

# FREE NEAR CAPACITY VARIABLE LENGTH CODING REGULAR AND EXIT CHART AIDED IRREGULAR DESIGNS WILEY IEEE

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## Near Capacity Variable Length Coding Regular And Exit Chart Aided Irregular Designs Wiley Ieee Introduction

### Near-Capacity Variable-Length Coding

Recent developments such as the invention of powerful turbo-decoding and irregular designs, together with the increase in the number of potential applications to multimedia signal compression, have increased the importance of variable length coding (VLC). Providing insights into the very latest research, the authors examine the design of diverse near-capacity VLC codes in the context of wireless telecommunications. The book commences with an introduction to Information Theory, followed by a discussion of Regular as well as Irregular Variable Length Coding and their applications in joint source and channel coding. Near-capacity designs are created using Extrinsic Information Transfer (EXIT) chart analysis. The latest techniques are discussed, outlining radical concepts such as Genetic Algorithm (GA) aided construction of diverse VLC codes. The book concludes with two chapters on VLC-based space-time transceivers as well as on frequency-hopping assisted schemes, followed by suggestions for future work on the topic. Surveys the historic evolution and development of VLCs Discusses the very latest research into VLC codes Introduces the novel concept of Irregular VLCs and their application in joint-source and channel coding

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### MIMO-OFDM for LTE, WiFi and WiMAX

MIMO-OFDM for LTE, WiFi and WiMAX: Coherent versus Non-Coherent and Cooperative Turbo-Transceivers provides an up-to-date portrayal of wireless transmission based on OFDM techniques augmented with Space-Time Block Codes (STBCs) and Spatial-Division Multiple Access (SDMA). The volume also offers an in-depth treatment of cutting-edge Cooperative Communications. This monograph collates the latest techniques in a number of specific design areas of turbo-detected MIMO-OFDM wireless systems. As a result a wide range of topical subjects are examined, including channel coding and multiuser detection (MUD), with a special emphasis on optimum maximum-likelihood (ML) MUDs, reduced-complexity genetic algorithm aided near-ML MUDs and sphere detection. The benefits of spreading codes as well as joint iterative channel and data estimation are only a few of the radical new features of the book. Also considered are the benefits of turbo and LDPC channel coding, the entire suite of known joint coding and modulation schemes, space-time coding as well as SDM/SDMA MIMOs within the context of various application examples. The book systematically converts the lessons of Shannon's information theory into design principles applicable to practical wireless systems; the depth of discussions increases towards the end of the book. Discusses many state-of-the-art topics important to today's wireless communications engineers. Includes numerous complete system design examples for the industrial practitioner. Offers a detailed portrayal of sphere detection. Based on over twenty years of research into OFDM in the context of various applications, subsequently presenting comprehensive bibliographies.

### Turbo Coding, Turbo Equalisation and Space-Time Coding

Covering the full range of channel codes from the most conventional through to the most advanced, the second edition of Turbo Coding, Turbo Equalisation and Space-Time Coding is a self-contained reference on channel coding for wireless channels. The book commences with a historical perspective on the topic, which leads to two basic component codes, convolutional and block codes. It then moves on to turbo codes which exploit iterative decoding by using algorithms, such as the Maximum-A-Posteriori (MAP), Log-MAP and Soft Output Viterbi Algorithm (SOVA), comparing their performance. It also compares Trellis Coded Modulation (TCM), Turbo Trellis Coded Modulation (TTCM), Bit-Interleaved Coded Modulation (BICM) and Iterative BICM (BICM-ID) under various channel conditions. The horizon of the content is then extended to incorporate topics which have found their way into diverse standard systems. These include space-time block and trellis codes, as well as other Multiple-Input Multiple-Output (MIMO) schemes and near-instantaneously Adaptive Quadrature Amplitude Modulation (AQAM). The book also elaborates on turbo equalisation by providing a detailed portrayal of recent advances in partial response modulation schemes using diverse channel codes. A radically new aspect for this second edition is the discussion of multi-level coding and sphere-packing schemes, Extrinsic Information Transfer (EXIT) charts, as well as an introduction to the family of Generalized Low Density Parity Check codes. This new edition includes recent advances in near-capacity turbo-transceivers as well as new sections on multi-level coding schemes and of Generalized Low Density Parity Check codes Comparatively studies diverse channel coded and turbo detected systems to give all-inclusive information for researchers, engineers and students Details EXIT-chart based irregular transceiver designs Uses rich performance comparisons as well as diverse near-capacity design examples

### Near-Capacity Multi-Functional MIMO Systems

Providing an all-encompassing self-contained treatment of Near-Capacity Multi-Functional MIMO Systems , the book starts by categorizing the family of Multiple-Input Multiple-Output (MIMO) schemes as diversity techniques, multiplexing schemes, multiple access arrangements and beam-forming techniques. Sophisticated coherent and low-complexity non-coherent MIMO receivers dispensing with channel estimation are considered in both classic and cooperation-aided scenarios. It is demonstrated that in the presence of correlated shadow-fading, cooperation-assisted systems may be expected to outperform their non-cooperative counterparts. The book contains a 100-page chapter on the unified treatment of all block codes in the context of high-flexibility, cutting-edge irregular Linear Dispersion Codes (LDC), which approach the MIMO-capacity. The majority of the book's solutions are in the optimum sphere-packing frame-work. Sophisticated amalgam of five year's near-capacity MIMO research Detailed examination of wireless landscape, including the fields of channel coding, spacetime coding and turbo detection techniques Novel tool of Extrinsic Information Transfer Charts (EXIT) used to address recent developments Material presented logically, allowing advanced readers to turn directly to any specific chapter of interest One of the only books to cover these subjects, giving equal weighting to each

### Data-Centric Business and Applications

This book discusses processes and procedures in information/data processing and management. The global market is becoming more and more complex with an increased availability of data and information, and as a result doing business with information is becoming more popular, with a significant impact on modern society immensely. This means that there is a growing need for a common understanding of how to create, access, use and manage business information. As such this book explores different aspects of data and information processing, including information generation, representation, structuring, organization, storage, retrieval, navigation, human factors in information systems, and the use of information. It also analyzes the challenges and opportunities of doing business with information, and presents various perspectives on business information managing.

### Multiphysics Simulation by Design for Electrical Machines, Power Electronics and Drives

Presents applied theory and advanced simulation techniques for electric machines and drives This book combines the knowledge of experts from both academia and the software industry to present theories of multiphysics simulation by design for electrical machines, power electronics, and drives. The comprehensive design approach described within supports new applications required by technologies sustaining high drive efficiency. The highlighted framework considers the electric machine at the heart of the entire electric drive. The book also emphasizes the simulation by design concept—a concept that frames the entire highlighted design methodology, which is described and illustrated by various advanced simulation technologies. Multiphysics Simulation by Design for Electrical Machines, Power Electronics and Drives begins with the basics of electrical machine design and manufacturing tolerances. It also discusses fundamental aspects of the state of the art design process and includes examples from industrial practice. It explains FEM-based analysis techniques for electrical machine design—providing details on how it can be employed in ANSYS Maxwell software. In addition, the book covers advanced magnetic material modeling capabilities employed in numerical computation; thermal analysis; automated optimization for electric machines; and power electronics and drive systems. This valuable resource: Delivers the multi-physics know-how based on practical electric machine design methodologies Provides an extensive overview of electric machine design optimization and its integration with power electronics and drives Incorporates case studies from industrial practice and research and development projects Multiphysics Simulation by Design for Electrical Machines, Power Electronics and Drives is an incredibly helpful book for design engineers, application and system engineers, and technical professionals. It will also benefit graduate engineering students with a strong interest in electric machines and drives.

## LDPC Code Designs, Constructions, and Unification

In this book, leading authorities unify algebraic- and graph-based LDPC code designs and constructions into a single theoretical framework.

## Turbo Code Applications

Turbo Code Applications: a journey from a paper to realization presents c- temporary applications of turbo codes in thirteen technical chapters. Each chapter focuses on a particular communication technology utilizing turbo codes, and they are written by experts who have been working in related th areas from around the world. This book is published to celebrate the 10 year anniversary of turbo codes invention by Claude Berrou Alain Glavieux and Punya Thitimajshima (1993-2003). As known for more than a decade, turbo code is the astonishing error control coding scheme which its perf- mance closes to the Shannon’s limit. It has been honored consequently as one of the seventeen great innovations during the ?rst ?fty years of information theory foundation. With the amazing performance compared to that of other existing codes, turbo codes have been adopted into many communication s- tems and incorporated with various modern industrial standards. Numerous research works have been reported from universities and advance companies worldwide. Evidently, it has successfully revolutionized the digital commu- cations. Turbo code and its successors have been applied in most communications startingfromthegroundorterrestrialsystemsofdatastorage,ADSLmodem, and ?ber optic communications. Subsequently, it moves up to the air channel applications by employing to wireless communication systems, and then ?ies up to the space by using in digital video broadcasting and satellite com- nications. Undoubtedly, with the excellent error correction potential, it has been selected to support data transmission in space exploring system as well.

## Coding Theory

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

## Architectural Research Methods

A practical guide to research for architects and designers—now updated and expanded! From searching for the best glass to prevent glare to determining how clients might react to the color choice for restaurant walls, research is a crucial tool that architects must master in order to effectively address the technical, aesthetic, and behavioral issues that arise in their work. This book’s unique coverage of research methods is specifically targeted to help professional designers and researchers better conduct and understand research. Part I explores basic research issues and concepts, and includes chapters on relating theory to method and design to research. Part II gives a comprehensive treatment of specific strategies for investigating built forms. In all, the book covers seven types of research, including historical, qualitative, correlational, experimental, simulation, logical argumentation, and case studies and mixed methods. Features new to this edition include: Strategies for investigation, practical examples, and resources for additional information A look at current trends and innovations in research Coverage of design studio–based research that shows how strategies described in the book can be employed in real life A discussion of digital media and online research New and updated examples of research studies A new chapter on the relationship between design and research Architectural Research Methods is an essential reference for architecture students and researchers as well as architects, interior designers, landscape architects, and building product manufacturers.

## Channel Codes

Channel coding lies at the heart of digital communication and data storage, and this detailed introduction describes the core theory as well as decoding algorithms, implementation details, and performance analyses. In this book, Professors Ryan and Lin provide clear information on modern channel codes, including turbo and low-density parity-check (LDPC) codes. They also present detailed coverage of BCH codes, Reed-Solomon codes, convolutional codes, finite geometry codes, and product codes, providing a one-stop resource for both classical and modern coding techniques. Assuming no prior knowledge in the field of channel coding, the opening chapters begin with basic theory to introduce newcomers to the subject. Later chapters then extend to advanced topics such as code ensemble performance analyses and algebraic code design. 250 varied and stimulating end-of-chapter problems are also included to test and enhance learning, making this an essential resource for students and practitioners alike.

## Blockchain for Distributed Systems Security

AN ESSENTIAL GUIDE TO USING BLOCKCHAIN TO PROVIDE FLEXIBILITY, COST-SAVINGS, AND SECURITY TO DATA MANAGEMENT, DATA ANALYSIS, AND INFORMATION SHARING Blockchain for Distributed Systems Security contains a description of the properties that underpin the formal foundations of Blockchain technologies and explores the practical issues for deployment in cloud and Internet of Things (IoT) platforms. The authors—noted experts in the field—present security and privacy issues that must be addressed for Blockchain technologies to be adopted for civilian and military domains. The book covers a range of topics including data provenance in cloud storage, secure IoT models, auditing architecture, and empirical validation of permissioned Blockchain platforms. The book’s security and privacy analysis helps with an understanding of the basics of Blockchain and it explores the quantifying impact of the new attack surfaces introduced by Blockchain technologies and platforms. In addition, the book contains relevant and current updates on the topic. This important resource: Provides an overview of Blockchain-based secure data management and storage for cloud and IoT Covers cutting-edge research findings on topics including invariant-based supply chain protection, information sharing framework, and trust worthy information federation Addresses security and privacy concerns in Blockchain in key areas, such as preventing digital currency miners from launching attacks against mining pools, empirical analysis of the attack surface of Blockchain, and more Written for researchers and experts in computer science and engineering, Blockchain for Distributed Systems Security contains the most recent information and academic research to provide an understanding of the application of Blockchain technology.

## Bioimage Data Analysis Workflows

This Open Access textbook provides students and researchers in the life sciences with essential practical information on how to quantitatively analyze data images. It refrains from focusing on theory, and instead uses practical examples and step-by step protocols to familiarize readers with the most commonly used image processing and analysis platforms such as ImageJ, MatLab and Python. Besides gaining knowhow on algorithm usage, readers will learn how to create an analysis pipeline by scripting language; these skills are important in order to document reproducible image analysis workflows. The textbook is chiefly intended for advanced undergraduates in the life sciences and biomedicine without a theoretical background in data analysis, as well as for postdocs, staff scientists and faculty members who need to perform regular quantitative analyses of microscopy images.

## Third-Generation Systems and Intelligent Wireless Networking

Of Non-Wraparound Network Performance -- Wrap-around Network Performance Results -- Performance Results over a LOS Channel -- Performance Results over a Multipath Channel -- Performance over a Multipath Channel using Power Control -- Performance of an AQAM based Network using Power Control -- UTRA, Adaptive Arrays and Adaptive Modulation -- Direct Sequence Code Division Multiple Access -- UMTS Terrestrial Radio Access -- Spreading and Modulation -- Common Pilot Channel -- Power Control -- Uplink Power Control -- Downlink Power Control -- Soft Handover -- Signal-to-Interference plus Noise Ratio Calculations -- Downlink -- Uplink -- Multi-User Detection -- Simulation Results -- Simulation Parameters -- The Effect of Pilot Power on Soft Handover Results -- Fixed Received Pilot Power Thresholds without Shadowing -- Fixed Received Pilot Power Thresholds with 0.5 Hz Shadowing -- Fixed Received Pilot Power Thresholds with 1.0 Hz Shadowing -- Relative Received Pilot Power Thresholds without Shadowing -- Relative Received Pilot Power Thresholds with 0.5 Hz Shadowing -- Relative Received Pilot Power Thresholds with 1.0 Hz Shadowing -- E[subscript c]/I[subscript o] Power Based Soft Handover Results -- Fixed E[subscript c]/I[subscript o] Thresholds without Shadowing -- Fixed E[subscript c]/I[subscript o] Thresholds with 0.5 Hz Shadowing -- Fixed E[subscript c]/I[subscript o] Thresholds with 1.0 Hz Shadowing -- Relative E[subscript c]/I[subscript o] Thresholds without Shadowing.

## Reinforcement Learning, second edition

The significantly expanded and updated new edition of a widely used text on reinforcement learning, one of the most active research areas in artificial intelligence. Reinforcement learning, one of the most active research areas in artificial intelligence, is a computational approach to learning whereby an agent tries to maximize the total amount of reward it receives while interacting with a complex, uncertain environment. In Reinforcement Learning, Richard Sutton and Andrew Barto provide a clear and simple account of the field’s key ideas and algorithms. This second edition has been significantly expanded and updated, presenting new topics and updating coverage of other topics. Like the first edition, this second edition focuses on core online learning algorithms, with the more mathematical material set off in shaded boxes. Part I covers as much of reinforcement learning as possible without going beyond the tabular case for which exact solutions can be found. Many algorithms presented in this part are new to the second edition, including UCB, Expected Sarsa, and Double Learning. Part II extends these ideas to function approximation, with new sections on such topics as artificial neural networks and the Fourier basis, and offers expanded treatment of off-policy learning and policy-gradient methods. Part III has new chapters on reinforcement learning’s relationships to psychology and neuroscience, as well as an updated case-studies chapter including AlphaGo and AlphaGo Zero, Atari game playing, and IBM Watson’s wagering strategy. The final chapter discusses the future societal impacts of reinforcement learning.

## IEEE Recommended Practice for Powering and Grounding Electronic Equipment

Explores the fundamentals required to understand, analyze, and implement space modulation techniques (SMTs) in coherent and non-coherent radio frequency environments This book focuses on the concept of space modulation techniques (SMTs), and covers those emerging high data rate wireless communication techniques. The book discusses the advantages and disadvantages of SMTs along with their performance. A general framework for analyzing the performance of SMTs is provided and used to detail their performance over several generalized fading channels. The book also addresses the transmitter design of these techniques with the optimum number of hardware components and the use of these techniques in cooperative and mm-Wave communications. Beginning with an introduction to the subject and a brief history, Space Modulation Techniques goes on to offer chapters covering MIMO systems like spatial multiplexing and space-time coding. It then looks at channel models, such as Rayleigh, Rician, Nakagami-m, and other generalized distributions. A discussion of SMTs includes techniques like space shift keying (SSK), space-time shift keying (STSK), trellis coded spatial modulation (TCSM), spatial modulation (SM), generalized spatial modulation (GSM), quadrature spatial modulation (QSM), and more. The book also presents a non-coherent design for different SMTs, and a framework for SMTs’ performance analysis in different channel conditions and in the presence of channel imperfections, all that along with an information theoretic treatment of SMTs. Lastly, it provides performance comparisons, results, and MATLAB codes and offers readers practical implementation designs for SMTs. The book also: Provides readers with the expertise of the inventors of space modulation techniques (SMTs) Analyzes error performance, capacity performance, and system complexity. Discusses practical implementation of SMTs and studies SMTs with cooperative and mm-Wave communications Explores and compares MIMO schemes Space Modulation Techniques is an ideal book for professional and academic readers that are active in the field of SMT MIMO systems.

## Space Modulation Techniques

Praise for the first edition: “This excellent text will be useful to every system engineer (SE) regardless of the domain. It covers ALL relevant SE material and does so in a very clear, methodical fashion. The breadth and depth of the author’s presentation of SE principles and practices is outstanding.” –Philip Allen This textbook presents a comprehensive, step-by-step guide to System Engineering analysis, design, and development via an integrated set of concepts, principles, practices, and methodologies. The methods presented in this text apply to any type of human system -- small, medium, and large organizational systems and system development projects delivering engineered systems or services across multiple business sectors such as medical, transportation, financial, educational, governmental, aerospace and defense, utilities, political, and charity, among others. Provides a common focal point for “bridging the gap” between and unifying System Users, System Acquirers, multi-discipline System Engineering, and Project, Functional, and Executive Management education, knowledge, and decision-making for developing systems, products, or services Each chapter provides definitions of key terms, guiding principles, examples, author’s notes, real-world examples, and exercises, which highlight and reinforce key SE&D concepts and practices Addresses concepts employed in Model-Based Systems Engineering (MBSE), Model-Driven Design (MDD), Unified Modeling Language (UMLTM) / Systems Modeling Language (SysMLTM), and Agile/Spiral/V-Model Development such as user needs, stories, and use cases analysis; specification development; system architecture development; User-Centric System Design (UCSD); interface definition & control; system integration & test; and Verification & Validation (V&V) Highlights/introduces a new 21st Century Systems Engineering & Development (SE&D) paradigm that is easy to understand and implement. Provides practices that are critical staging points for technical decision making such as Technical Strategy Development; Life Cycle requirements; Phases, Modes, & States; SE Process; Requirements Derivation; System Architecture Development, User-Centric System Design (UCSD); Engineering Standards, Coordinate Systems, and Conventions; et al. Thoroughly illustrated, with end-of-chapter exercises and numerous case studies and examples, Systems Engineering Analysis, Design, and Development, Second Edition is a primary textbook for multi-discipline, engineering, system analysis, and project management undergraduate/graduate level students and a valuable reference for professionals.

## System Engineering Analysis, Design, and Development

The majority of data sets collected by researchers in all disciplines are multivariate, meaning that several measurements, observations, or recordings are taken on each of the units in the data set. These units might be human subjects, archaeological artifacts, countries, or a vast variety of other things. In a few cases, it may be sensible to isolate each variable and study it separately, but in most instances all the variables need to be examined simultaneously in order to fully grasp the structure and key features of the data. For this purpose, one or another method of multivariate analysis might be helpful, and it is with such methods that this book is largely concerned. Multivariate analysis includes methods both for describing and exploring such data and for making formal inferences about them. The aim of all the techniques is, in general sense, to display or extract the signal in the data in the presence of noise and to find out what the data show us in the midst of their apparent chaos. An Introduction to Applied Multivariate Analysis with R explores the correct application of these methods so as to extract as much information as possible from the data at hand, particularly as some type of graphical representation, via the R software. Throughout the book, the authors give many examples of R code used to apply the multivariate techniques to multivariate data.

## An Introduction to Applied Multivariate Analysis with R

Acknowledgments. Basic Real-Time Concepts. Computer Hardware. Languages Issues. The Software Life Cycle. Real-Time Specification and Design Techniques. Real-Time Kernels. Intertask Communication and Synchronization. Real-Time Memory Management. System Performance Analysis and Optimization. Queuing Models. Reliability, Testing, and Fault Tolerance. Multiprocessing Systems. Hardware/Software Integration. Real-Time Applications. Glossary. Bibliography. Index.

## Real-Time Systems Design and Analysis

Pack contains Vol. 1: Practical guidance and lessons identified (ISBN 9780114302030) and Vol. 2: Supporting theory and evidence (ISBN 9780114302047). Both volumes are available separately

## Understanding Crowd Behaviours [pack]

A state-of-the-art psychological perspective on team working and collaborative organizational processes This handbook makes a unique contribution to organizational psychology and HRM by providing comprehensive international coverage of the contemporary field of team working and collaborative organizational processes. It provides critical reviews of key topics related to teams including design, diversity, leadership, trust processes and performance measurement, drawing on the work of leading thinkers including Linda Argote, Neal Ashkanasy, Robert Kraut, Floor Rink and Daan van Knippenberg.

## The Wiley Blackwell Handbook of the Psychology of Team Working and Collaborative Processes

Drawing Futures brings together international designers and artists for speculations in contemporary drawing for art and architecture. Despite numerous developments in technological manufacture and computational design that provide new grounds for designers, the act of drawing still plays a central role as a vehicle for speculation. There is a rich and long history of drawing tied to innovations in technology as well as to revolutions in our philosophical understanding of the world. In reflection of a society now underpinned by computational networks and interfaces allowing hitherto unprecedented views of the world, the changing status of the drawing and its representation as a political act demands a platform for reflection and innovation. Drawing Futures will present a compendium of projects, writings and interviews that critically reassess the act of drawing and where its future may lie. Drawing Futures focuses on the discussion of how the field of drawing may expand synchronously alongside technological and computational developments. The book coincides with an international conference of the same name, taking place at The Bartlett School of Architecture, UCL, in November 2016. Bringing together practitioners from many creative fields, the book discusses how drawing is changing in relation to new technologies for the production and dissemination of ideas.

## Drawing Futures

The study of human body measurements on a comparative basis is known as anthropometrics. Its applicability to the design process is seen in the physical fit, or interface, between the human body and the various components of interior space. Human Dimension and Interior Space is the first major anthropometrically based reference book of design standards for use by all those involved with the physical planning and detailing of interiors, including interior designers, architects, furniture designers, builders, industrial designers, and students of design. The use of anthropometric data, although no substitute for good design or sound professional judgment should be viewed as one of the many tools required in the design process. This comprehensive overview of anthropometrics consists of three parts. The first part deals with the theory and application of anthropometrics and includes a special section dealing with physically disabled and elderly people. It provides the designer with the fundamentals of anthropometrics and a basic understanding of how interior design standards are established. The second part contains easy-to-read, illustrated anthropometric tables, which provide the most current data available on human body size, organized by age and percentile groupings. Also included is data relative to the range of joint motion and body sizes of children. The third part contains hundreds of dimensioned drawings, illustrating in plan and section the proper anthropometrically based relationship between user and space. The types of spaces range from residential and commercial to recreational and institutional, and all dimensions include metric conversions. In the Epilogue, the authors challenge the interior design profession, the building industry, and the furniture manufacturer to seriously explore the problem of adjustability in design. They expose the fallacy of designing to accommodate the so-called average man, who, in fact, does not exist. Using government data, including studies prepared by Dr. Howard Stoudt, Dr. Albert Damon, and Dr. Ross McFarland, formerly of the Harvard School of Public Health, and Jean Roberts of the U.S. Public Health Service, Panero and Zelnik have devised a system of interior design reference standards, easily understood through a series of charts and situation drawings. With Human Dimension and Interior Space, these standards are now accessible to all designers of interior environments.

## Human Dimension and Interior Space

MIMO-OFDM is a key technology for next-generation cellular communications (3GPP-LTE, Mobile WiMAX, IMT-Advanced) as well as wireless LAN (IEEE 802.11a, IEEE 802.11n), wireless PAN (MB-OFDM), and broadcasting (DAB, DVB, DMB). In MIMO-OFDM Wireless Communications with MATLAB®, the authors provide a comprehensive introduction to the theory and practice of wireless channel modeling, OFDM, and MIMO, using MATLAB® programs to simulate the various techniques on MIMO-OFDM systems. One of the only books in the area dedicated to explaining simulation aspects Covers implementation to help cement the key concepts Uses materials that have been classroom-tested in numerous universities Provides the analytic solutions and practical examples with downloadable MATLAB® codes Simulation examples based on actual industry and research projects Presentation slides with key equations and figures for instructor use MIMO-OFDM Wireless Communications with MATLAB® is a key text for graduate students in wireless communications. Professionals and technicians in wireless communication fields, graduate students in signal processing, as well as senior undergraduates majoring in wireless communications will find this book a practical introduction to the MIMO-OFDM techniques. Instructor materials and MATLAB® code examples available for download at [www.wiley.com/go/chomimo](http://www.wiley.com/go/chomimo)

## MIMO-OFDM Wireless Communications with MATLAB

Wireless communications has witnessed a tremendous growth during the past decade and further spectacular enabling technology advances are expected in an effort to render ubiquitous wireless connectivity a reality. Currently, a technical in-depth book on this subject is unavailable, which has a similar detailed exposure of OFDM, MIMO-OFDM and MC-CDMA. A further attraction of these topics is that it allows the reader to view their design trade-offs in a comparative context. Divided into three main parts: Part I provides a detailed exposure of OFDM designed for employment in various applications Part II is another design alternative applicable in the context of OFDM systems where the channel quality fluctuations observed are averaged out with the aid of frequency-domain spreading codes, which leads to the concept of MC-CDMA Part III discusses how to employ multiple antennas at the base station for the sake of supporting multiple users in the uplink By providing an all-encompassing self-contained treatment this volume will appeal to a wide readership, as it is both an easy-reading textbook and a high-level research monograph.

## OFDM and MC-CDMA

This complete guide to physical-layer security presents the theoretical foundations, practical implementation, challenges and benefits of a groundbreaking new model for secure communication. Using a bottom-up approach from the link level all the way to end-to-end architectures, it provides essential practical tools that enable graduate students, industry professionals and researchers to build more secure systems by exploiting the noise inherent to communications channels. The book begins with a self-contained explanation of the information-theoretic limits of secure communications at the physical layer. It then goes on to develop practical coding schemes, building on the theoretical insights and enabling readers to understand the challenges and opportunities related to the design of physical layer security schemes. Finally, applications to multi-user communications and network coding are also included.

## Physical-Layer Security

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.

### Channel Coding Techniques for Wireless Communications

This book introduces Software Quality Assurance (SQA) and provides an overview of standards used to implement SQA. It defines ways to assess the effectiveness of how one approaches software quality across key industry sectors such as telecommunications, transport, defense, and aerospace. Includes supplementary website with an instructor’s guide and solutions Applies IEEE software standards as well as the Capability Maturity Model Integration for Development (CMMI) Illustrates the application of software quality assurance practices through the use of practical examples, quotes from experts, and tips from the authors

### Software Quality Assurance

Written by experts, Digital Terrain Modeling: Principles and Methodology provides comprehensive coverage of recent developments in the field. The topics include terrain analysis, sampling strategy, acquisition methodology, surface modeling principles, triangulation algorithms, interpolation techniques, on-line and off-line quality control in data a

### Digital Terrain Modeling

This exclusive coverage of the opportunities, technological challenges, solutions, and state of the art of large MIMO systems provides an in-depth discussion of algorithms for large MIMO signal processing, suited for large MIMO signal detection, precoding and LDPC code designs. An ideal resource for researchers, designers, developers and practitioners in wireless communications.

### Large MIMO Systems

Extensively class-tested, this textbook takes an innovative approach to software testing: it defines testing as the process of applying a few well-defined, general-purpose test criteria to a structure or model of the software. It incorporates the latest innovations in testing, including techniques to test modern types of software such as OO, web applications, and embedded software. The book contains numerous examples throughout. An instructor's solution manual, PowerPoint slides, sample syllabi, additional examples and updates, testing tools for students, and example software programs in Java are available on an extensive website.

### Introduction to Software Testing

Cities across the globe are looking to develop affordable, environmentally friendly, and socially responsible transportation solutions that can meet the accessibility needs of expanding metropolitan populations and support future economic and urban development. When appropriately planned and properly implemented as part of a larger public transportation network, urban rail systems can provide rapid mobility and vital access to city centers from surrounding districts. High-performing urban rail services, when carefully approached as development projects, can help enhance quality of life by giving citizens access to employment opportunities, essential services, urban amenities, and neighboring communities. The purpose of this Handbook is to synthesize and disseminate knowledge to inform the planning, implementation, and operations of urban rail projects with a view towards: -- Emphasizing the need for early studies and project planning; -- Making projects more sustainable (economically, socially, and environmentally); -- Improving socioeconomic returns and access to opportunities for users; -- Maximizing the value of private participation, where appropriate; and -- Building capacity within project implementing and managing institutions This Handbook provides experiential advice to tackle the technical, institutional, and financial challenges faced by decision makers considering urban rail projects. It brings together the expertise of World Bank staff and the input of numerous specialists to synthesize international 'good practices' and recommendations that are independent of commercial, financial political, or other interests. The material presented is intended as an honest-broker guide to maximize the impact and manage the challenges of urban rail systems in cities in both developed and developing countries. Rather than identify a single approach, this Handbook acknowledges the complexities and context necessary when approaching an urban rail development by helping to prepare decision makers to ask the right questions, consider the key issues, perform the necessary studies, apply adequate tools, and learn from international good practice all at the right time in the project development process.

### The Urban Rail Development Handbook

This Third Edition updates a landmark text with the latest findings The Third Edition of the internationally lauded Semiconductor Material and Device Characterization brings the text fully up-to-date with the latest developments in the field and includes new pedagogical tools to assist readers. Not only does the Third Edition set forth all the latest measurement techniques, but it also examines new interpretations and new applications of existing techniques. Semiconductor Material and Device Characterization remains the sole text dedicated to characterization techniques for measuring semiconductor materials and devices. Coverage includes the full range of electrical and optical characterization methods, including the more specialized chemical and physical techniques. Readers familiar with the previous two editions will discover a thoroughly revised and updated Third Edition, including: Updated and revised figures and examples reflecting the most current data and information 260 new references offering access to the latest research and discussions in specialized topics New problems and review questions at the end of each chapter to test readers' understanding of the material In addition, readers will find fully updated and revised sections in each chapter. Plus, two new chapters have been added: Charge-Based and Probe Characterization introduces charge-based measurement and Kelvin probes. This chapter also examines probe-based measurements, including scanning capacitance, scanning Kelvin force, scanning spreading resistance, and ballistic electron emission microscopy. Reliability and Failure Analysis examines failure times and distribution functions, and discusses electromigration, hot carriers, gate oxide integrity, negative bias temperature instability, stress-induced leakage current, and electrostatic discharge. Written by an internationally recognized authority in the field, Semiconductor Material and Device Characterization remains essential reading for graduate students as well as for professionals working in the field of semiconductor devices and materials. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

### Semiconductor Material and Device Characterization

Break into the powerful world of parallel GPU programming with this down-to-earth, practical guide Designed for professionals across multiple industrial sectors, Professional CUDA C Programming presents CUDA -- a parallel computing platform and programming model designed to ease the development of GPU programming -- fundamentals in an easy-to-follow format, and teaches readers how to think in parallel and implement parallel algorithms on GPUs. Each chapter covers a specific topic, and includes workable examples that demonstrate the development process, allowing readers to explore both the \"hard\" and \"soft\" aspects of GPU programming. Computing architectures are experiencing a fundamental shift toward scalable parallel computing motivated by application requirements in industry and science. This book demonstrates the challenges of efficiently utilizing compute resources at peak performance, presents modern techniques for tackling these challenges, while increasing accessibility for professionals who are not necessarily parallel programming experts. The CUDA programming model and tools empower developers to write high-performance applications on a scalable, parallel computing platform: the GPU. However, CUDA itself can be difficult to learn without extensive programming experience. Recognized CUDA authorities John Cheng, Max Grossman, and Ty McKercher guide readers through essential GPU programming skills and best practices in Professional CUDA C Programming, including: CUDA Programming Model GPU Execution Model GPU Memory model Streams, Event and Concurrency Multi-GPU Programming CUDA Domain-Specific Libraries Profiling and Performance Tuning The book makes complex CUDA concepts easy to understand for anyone with knowledge of basic software development with exercises designed to be both readable and high-performance. For the professional seeking entrance to parallel computing and the high-performance computing community, Professional CUDA C Programming is an invaluable resource, with the most current information available on the market.

### Professional CUDA C Programming

AEROSOL SCIENCE TECHNOLOGY AND APPLICATIONS Aerosols influence many areas of our daily life. They are at the core of environmental problems such as global warming, photochemical smog and poor air quality. They can also have diverse effects on human health, where exposure occurs in both outdoor and indoor environments. However, aerosols can have beneficial effects too; the delivery of drugs to the lungs, the delivery of fuels for combustion and the production of nanomaterials all rely on aerosols. Advances in particle measurement technologies have made it possible to take advantage of rapid changes in both particle size and concentration. Likewise, aerosols can now be produced in a controlled fashion. Reviewing many technological applications together with the current scientific status of aerosol modelling and measurements, this book includes: Satellite aerosol remote sensing The effects of aerosols on climate change Air pollution and health Pharmaceutical aerosols and pulmonary drug delivery Bioaerosols and hospital infections Particle emissions from vehicles The safety of emerging nanomaterials Radioactive aerosols: tracers of atmospheric processes With the importance of this topic brought to the public's attention after the eruption of the Icelandic volcano Eyjafjallajökull, this book provides a timely, concise and accessible overview of the many facets of aerosol science.

### Aerosol Science

The authors of this text have written a comprehensive introduction to the modeling and optimization problems encountered when designing new propulsion systems for passenger cars. It is intended for persons interested in the analysis and optimization of vehicle propulsion systems. Its focus is on the control-oriented mathematical description of the physical processes and on the model-based optimization of the system structure and of the supervisory control algorithms.

### Vehicle Propulsion Systems

Praise for How I Became a Quant \"Led by two top-notch quants, Richard R. Lindsey and Barry Schachter, How I Became a Quant details the quirky world of quantitative analysis through stories told by some of today's most successful quants. For anyone who might have thought otherwise, there are engaging personalities behind all that number crunching!\" --Ira Kawaller, Kawaller & Co. and the Kawaller Fund \"A fun and fascinating read. This book tells the story of how academics, physicists, mathematicians, and other scientists became professional investors managing billions.\" --David A. Krell, President and CEO, International Securities Exchange \"How I Became a Quant should be must reading for all students with a quantitative aptitude. It provides fascinating examples of the dynamic career opportunities potentially open to anyone with the skills and passion for quantitative analysis.\" --Roy D. Henriksson, Chief Investment Officer, Advanced Portfolio Management \"Quants\"--those who design and implement mathematical models for the pricing of derivatives, assessment of risk, or prediction of market movements--are the backbone of today's investment industry. As the greater volatility of current financial markets has driven investors to seek shelter from increasing uncertainty, the quant revolution has given people the opportunity to avoid unwanted financial risk by literally trading it away, or more specifically, paying someone else to take on the unwanted risk. How I Became a Quant reveals the faces behind the quant revolution, offering you?the?chance to learn firsthand what it's like to be a?quant today. In this fascinating collection of Wall Street war stories, more than two dozen quants detail their roots, roles, and contributions, explaining what they do and how they do it, as well as outlining the sometimes unexpected paths they have followed from the halls of academia to the front lines of an investment revolution.

## How I Became a Quant

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