visible light communication systems. This valuable resource will aid the readers in understanding the concept, carrying out extensive analysis, simulations, implementation and evaluation of OWC links. This 2nd edition is structured into nine compact chapters that cover the main aspects of OWC systems: History, current state of the art and challenges Fundamental principles Optical source and detector and noise sources Modulation, equalization, diversity techniques Channel models and system performance analysis Visible light communications Terrestrial free space optics communications Relay-based free space optics communications Matlab codes. A number of Matlab based simulation codes are included in this 2nd edition to assist the readers in mastering the subject and most importantly to encourage them to write their own simulation codes and enhance their knowledge.

FPGA-Based Embedded System Developer's Guide John Wiley & Sons

IT technology engineering changes everyday life, especially in Computing and Communications. The goal of this book is to further explore the theoretical and practical issues of Future Computing and Communications. It also aims to foster new ideas

and collaboration between researchers and practitioners.

Exploratory Data Analysis with MATLAB Oxford University Press

One of the most important key technologies for digital communication systems as well as storage media is coding theory. It provides a means to transmit information across time and space over noisy and unreliable communication channels. Coding Theory: Algorithms, Architectures and Applications provides a concise overview of channel coding theory and practice, as well as the accompanying signal processing architectures. The book is unique in presenting algorithms, architectures, and applications of coding theory in a unified framework. It covers the basics of coding theory before moving on to discuss algebraic linear block and cyclic codes, turbo codes and low density parity check codes and space-time codes. Coding

Theory provides algorithms and architectures used for implementing coding and decoding strategies as well as coding schemes used in practice especially in communication systems. Feature of the book include: Unique presentation-like style for summarising main aspects Practical issues for implementation of coding techniques Sound theoretical approach to practical, relevant coding methodologies Covers standard coding schemes such as block and convolutional codes, coding schemes such as Turbo and LDPC codes, and space time codes currently in research, all covered in a common framework with respect to their applications. This book is ideal for postgraduate and undergraduate students of communication and information engineering, as well as computer science students. It will also be of use to engineers working in the industry who want to know more about the theoretical basics of coding theory and their application in currently relevant communication systems