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5G Explained

Security and Deployment of Advanced Mobile Communications

John Wiley & Sons **Practical Guide Provides Students and Industry Professionals with Latest Information on 5G Mobile Networks** Continuing the tradition established in his previous publications, Jyrki Penttinen offers 5G Explained as a thorough yet concise introduction to recent advancements and growing trends in mobile telecommunications. In this case, Penttinen focuses on the development and employment of 5G mobile networks and, more specifically, the challenges inherent in adjusting to new global standardization requirements and in maintaining a high level of security even as mobile technology expands to new horizons. The text discusses, for example, the Internet of Things (IoT) and how to keep networks reliable and secure when they are constantly accessed by many different devices with varying levels of user involvement and competence. 5G Explained is primarily designed for specialists who need rapid acclimation to the possibilities and concerns presented by 5G adoption. Therefore, it assumes some prior knowledge of mobile communications. However, earlier chapters are structured so that even relative newcomers will gain useful information. Other notable features include: Three modules each consisting of three chapters: Introduction, Technical Network Description and Planning of Security and Deployment Comprehensive coverage of topics such as technical requirements for 5G, network architecture, radio and core networks and services/applications Discussion of specific security techniques in addition to common-sense guidelines for planning, deploying, managing and optimizing 5G networks 5G Explained offers crucial updates for anyone involved in designing, deploying or working with 5G networks. It should prove a valuable guide for operators, equipment manufacturers and other professionals in mobile equipment engineering and security, network planning and optimization, and mobile application development, or anyone looking to break into these fields.

Software-Defined Radio for Engineers

Artech House **Based on the popular Artech House classic, Digital Communication Systems Engineering with Software-Defined Radio**, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

Internet of Things and Sensors Networks in 5G Wireless Communications

MDPI **The Internet of Things (IoT)** has attracted much attention from society, industry and academia as a promising technology that can enhance day to day activities, and the creation of new business models, products and services, and serve as a broad source of research topics and ideas. A future digital society is envisioned, composed of numerous wireless connected sensors and devices. Driven by huge demand, the massive IoT (mIoT) or massive machine type communication (mMTC) has been identified as one of the three main communication scenarios for 5G. In addition to connectivity, computing and storage and data management are also long-standing issues for low-cost devices and

sensors. The book is a collection of outstanding technical research and industrial papers covering new research results, with a wide range of features within the 5G-and-beyond framework. It provides a range of discussions of the major research challenges and achievements within this topic.

mmWave Massive MIMO

A Paradigm for 5G

[Academic Press](#) **mmWave Massive MIMO: A Paradigm for 5G** is the first book of its kind to hinge together related discussions on mmWave and Massive MIMO under the umbrella of 5G networks. New networking scenarios are identified, along with fundamental design requirements for mmWave Massive MIMO networks from an architectural and practical perspective. Working towards final deployment, this book updates the research community on the current mmWave Massive MIMO roadmap, taking into account the future emerging technologies emanating from 3GPP/IEEE. The book's editors draw on their vast experience in international research on the forefront of the mmWave Massive MIMO research arena and standardization. This book aims to talk openly about the topic, and will serve as a useful reference not only for postgraduate students to learn more on this evolving field, but also as inspiration for mobile communication researchers who want to make further innovative strides in the field to mark their legacy in the 5G arena. Contains tutorials on the basics of mmWave and Massive MIMO Identifies new 5G networking scenarios, along with design requirements from an architectural and practical perspective Details the latest updates on the evolution of the mmWave Massive MIMO roadmap, considering future emerging technologies emanating from 3GPP/IEEE Includes contributions from leading experts in the field in modeling and prototype design for mmWave Massive MIMO design Presents an ideal reference that not only helps postgraduate students learn more in this evolving field, but also inspires mobile communication researchers towards further innovation

Electronic Systems and Intelligent Computing

Proceedings of ESIC 2020

[Springer Nature](#) This book presents selected, high-quality research papers from the International Conference on Electronic Systems and Intelligent Computing (ESIC 2020), held at NIT Yupia, Arunachal Pradesh, India, on 2 - 4 March 2020. Discussing the latest challenges and solutions in the field of smart computing, cyber-physical systems and intelligent technologies, it includes papers based on original theoretical, practical and experimental simulations, developments, applications, measurements, and testing. The applications and solutions featured provide valuable reference material for future product development.

High-performance Communication Networks

[Morgan Kaufmann](#) Rapid advances in networking technology have promoted a fully revised second edition of this successful introduction to communication networks.

Introduction to Wireless and Mobile Systems

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

5G Physical Layer Technologies

[John Wiley & Sons](#) Written in a clear and concise manner, this book presents readers with an in-depth discussion of the 5G technologies that will help move society beyond its current capabilities. It perfectly illustrates how the technology itself will benefit both individual consumers and industry as the world heads towards a more connected state of being. Every technological application presented is modeled in a schematic diagram and is considered in depth through mathematical analysis and performance assessment. Furthermore, published simulation data and measurements are checked. Each chapter of 5G Physical Layer Technologies contains texts, mathematical analysis, and applications supported by figures, graphs, data tables, appendices, and a list of up to date references, along with an executive summary of the key issues. Topics covered include: the evolution of wireless communications; full duplex communications and full dimension MIMO technologies; network virtualization and wireless energy harvesting; Internet

of Things and smart cities; and millimeter wave massive MIMO technology. Additional chapters look at millimeter wave propagation losses caused by atmospheric gases, rain, snow, building materials and vegetation; wireless channel modeling and array mutual coupling; massive array configurations and 3D channel modeling; massive MIMO channel estimation schemes and channel reciprocity; 3D beamforming technologies; and linear precoding strategies for multiuser massive MIMO systems. Other features include: In depth coverage of a hot topic soon to become the backbone of IoT connecting devices, machines, and vehicles Addresses the need for green communications for the 21st century Provides a comprehensive support for the advanced mathematics exploited in the book by including appendices and worked examples Contributions from the EU research programmes, the International telecommunications companies, and the International standards institutions (ITU; 3GPP; ETSI) are covered in depth Includes numerous tables and illustrations to aid the reader Fills the gap in the current literature where technologies are not explained in depth or omitted altogether 5G Physical Layer Technologies is an essential resource for undergraduate and postgraduate courses on wireless communications and technology. It is also an excellent source of information for design engineers, research and development engineers, the private-public research community, university research academics, undergraduate and postgraduate students, technical managers, service providers, and all professionals involved in the communications and technology industry.

Technologies for economic and functional lightweight design

Conference proceedings 2020

[Springer Nature](#) This book comprises the proceedings of the conference “Future Production of Hybrid Structures 2020”, which took place in Wolfsburg. The conference focused on hybrid lightweight design, which is characterized by the combination of different materials with the aim of improving properties and reducing weight. In particular, production technologies for hybrid lightweight design were discussed, new evaluation methods for the ecological assessment of hybrid components were presented and future-oriented approaches motivated by nature for the development of components, assemblies and systems were introduced. Lightweight design is a key technology for the development of sustainable and resource-efficient mobility concepts. Vehicle manufacturers operate in an area of conflict between customer requirements, competition and legislation. Material hybrid structures, which combine the advantages of different materials, have a high potential for reducing weight, while simultaneously expanding component functionality. The future, efficient use of function-integrated hybrid structures in vehicle design requires innovations and constant developments in vehicle and production technology. There is a great demand, especially with regard to new methods and technologies, for "affordable" lightweight construction in large-scale production, taking into account the increasing requirements with regard to variant diversity, safety and quality.

Cognition in the Wild

[MIT Press](#) Edwin Hutchins combines his background as an anthropologist and an open ocean racing sailor and navigator in this account of how anthropological methods can be combined with cognitive theory to produce a new reading of cognitive science. His theoretical insights are grounded in an extended analysis of ship navigation—its computational basis, its historical roots, its social organization, and the details of its implementation in actual practice aboard large ships. The result is an unusual interdisciplinary approach to cognition in culturally constituted activities outside the laboratory—"in the wild." Hutchins examines a set of phenomena that have fallen in the cracks between the established disciplines of psychology and anthropology, bringing to light a new set of relationships between culture and cognition. The standard view is that culture affects the cognition of individuals. Hutchins argues instead that cultural activity systems have cognitive properties of their own that are different from the cognitive properties of the individuals who participate in them. Each action for bringing a large naval vessel into port, for example, is informed by culture: the navigation team can be seen as a cognitive and computational system. Introducing Navy life and work on the bridge, Hutchins makes a clear distinction between the cognitive properties of an individual and the cognitive properties of a system. In striking contrast to the usual laboratory tasks of research in cognitive science, he applies the principal metaphor of cognitive science—cognition as computation (adopting David Marr's paradigm)—to the navigation task. After comparing modern Western navigation with the method practiced in Micronesia, Hutchins explores the computational and cognitive properties of systems that are larger than an individual. He then turns to an analysis of learning or change in the organization of cognitive systems at several scales. Hutchins's conclusion illustrates the costs of ignoring the cultural nature of cognition, pointing to the ways in which contemporary cognitive science can be transformed by new meanings and interpretations. A Bradford Book

Protecting Information Assets and IT Infrastructure in the Cloud

[CRC Press](#) Today, many businesses and corporations are moving their on premises IT Infrastructure to the Cloud. There are numerous advantages to do doing so, including on-demand service, scalability, and fixed pricing. As a result, the

Cloud has become a popular target of cyber-based attacks. Although an ISP is often charged with keeping virtual infrastructure secure, it is not safe to assume this. Back-up measures must be taken. This book explains how to guard against cyber-attacks by adding another layer of protection to the most valuable data in the Cloud: customer information and trade secrets.

Distributed Computing and Artificial Intelligence, Special Sessions, 15th International Conference

[Springer](#) This book presents the outcomes of the 15th International Conference on Distributed Computing and Artificial Intelligence, held in Toledo (Spain) from 20th to 22nd June 2018 and hosted by the UCLM, and which brought together researchers and developers from industry, education and the academic world to report on the latest scientific research, technical advances and methodologies. Highlighting multi-disciplinary and transversal aspects, the book focuses on the conferences Special Sessions, including Advances in Demand Response and Renewable Energy Sources in Smart Grids (ADRESS); AI- Driven Methods for Multimodal Networks and Processes Modeling (AIMPM); Social Modelling of Ambient Intelligence in Large Facilities (SMALF); Communications, Electronics and Signal Processing (CESP); Complexity in Natural and Formal Languages (CNFL); and Web and Social Media Mining (WASMM).

European-Russian Space Cooperation

From de Gaulle to ExoMars

[Springer Nature](#) The story of European-Russian collaboration in space is little known and its importance all too often understated. Because France was the principal interlocutor between these nations, such cooperation did not receive the attention it deserved in English-language literature. This book rectifies that history, showing how Russia and Europe forged a successful partnership that has continued to the present day. Space writer Brian Harvey provides an in-depth picture of how this European-Russian relationship evolved and what factors—scientific, political and industrial—propelled it over the decades. The history begins in the cold war period with the first collaborative ventures between the Soviet Union and European countries, primarily France, followed later by Germany and other European countries. Next, the chapters turn to the missions when European astronauts flew to Russian space stations, the Soyuz rocket made a new home in European territory in the South American jungle and science missions were flown to study deep space. Their climax is the joint mission to explore Mars, called ExoMars, which has already sent a mission to Mars. Through this close examination of these European-Russian efforts, readers will appreciate an altogether new perspective on the history of space exploration, no longer defined by competition, but rather by collaboration and cooperation.

A Brief History of Computing

[Springer Science & Business Media](#) This lively and fascinating text traces the key developments in computation - from 3000 B.C. to the present day - in an easy-to-follow and concise manner. Topics and features: ideal for self-study, offering many pedagogical features such as chapter-opening key topics, chapter introductions and summaries, exercises, and a glossary; presents detailed information on major figures in computing, such as Boole, Babbage, Shannon, Turing, Zuse and Von Neumann; reviews the history of software engineering and of programming languages, including syntax and semantics; discusses the progress of artificial intelligence, with extension to such key disciplines as philosophy, psychology, linguistics, neural networks and cybernetics; examines the impact on society of the introduction of the personal computer, the World Wide Web, and the development of mobile phone technology; follows the evolution of a number of major technology companies, including IBM, Microsoft and Apple.

Communications, Signal Processing, and Systems

Proceedings of the 9th International Conference on Communications, Signal Processing, and Systems

[Springer Nature](#) This book brings together papers presented at the 2020 International Conference on Communications, Signal Processing, and Systems, which provides a venue to disseminate the latest developments and to discuss the interactions and links between these multidisciplinary fields. Spanning topics ranging from communications, signal processing and systems, this book is aimed at undergraduate and graduate students in Electrical Engineering, Computer Science and Mathematics, researchers and engineers from academia and industry as well as government employees (such as NSF, DOD and DOE).

DARPA Technical Accomplishments

An Historical Review of Selected DARPA Projects

Deep Space Propulsion

A Roadmap to Interstellar Flight

[Springer Science & Business Media](#) **The technology of the next few decades could possibly allow us to explore with robotic probes the closest stars outside our Solar System, and maybe even observe some of the recently discovered planets circling these stars. This book looks at the reasons for exploring our stellar neighbors and at the technologies we are developing to build space probes that can traverse the enormous distances between the stars. In order to reach the nearest stars, we must first develop a propulsion technology that would take our robotic probes there in a reasonable time. Such propulsion technology has radically different requirements from conventional chemical rockets, because of the enormous distances that must be crossed. Surprisingly, many propulsion schemes for interstellar travel have been suggested and await only practical engineering solutions and the political will to make them a reality. This is a result of the tremendous advances in astrophysics that have been made in recent decades and the perseverance and imagination of tenacious theoretical physicists. This book explores these different propulsion schemes - all based on current physics - and the challenges they present to physicists, engineers, and space exploration entrepreneurs. This book will be helpful to anyone who really wants to understand the principles behind and likely future course of interstellar travel and who wants to recognize the distinctions between pure fantasy (such as Star Trek's 'warp drive') and methods that are grounded in real physics and offer practical technological solutions for exploring the stars in the decades to come.**

ColdFusion Presents: New Thinking

From Einstein to Artificial Intelligence, the Science and Technology That Transformed Our World

[Mango Media Inc.](#) **The creator of YouTube's ColdFusion explores the development of technology from Industrial Revolution to Artificial Intelligence to figure out what's next. As each new stage of technology builds on the last, advancements start to progress at an exponential rate. In order to know where we're headed, it's essential to know how we got here. What hidden stories lie behind the technology we use today? What drove the men and women who invented it? What were those special moments that changed the world forever? Dagogo Altraide explores these questions in a history of human innovation that reveals how new technologies influence each other, how our modern world came to be, and what future innovations might look like. From the electric world of Tesla and the steam engine revolution to the first computers, the invention of the internet, and the rise of artificial intelligence, New Thinking tells the stories of the men and women who changed our world with the power of new thought.**

Interdisciplinary Research in Technology and Management

Proceedings of the International Conference on Interdisciplinary Research in Technology and Management (IRTM, 2021), 26-28 February, 2021, Kolkata, India

[CRC Press](#) **The conference on 'Interdisciplinary Research in Technology and Management' was a bold experiment in deviating from the traditional approach of conferences which focus on a specific topic or theme. By attempting to bring diverse inter-related topics on a common platform, the conference has sought to answer a long felt need and give a fillip to interdisciplinary research not only within the technology domain but across domains in the management field as well. The spectrum of topics covered in the research papers is too wide to be singled out for specific mention but it is noteworthy that these papers addressed many important and relevant concerns of the day.**

2015 9th European Conference on Antennas and Propagation (EuCAP)

13 - 17 April 2015, Lisbon, Portugal

Broadband Wireless Communications

Transmission, Access and Services

Springer Science & Business Media **Broadband Wireless Access** is a highly challenging and fast changing area of multimedia radio communications. These papers on the subject are the proceedings of the 9th Tyrrhenian Workshop, held in Lerici, Italy, September 1997. They provide a prospect on the state of the art and future development, with a sufficiently wide focus to cover technological, architectural and regulatory issues. Emphasis is given to those advances of digital signal processing techniques, microwave monolithic integrated circuits and smart antennae that will allow the design of low cost user terminals with advanced capabilities. Specific attention is also devoted to the protocols these new terminals will use to access the radio medium, and to the kind of services that will eventually be provided to the end-user in the future. With contributions from worldwide experts, the material presented here is a timely and high-level overview of the field, and as well as being informative is a useful tool for promoting further investigation into the area of multimedia radio communications.

Information and Communication Technology for Development for Africa

Second International Conference, ICT4DA 2019, Bahir Dar, Ethiopia, May 28-30, 2019, Revised Selected Papers

Springer This book constitutes the proceedings of the Second International Conference on Information and Communication Technology for Development for Africa, ICT4DA 2019, held in Bahir Dar, Ethiopia, in May 2019. The 29 revised full papers presented were carefully reviewed and selected from 69 submissions. The papers address the impact of ICT in fostering economic development in Africa. In detail they cover the following topics: artificial intelligence and data science; wireless and mobile computing; and Natural Language Processing.

International Conference on Advanced Computing Networking and Informatics

ICANI-2018

Springer The book comprises selected papers presented at the International Conference on Advanced Computing, Networking and Informatics (ICANI 2018), organized by Medi-Caps University, India. It includes novel and original research work on advanced computing, networking and informatics, and discusses a wide variety of industrial, engineering and scientific applications of the emerging techniques in the field of computing and networking.

The Innovation in Computing Companion

A Compendium of Select, Pivotal Inventions

Springer This encyclopedic reference provides a concise and engaging overview of the groundbreaking inventions and conceptual innovations that have shaped the field of computing, and the technology that runs the modern world. Each alphabetically-ordered entry presents a brief account of a pivotal innovation and the great minds behind it, selected from a wide range of diverse topics. Topics and features: Describes the development of Babbage's computing machines, Leibniz's binary arithmetic, Boole's symbolic logic, and Von Neumann architecture Reviews a range of historical analog and digital computers, significant mainframes and minicomputers, and pioneering home and personal computers Discusses a selection of programming languages and operating systems, along with key concepts in software engineering and commercial computing Examines the invention of the transistor, the integrated circuit, and the microprocessor Relates the history of such developments in personal computing as the mouse, the GUI, Atari video

games, and Microsoft Office Surveys innovations in communications, covering mobile phones, WiFi, the Internet and World Wide Web, e-commerce, smartphones, social media, and GPS Presents coverage of topics on artificial intelligence, the ATM, digital photography and digital music, robotics, and Wikipedia Contains self-test quizzes and a helpful glossary This enjoyable compendium will appeal to the general reader curious about the intellectual milestones that led to the digital age, as well as to the student of computer science seeking a primer on the history of their field. Dr. Gerard O'Regan is a CMMI software process improvement consultant with research interests including software quality and software process improvement, mathematical approaches to software quality, and the history of computing. He is the author of such Springer titles as World of Computing, Concise Guide to Formal Methods, Concise Guide to Software Engineering, and Guide to Discrete Mathematics.

Optical Wireless Communications

An Emerging Technology

Springer This book focuses on optical wireless communications (OWC), an emerging technology with huge potential for the provision of pervasive and reliable next-generation communications networks. It shows how the development of novel and efficient wireless technologies can contribute to a range of transmission links essential for the heterogeneous networks of the future to support various communications services and traffic patterns with ever-increasing demands for higher data-transfer rates. The book starts with a chapter reviewing the OWC field, which explains different sub-technologies (visible-light, ultraviolet (UV) and infrared (IR) communications) and introduces the spectrum of application areas (indoor, vehicular, terrestrial, underwater, intersatellite, deep space, etc.). This provides readers with the necessary background information to understand the specialist material in the main body of the book, which is in four parts. The first of these deals with propagation modelling and channel characterization of OWC channels at different spectral bands and with different applications. The second starts by providing a unified information-theoretic treatment of OWC and then discusses advanced physical-layer methodologies (including, but not limited to: advanced coding, modulation diversity, cooperation and multi-carrier techniques) and the ultimate limitations imposed by practical constraints. On top of the physical layer come the upper-layer protocols and cross-layer designs that are the subject of the third part of the book. The last part of the book features a chapter-by-chapter assessment of selected OWC applications. Optical Wireless Communications is a valuable reference guide for academic researchers and practitioners concerned with the future development of the world's communication networks. It succinctly but comprehensively presents the latest advances in the field.

Handbook of Aerospace Electromagnetic Compatibility

John Wiley & Sons A comprehensive resource that explores electromagnetic compatibility (EMC) for aerospace systems **Handbook of Aerospace Electromagnetic Compatibility** is a groundbreaking book on EMC for aerospace systems that addresses both aircraft and space vehicles. With contributions from an international panel of aerospace EMC experts, this important text deals with the testing of spacecraft components and subsystems, analysis of crosstalk and field coupling, aircraft communication systems, and much more. The text also includes information on lightning effects and testing, as well as guidance on design principles and techniques for lightning protection. The book offers an introduction to E3 models and techniques in aerospace systems and explores EMP effects on and technology for aerospace systems. Filled with the most up-to-date information, illustrative examples, descriptive figures, and helpful scenarios, **Handbook of Aerospace Electromagnetic Compatibility** is designed to be a practical information source. This vital guide to electromagnetic compatibility: • Provides information on a range of topics including grounding, coupling, test procedures, standards, and requirements • Offers discussions on standards for aerospace applications • Addresses aerospace EMC through the use of testing and theoretical approaches Written for EMC engineers and practitioners, **Handbook of Aerospace Electromagnetic Compatibility** is a critical text for understanding EMC for aerospace systems.

The Military Balance 2021

Routledge Published each year since 1959, **The Military Balance** is an indispensable reference to the capabilities of armed forces across the globe. It will be of interest to anyone interested in security and military issues and is regularly consulted by academia, media, armed forces, the private sector and government. Key Elements: 1. Data on the military organisations, equipment inventories and defence budgets of 171 countries 2. Analysis of major developments affecting defence policy and procurement, and defence economics, arranged region-by-region. 3. Key trends in the land, sea and air domains, and in cyberspace 4. Selected defence procurement programmes, arranged region-by-region 5. Full-colour graphics including maps and illustrations 6. Extensive explanatory notes and references 7. The hardcopy edition is accompanied by a full-colour wall chart Features in the 2021 edition include: - Analytical texts on future maritime competition, battle management systems, China's civil-military integration and fractures in the arms-control environment - Military cyber capabilities - Analysis of developments in defence policy, military capability and defence economics and industry for China, Egypt, Finland, Indonesia, Russia, Senegal and the United States. - A wallchart illustrating global submarine holdings and key trends in subsurface warfare

Introduction to the Design and Analysis of Composite Structures

An Engineers Practical Guide Using Optistruct

[Jeffrey Wollschlager](#) Written as a self-paced training course, the books objective is to provide the professional engineer with a practical resource on the design and analysis of composite structures. With the recent high utilization of composite materials in aerospace, automotive, civil, marine, and recreational structures; comes the high demand for engineers with composites design and analysis knowledge and experience. However, the availability of engineers with the required knowledge and experience is difficult to obtain. Therefore, many engineers are faced with the daunting task of performing composites design and analysis projects with little background in composites design and analysis. The book is aimed at helping those engineers gain practical composites design and analysis knowledge in as short a time as possible. The book focuses on obtaining a fundamental understanding of the basic equations of composite material behavior which drive composite structures design. After completing the training course provided by the book, practicing engineers will walk away with the latest knowledge available to design weight-efficient composite structures.

American Flying Boats and Amphibious Aircraft

An Illustrated History

[McFarland](#) This work is a comprehensive, heavily illustrated history of the many flying boats and amphibious aircraft designed and built in the United States. It is divided into three chronological sections: the early era (1912-1928), the golden era (1928-1945), and the post-war era (1945-present), with historical overviews of each period. Within each section, individual aircraft types are listed in alphabetical order by manufacturer or builder, with historical background, technical specifications, drawings, and one or more photographs. Appendices cover lesser known flying boat and amphibian types as well as various design concepts that never achieved the flying stage.

Foundations of MIMO Communication

[Cambridge University Press](#) An accessible, comprehensive and coherent treatment of MIMO communication, drawing on ideas from information theory and signal processing.

Ames Research Center

Moffett Field, California

Sensors for Automotive and Aerospace Applications

[Springer](#) This volume covers the various sensors related to automotive and aerospace sectors, discussing their properties as well as how they are realized, calibrated and deployed. Written by experts in the field, it provides a ready reference to product developers, researchers and students working on sensor design and fabrication, and provides perspective on both current and future research.

Communication Technology Update and Fundamentals

17th Edition

[Routledge](#) Communication Technology Update and Fundamentals, now in its 17th edition, has set the standard as the single best resource for students and professionals looking to brush up on how communication technologies have developed, grown, and converged, as well as what's in store for the future. The book covers the fundamentals of communication technology in five chapters that explain the communication technology ecosystem, its history, theories, structure, and regulations. Each chapter is written by experts who each provide a snapshot of an individual field. The book also dives into the latest developments in electronic mass media, computers, consumer electronics, networking, and telephony. Together, these updates provide a broad overview of these industries and examine the role communication technologies play in our everyday lives. In addition to substantial updates to each chapter, the 17th edition includes the first-ever chapter on Artificial Intelligence; updated user data in every chapter; an overview of industry structure, including recent and proposed mergers and acquisitions; and sidebars exploring sustainability and relevance of each technology to Gen Z. Communication Technology Update and Fundamentals continues to be the industry-leading resource for both students and professionals seeking to understand how communication technologies

have developed and where they are headed.

Next-Generation Wireless Technologies

4G and Beyond

[Springer Science & Business Media](#) **This comprehensive text/reference examines the various challenges to secure, efficient and cost-effective next-generation wireless networking. Topics and features: presents the latest advances, standards and technical challenges in a broad range of emerging wireless technologies; discusses cooperative and mesh networks, delay tolerant networks, and other next-generation networks such as LTE; examines real-world applications of vehicular communications, broadband wireless technologies, RFID technology, and energy-efficient wireless communications; introduces developments towards the 'Internet of Things' from both a communications and a service perspective; discusses the machine-to-machine communication model, important applications of wireless technologies in healthcare, and security issues in state-of-the-art networks.**

The Message Box

[paula lund](#) **Olivia is an eleven year old girl who finds a mysterious box. Her and her two friends Whitney and Sophie help to make it their own.**

Dielectric Resonator Antenna Handbook

[Artech House Publishers](#) **Enhance any display with these beautiful borders that feature full-color photographs of panoramic scenes. Eight 24" x 6" borders connect seamlessly for a total length of 16 feet. For use with Grades PreK-5.**

System Lifecycle Management

Engineering Digitalization (Engineering 4.0)

[Springer Vieweg](#) **Years of experience in the area of Product Lifecycle Management (PLM) in industry, research and education form the basis for this overview. The author covers the development from PDM via PLM to SysLM (System Lifecycle Management) in the form commonly used today, which are necessary prerequisites for the sustainable development and implementation of IoT/loS, Industry 4.0 and Engineering 4.0 concepts. The building blocks and properties of future-proof systems for the successful implementation of the concepts of Engineering 4.0 are thereby dedicated to holistic considerations, which also inform in detail. SysLM functions and processes in mechatronic development and design as well as across the entire product lifecycle - from requirements management to the Digital Twin - are covered as examples. SysLM trends such as low code development, cloud, disruptive business models, and bimodality provide an outlook on future developments. The author dedicates the treatment of the agile SysLM introduction to the implementation in the enterprise. The basics are deepened with examples of a concrete SysLM system.**

Nonlinear Microwave Circuits

[Wiley-IEEE Press](#) **This classic text is an excellent resource and time-saver for engineers who need to tackle troublesome nonlinear components that remain in use despite recent advances in microwave technology. NONLINEAR MICROWAVE CIRCUITS offers detailed, technically substantial coverage of key methods for the analysis, design, and optimization of nonlinear microwave circuits. Using minimal mathematics, it integrates in-depth, "readable" coverage of the underlying theories that guide these methods. This book is replete with valuable "how to" information on a wide range of topics.**

Radio Propagation for Modern Wireless Systems

[Pearson Education](#) **To build wireless systems that deliver maximum performance and reliability, engineers need a detailed understanding of radio propagation. Drawing on over 15 years of experience, leading wireless communications researcher Henry Bertoni presents the most complete discussion of techniques for predicting radio propagation ever published. From its insightful introduction on spectrum reuse to its state-of-the-art real-world models for buildings, terrain, and foliage, Radio Propagation for Modern Wireless Systems delivers invaluable information for every wireless system designer. Coverage provides: A door to the understanding of radio wave propagation for the wireless channel. In-depth study of the effects on path loss of buildings, terrain, and foliage. A unified view of key propagation effects in narrowband and wideband systems, including spatial variation, angle of arrival, and delay spread. Readable account of diffraction at building corners, with worked out examples. Never-before-published coverage of mobile-to-mobile path loss in cities. Effective new ray-based models for site-specific predictions and simulation of channel statistics. Simulations of fast fading and shadow loss. From start to finish, Radio Propagation for Modern Wireless Systems presents sophisticated models-and compares their results with actual field measurements. With thorough coverage and extensive examples from both narrowband and wideband systems, it can**

help any wireless designer deliver more powerful, cost-effective services.

2019 IEEE International Symposium on Antennas and
Propagation and USNC-URSI Radio Science Meeting
Proceedings : 7-12 July 2019, Hilton Atlanta, Atlanta,
Georgia, USA