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Digital Signal Processing 101 - Michael Parker 2010-05-26 Digital Signal Processing 101: Everything You Need to Know to Get Started provides a basic tutorial on digital signal processing (DSP). Beginning with discussions of numerical representation and complex numbers and exponentials, it goes on to explain difficult concepts such as sampling, aliasing, imaginary numbers, and frequency response. It does so using easy-to-understand examples and a minimum of mathematics. In

addition, there is an overview of the DSP functions and implementation used in several DSP-intensive fields or applications, from error correction to CDMA mobile communication to airborne radar systems. This book is intended for those who have absolutely no previous experience with DSP, but are comfortable with high-school-level math skills. It is also for those who work in or provide components for industries that are made possible by DSP. Sample industries include

wireless mobile phone and infrastructure equipment, broadcast and cable video, DSL modems, satellite communications, medical imaging, audio, radar, sonar, surveillance, and electrical motor control. Dismayed when presented with a mass of equations as an explanation of DSP? This is the book for you! Clear examples and a non-mathematical approach gets you up to speed with DSP Includes an overview of the DSP functions and implementation used in typical DSP-intensive applications, including error correction, CDMA mobile communication, and radar systems

MIMO Radar: Theory and Application - Jamie Bergin
2018-03-31

This comprehensive new resource provides in-depth and timely coverage of the underpinnings and latest advances of MIMO radar. This book provides a comprehensive introduction to MIMO radar and demonstrates it's utility in real-world applications, then culminates with the latest

advances in optimal and adaptive MIMO radar for enhanced detection and target ID in challenging environments. Signal processing prerequisites are explained, including radar signals, orthogonal waveforms, matched filtering, multi-channel beam forming, and Doppler processing. This book discusses MIMO radar signal model, antenna properties, system modeling and waveform alternatives. MIMO implantation challenges are covered, including computational complexity, adaptive clutter mitigation, calibration and equalization, and hardware constraints. Applications for GMTI radar, OTH radar, maritime radar, and automotive radar are explained. The book offers an introduction to optimum MIMO radar and includes details about detection, clutter, and target ID. Insight into adaptive MIMO radar and MIMO channel estimation is presented and techniques and illustrative examples are given. Readers find exclusive flight

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testing data from DARPA. The breadth of coverage in this all-inclusive resource makes it suitable for both practicing engineers and advanced researchers. The book concludes with discussions on areas for future research.

Principles of Modern Radar -

Mark A. Richards 2010-06-30

Dr. John Milan, radar consultant; formerly 36 years with ITT Gilfillan, IEEE AESS Radar Systems Panel --

Risk Modeling for Hazards and Disasters - Gero Michel 2017-08-29

Risk Modeling for Hazards and Disasters covers all major aspects of catastrophe risk modeling, from hazards through to financial analysis. It explores relevant new science in risk modeling, indirect losses, assessment of impact and consequences to insurance losses, and current changes in risk modeling practice, along with case studies. It also provides further insight into the shortcomings of current models and examines model risk and ideas to diversify risk assessment. Risk Modeling for

Hazards and Disasters instructs readers on how to assess, price and then hedge the losses from natural and manmade catastrophes. This book reviews current model development and science and explains recent changes in the catastrophe modeling space, including new initiatives covering uncertainty and big data in the assessment of risk for insurance pricing and portfolio management. Edited by a leading expert in both hazards and risk, this book is authored by a global panel including major modeling vendors, modeling consulting firms, and well-known catastrophe modeling scientists. Risk Modeling for Hazards and Disasters provides important insight into how models are used to price and manage risk. Includes high profile case studies such as the Newcastle earthquake, Hurricane Andrew and Hurricane Katrina Provides crucial information on new ideas and platforms that will help address the new demands for risk management and

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catastrophe risk reporting
Presents the theory and practice needed to know how models are created and what is and what is not important in the modeling process Covers relevant new science in risk modeling, indirect losses, assessment of impact and consequences to insurance losses, and current changes in risk modeling practice, along with case studies

Handbook of Radar Signal Analysis - Bassem R. Mahafza
2021-08-17

This new handbook on radar signal analysis adopts a deliberate and systematic approach. It uses a clear and consistent level of delivery while maintaining strong and easy-to-follow mathematical details. The emphasis of this book is on radar signal types and their relevant signal processing and not on radar systems hardware or components. This handbook serves as a valuable reference to a wide range of audience. More specifically, college-level students, practicing radar engineers, as well as casual

readers of the subject are the intended target audience of the first few chapters of this book. As the book chapters progress, these grow in complexity and specificity. Accordingly, later chapters are intended for practicing engineers, graduate college students, and advanced readers. Finally, the last few chapters contain several special topics on radar systems that are both educational and scientifically entertaining to all readers. The presentation of topics in this handbook takes the reader on a scientific journey whose major landmarks comprise the different radar subsystems and components. In this context, the chapters follow the radar signal along this journey from its birth to the end of its life. Along the way, the different relevant radar subsystems are analyzed and discussed in great detail. The chapter contributors of this new handbook comprise experienced academia members and practicing radar engineers. Their combined years of academic and real-

world experiences are in excess of 175. Together, they bring a unique, easy-to-follow mix of mathematical and practical presentations of the topics discussed in this book. See the "Chapter Contributors" section to learn more about these individuals.

Introduction to Radar

Analysis - Bassem R. Mahafza
2017-11-23

Introduction to Radar Analysis, Second Edition is a major revision of the popular textbook. It is written within the context of communication theory as well as the theory of signals and noise. By emphasizing principles and fundamentals, the textbook serves as a vital source for students and engineers. Part I bridges the gap between communication, signal analysis, and radar. Topics include modulation techniques and associated Continuous Wave (CW) and pulsed radar systems. Part II is devoted to radar signal processing and pulse compression techniques. Part III presents special topics in radar systems including

radar detection, radar clutter, target tracking, phased arrays, and Synthetic Aperture Radar (SAR). Many new exercises are included and the author provides comprehensive easy-to-follow mathematical derivations of all key equations and formulas. The author has worked extensively for the U.S. Army, the U.S. Space and Missile Command, and other military agencies. This is not just a textbook for senior level and graduate students, but a valuable tool for practicing radar engineers. Features Authored by a leading industry radar professional.

Comprehensive up-to-date coverage of radar systems analysis issues. Easy to follow mathematical derivations of all equations and formulas Numerous graphical plots and table format outputs. One part of the book is dedicated to radar waveforms and radar signal processing.

Inverse Synthetic Aperture Radar Imaging With MATLAB Algorithms - Caner Ozdemir
2021-05-04

Build your knowledge of

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SAR/ISAR imaging with this comprehensive and insightful resource The newly revised Second Edition of Inverse Synthetic Aperture Radar Imaging with MATLAB Algorithms covers in greater detail the fundamental and advanced topics necessary for a complete understanding of inverse synthetic aperture radar (ISAR) imaging and its concepts. Distinguished author and academician, Caner Özdemir, describes the practical aspects of ISAR imaging and presents illustrative examples of the radar signal processing algorithms used for ISAR imaging. The topics in each chapter are supplemented with MATLAB codes to assist readers in better understanding each of the principles discussed within the book. This new edition includes discussions of the most up-to-date topics to arise in the field of ISAR imaging and ISAR hardware design. The book provides a comprehensive analysis of advanced techniques like Fourier-based

radar imaging algorithms, and motion compensation techniques along with radar fundamentals for readers new to the subject. The author covers a wide variety of topics, including: Radar fundamentals, including concepts like radar cross section, maximum detectable range, frequency modulated continuous wave, and doppler frequency and pulsed radar The theoretical and practical aspects of signal processing algorithms used in ISAR imaging The numeric implementation of all necessary algorithms in MATLAB ISAR hardware, emerging topics on SAR/ISAR focusing algorithms such as bistatic ISAR imaging, polarimetric ISAR imaging, and near-field ISAR imaging, Applications of SAR/ISAR imaging techniques to other radar imaging problems such as thru-the-wall radar imaging and ground-penetrating radar imaging Perfect for graduate students in the fields of electrical and electronics engineering, electromagnetism, imaging radar, and physics, Inverse

Synthetic Aperture Radar Imaging With MATLAB Algorithms also belongs on the bookshelves of practicing researchers in the related areas looking for a useful resource to assist them in their day-to-day professional work.

[The Micro-Doppler Effect in Radar](#) - Victor Chen 2011

This highly practical resource provides you with thorough working knowledge of the micro-Doppler effect in radar, including its principles, applications and implementation with MATLAB codes. The book presents code for simulating radar backscattering from targets with various motions, generating micro-Doppler signatures, and analyzing the characteristics of targets. You find detailed descriptions of the physics and mathematics of the Doppler and micro-Doppler effect. Moreover, you learn how to derive rigid and non-rigid body motion induced micro-Doppler effect in radar scattering. The book provides a wide range of clear examples, including an oscillating

pendulum, a spinning and precession heavy top, rotating rotor blades of a helicopter, rotating wind-turbine blades, a person walking with swinging arms and legs, a flying bird, and movements of quadruped animals.

Proceedings of the Second International Airborne Remote Sensing Conference and Exhibition - 1996

[Bistatic Radar](#) - Mikhail Cherniakov 2008-10-13

The impact of bistatic radar technology on remote sensing is increasing as bistatic systems cross the theoretical threshold into practical embodiment. The wide spectrum of radar applications, including space exploration, defence, transport, aerospace, and meteorology, provides persistent impetus for this progress. This book is dedicated to the more advanced studies in bistatic radar which are currently the subject of intensive research activity and development. With contributions from the leading experts in the field of bistatic

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radar research, this book collates the latest developments in the field focusing particularly on bistatic synthetic aperture radar (BSAR) and passive bistatic radar systems (PBRS). Within these two areas the text: addresses the main BSAR topologies: spaceborne BSAR, airborne BSAR and space-surface BSAR; analyses the resurgent interest in, and practical applications of, PBRS; introduces passive BSAR technology; covers research of systems used in aircraft detection and tracking, and passive radar remote sensing of the ionosphere and the upper atmosphere. Bistatic Radar: Emerging Technology is an invaluable resource for practising engineers and researchers involved in the design and implementation of advanced bistatic radar systems in aerospace, communications, defence, transport and meteorology. Following on from Bistatic Radar: Principles and Practice it is also a comprehensive reference on the latest

research for postgraduate students taking specialist courses in radar technology.

Introduction to Radar Analysis

- Bassem R. Mahafza

2017-11-23

Introduction to Radar Analysis, Second Edition is a major revision of the popular textbook. It is written within the context of communication theory as well as the theory of signals and noise. By emphasizing principles and fundamentals, the textbook serves as a vital source for students and engineers. Part I bridges the gap between communication, signal analysis, and radar. Topics include modulation techniques and associated Continuous Wave (CW) and pulsed radar systems. Part II is devoted to radar signal processing and pulse compression techniques. Part III presents special topics in radar systems including radar detection, radar clutter, target tracking, phased arrays, and Synthetic Aperture Radar (SAR). Many new exercise are included and the author provides comprehensive easy-

to-follow mathematical derivations of all key equations and formulas. The author has worked extensively for the U.S. Army, the U.S. Space and Missile Command, and other military agencies. This is not just a textbook for senior level and graduates students, but a valuable tool for practicing radar engineers. Features Authored by a leading industry radar professional.

Comprehensive up-to-date coverage of radar systems analysis issues. Easy to follow mathematical derivations of all equations and formulas Numerous graphical plots and table format outputs. One part of the book is dedicated to radar waveforms and radar signal processing.

Emitter Detection and Geolocation for Electronic Warfare - Nicholas

O'Donoghue 2019-10-31

This comprehensive resource provides theoretical formulation for detecting and geolocating non-cooperative emitters. Implementation of geolocation algorithms are discussed, as well as

performance prediction of a hypothetical passive location system for systems analysis or vulnerability calculation.

Comparison of novel direction finding and geolocation algorithms to classical forms are also included. Rooted in statistical signal processing and array processing theory, this book also provides an overview of the application of novel detection and estimation algorithms to real world problems in EW. The book is divided into three parts: detection, angle of arrival estimation, and geolocation. Each section begins with an introductory chapter covering the relevant signal processing theory (either detection or estimation), then provides a series of chapters covering specific methods to achieve the desired end-product.

MATLAB® code is provided to assist readers with relevant probability and statistics, RF propagation, atmospheric absorption, and noise, giving readers an understanding of the implementation of the algorithms in the book, as well

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as developing new approaches to solving problems. Packed with problem sets and examples, this book strikes a balance between introductory texts and reference manuals, making it useful for novice as well as advanced practitioners.

Image and Signal Processing - Alamin Mansouri 2018-06-29

This book constitutes the refereed proceedings of the 8th International Conference on Image and Signal Processing, ICISP 2018, held in Cherbourg, France, in July 2018. The 58 revised full papers were carefully reviewed and selected from 122 submissions. The contributions report on the latest developments in image and signal processing, video processing, computer vision, multimedia and computer graphics, and mathematical imaging and vision.

Radar Systems Analysis and Design Using MATLAB -

Bassem R. Mahafza 2022-03-29

Radar Signal Analysis and Processing Using MATLAB -

Bassem R. Mahafza 2016-04-19
Offering radar-related software

for the analysis and design of radar waveform and signal processing, *Radar Signal Analysis and Processing Using MATLAB®* provides a comprehensive source of theoretical and practical information on radar signals, signal analysis, and radar signal processing with companion MATLAB® code.

After an overview of radar systems operation and design, the book reviews elements of signal theory relevant to radar detection and radar signal processing, along with random variables and processes. The author then presents the unique characteristic of the matched filter and develops a general formula for the output of the matched filter that is valid for any waveform. He analyzes several analog waveforms, including the linear frequency modulation pulse and stepped frequency waveforms, as well as unmodulated pulse-train, binary, polyphase, and frequency codes. The book explores radar target detection and pulse integration,

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emphasizing the constant false alarm rate. It also covers the stretch processor, the moving target indicator, radar Doppler processing, beamforming, and adaptive array processing. Using configurable MATLAB code, this book demonstrates how to apply signal processing to radar applications. It includes many examples and problems to illustrate the practical application of the theory.

Introduction to Radar Using Python and MATLAB - Lee Andrew (Andy) Harrison
2019-10-31

This comprehensive resource provides readers with the tools necessary to perform analysis of various waveforms for use in radar systems. It provides information about how to produce synthetic aperture (SAR) images by giving a tomographic formulation and implementation for SAR imaging. Tracking filter fundamentals, and each parameter associated with the filter and how each affects tracking performance are also presented. Various radar cross

section measurement techniques are covered, along with waveform selection analysis through the study of the ambiguity function for each particular waveform from simple linear frequency modulation (LFM) waveforms to more complicated coded waveforms. The text includes the Python tool suite, which allows the reader to analyze and predict radar performance for various scenarios and applications. Also provided are MATLAB® scripts corresponding to the Python tools. The software includes a user-friendly graphical user interface (GUI) that provides visualizations of the concepts being covered. Users have full access to both the Python and MATLAB source code to modify for their application. With examples using the tool suite are given at the end of each chapter, this text gives readers a clear understanding of how important target scattering is in areas of target detection, target tracking, pulse integration, and target discrimination.

Design of Multi-Frequency CW Radars - M. Jankiraman 2007

This book deals with the basic theory for design and analysis of Low Probability of Intercept (LPI) radar systems. The design of one such multi-frequency high resolution LPI radar, PANDORA, is covered. This work represents the first time that the topic of multi-frequency radars is discussed in such detail and it is based on research conducted by the author in The Netherlands. The book provides the design tools needed for development, design, and analysis of high resolution radar systems for commercial as well as military applications. Software written in MATLAB and C++ is provided to guide the reader in calculating radar parameters and in ambiguity function analysis. Some radar simulation software is also included.

Fundamentals of Radar Signal Processing - Mark A. Richards 2005-07-15

Advances in DSP (digital signal processing) have radically altered the design and usage of

radar systems -- making it essential for both working engineers as well as students to master DSP techniques. This text, which evolved from the author's own teaching, offers a rigorous, in-depth introduction to today's complex radar DSP technologies. Contents:
Introduction to Radar Systems
* Signal Models * Sampling and Quantization of Pulsed Radar Signals * Radar Waveforms * Pulse Compression Waveforms * Doppler Processing * Detection Fundamentals * Constant False Alarm Rate (CFAR) Detection * Introduction to Synthetic Aperture Imaging

MATLAB Simulations for Radar Systems Design -

Bassem R. Mahafza 2003-12-17
Simulation is integral to the successful design of modern radar systems, and there is arguably no better software for this purpose than MATLAB. But software and the ability to use it does not guarantee success. One must also:
Ö Understand radar operations and design philosophy
Ö Know how to select the radar parameters to

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meet the design requirements
• Be able to perform detailed trade-off analysis in the context of radar sizing, modes of operation, frequency selection, waveforms, and signal processing
• Develop loss and error budgets associated with the design
MATLAB Simulations for Radar Systems Design teaches all of this and provides the M-files and hands-on simulation experience needed to design and analyze radar systems. Part I forms a comprehensive description of radar systems, their analysis, and the design process. The authors' unique approach involves a design case study introduced in Chapter 1 and followed throughout the text. As the treatment progresses, the complexity increases and the case study requirements are adjusted accordingly. Part II presents a series of chapters—some authored by other experts in the field—on specialized radar topics important to a full understanding of radar systems design and analysis. A comprehensive set of MATLAB

programs and functions support both parts of the book and are available for download from the CRC Press Web site.

Digital Signal Processing Fundamentals - Vijay

Madiseti 2017-12-19

Now available in a three-volume set, this updated and expanded edition of the bestselling *The Digital Signal Processing Handbook* continues to provide the engineering community with authoritative coverage of the fundamental and specialized aspects of information-bearing signals in digital form. Encompassing essential background material, technical details, standards, and software, the second edition reflects cutting-edge information on signal processing algorithms and protocols related to speech, audio, multimedia, and video processing technology associated with standards ranging from WiMax to MP3 audio, low-power/high-performance DSPs, color image processing, and chips on video. Drawing on the experience of

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leading engineers, researchers, and scholars, the three-volume set contains 29 new chapters that address multimedia and Internet technologies, tomography, radar systems, architecture, standards, and future applications in speech, acoustics, video, radar, and telecommunications.

Emphasizing theoretical concepts, *Digital Signal Processing Fundamentals* provides comprehensive coverage of the basic foundations of DSP and includes the following parts: Signals and Systems; Signal Representation and Quantization; Fourier Transforms; Digital Filtering; Statistical Signal Processing; Adaptive Filtering; Inverse Problems and Signal Reconstruction; and Time-Frequency and Multirate Signal Processing.

Radar Propagation and Scattering in a Complex Maritime Environment - Christophe Bourlier 2018-07-24
This book addresses advanced numerical techniques used to significantly reduce the

complexity and memory requirement for solving the linear system that results from the discretization of the boundary integral equations by the Method of Moments (MoM). Typically, the problem of the VHF wave scattering from an object above a rough sea surface in a ducting environment is investigated as is the HF radar propagation above the Earth in the presence of islands. Along with these topics, the book also covers rapid asymptotic theories, which are derived and compared with references methods based on the MoM. Presents tactics on scattering from both rough surfaces and near a rough surface Discusses radar propagation in ducting environments Includes numerical techniques to accelerate MoM

Government Reports
Announcements & Index - 1996

**Radar Systems Analysis and Design Using MATLAB
Second Edition** - Bassem R. Mahafza 2005-03-09

An introduction to radar

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systems should ideally be self-contained and hands-on, a combination lacking in most radar texts. The first edition of Radar Systems Analysis and Design Using MATLAB® provided such an approach, and the second edition continues in the same vein. This edition has been updated, expanded, and reorganized to include advances in the field and to be more logical in sequence. Ideal for anyone encountering the topic for the first time or for professionals in need of on-the-job reference, this book features an abundance of MATLAB programs and code. Radar Systems Analysis and Design Using MATLAB®, Second Edition presents the fundamentals and principles of radar along with enough rigorous mathematical derivations to ensure that you gain a deep understanding. The author has extensively revised chapters on radar cross-section and polarization, matched filter and radar ambiguity function, and radar wave propagation. He also added information on

topics such as PRN codes, multipath and refraction, clutter and MTI processing, and high range resolution. With all MATLAB functions updated to reflect version 7.0 and an expanded set of self-test problems, you will find this up-to-date text to be the most complete treatment of radar available, providing the hands-on tools that will enrich your learning.

Basic Radar Analysis, Second Edition - Mervin C. Budge 2020-04-30

This highly-anticipated second edition of an Artech House classic covers several key radar analysis areas: the radar range equation, detection theory, ambiguity functions, waveforms, antennas, active arrays, receivers and signal processors, CFAR and chaff analysis. Readers will be able to predict the detection performance of a radar system using the radar range equation, its various parameters, matched filter theory, and Swerling target models. The performance of various signal processors, single pulse, pulsed

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Doppler, LFM, NLFM, and BPSK, are discussed, taking into account factors including MTI processing, integration gain, weighting loss and straddling loss. The details of radar analysis are covered from a mathematical perspective, with in-depth breakdowns of radar performance in the presence of clutter. Readers will be able to determine the noise temperature of a multi-channel receiver as it is used in active arrays. With the addition of three new chapters on moving target detectors, inverse synthetic aperture radar (ISAR) and constant false alarm rate (CFAR) and new MATLAB codes, this expanded second edition will appeal to the novice as well as the experienced practitioner.

Image Processing - Yung-Sheng Chen 2009-12-01

There are six sections in this book. The first section presents basic image processing techniques, such as image acquisition, storage, retrieval, transformation, filtering, and parallel computing. Then, some

applications, such as road sign recognition, air quality monitoring, remote sensed image analysis, and diagnosis of industrial parts are considered. Subsequently, the application of image processing for the special eye examination and a newly three-dimensional digital camera are introduced. On the other hand, the section of medical imaging will show the applications of nuclear imaging, ultrasound imaging, and biology. The section of neural fuzzy presents the topics of image recognition, self-learning, image restoration, as well as evolutionary. The final section will show how to implement the hardware design based on the SoC or FPGA to accelerate image processing.

Algorithms for Synthetic Aperture Radar Imagery - 2005

Radar Signals - Nadav Levanon 2004-09-21

A text and general reference on the design and analysis of radar signals As radar technology evolves to encompass a growing spectrum

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of applications in military, aerospace, automotive, and other sectors, innovations in digital signal processing have risen to meet the demand. Presenting a long overdue, up-to-date, dedicated resource on radar signals, the authors fill a critical gap in radar technology literature. Radar Signals features in-depth coverage of the most prevalent classical and modern radar signals used today, as well as new signal concepts developed in recent years. Inclusion of key MATLAB software codes throughout the book demonstrates how they dramatically simplify the process of describing and analyzing complex signals. Topics covered include: * Matched filter and ambiguity function concepts * Basic radar signals, with both analytical and numerical analysis * Frequency modulated and phase-coded pulses * Complete discussion of band-limiting schemes * Coherent LFM pulse trains-the most popular radar signal * Diversity in pulse trains, including stepped

frequency pulses * Continuous-wave signals * Multicarrier phase-coded signals Combining lucid explanation, preferred signal tables, MATLAB codes, and problem sets in each chapter, Radar Signals is an essential reference for professionals-and a systematic tutorial for any seeking to broaden their knowledge base in this dynamic field.

Electronically Scanned Arrays MATLAB® Modeling and Simulation - Arik D. Brown
2017-12-19

"[Contains] more lengthy mathematical derivations than most {comparable books} ... for arrays, provides for a unique, stand-alone mathematical description that can be adopted by anyone trying to communicate the theoretical foundation for their array design...has insights from a practitioner that are unique. The MATLAB® scripts alone are worth the price." —Daniel C. Ross, Ph. D, Northrop Grumman Corporation
Electronically Scanned Arrays: MATLAB® Modeling and Simulation is considered the

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first book to provide comprehensive modeling/simulation programs used to design and analyze Electronically Scanned Arrays (ESA), a key technology internationally in the scientific and engineering communities. Several books have been written about ESAs, but most cover only fundamental theory. Few, if any, provide the insightful, easy-to-use simulation tools found in this book. Obviously, MATLAB® is one of the greatest tools available for exploring and understanding science and engineering concepts, and we use MATLAB functions to easily and instantly calculate ESA patterns. However, to achieve a truly insightful and in-depth analysis of subarray architectures, conformal arrays, etc., it is imperative that users first develop a firm grasp of ESA fundamentals. Covers largely unexplored topics, such as reliability aspects and the application of ESAs in space This volume helps readers build that elemental understanding of

how ESAs work. It also provides code to run as an aid, so that readers don't have to start from scratch. The book expands on ESA principles and provides a modeling framework, using MATLAB to model applications of ESAs (i.e. pattern optimization, space-based applications, and reliability analysis). Presented code serves as an excellent vehicle to help readers master the analysis and simulation of ESAs. Exploring how difficult problems can be simplified with short, elegant solutions, this is an invaluable resource for students and others new to ESAs, as well as experienced practicing engineers who model ESAs at the systems level.

Optics for Engineers -

Charles A. DiMarzio

2011-08-09

The field of optics has become central to major developments in medical imaging, remote sensing, communication, micro- and nanofabrication, and consumer technology, among other areas. Applications of optics are now found in

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products such as laser printers, bar-code scanners, and even mobile phones. There is a growing need for engineers to understand

Advances in Decision Sciences, Image Processing, Security and Computer Vision - Suresh

Chandra Satapathy 2019-07-25

This book constitutes the proceedings of the First International Conference on Emerging Trends in Engineering (ICETE), held at University College of Engineering and organised by the Alumni Association, University College of Engineering, Osmania University, in Hyderabad, India on 22–23 March 2019. The proceedings of the ICETE are published in three volumes, covering seven areas: Biomedical, Civil, Computer Science, Electrical & Electronics, Electronics & Communication, Mechanical, and Mining Engineering. The 215 peer-reviewed papers from around the globe present the latest state-of-the-art research, and are useful to postgraduate students, researchers,

academics and industry engineers working in the respective fields. Volume 2 presents papers on the theme “Advances in Decision Sciences, Image Processing, Security and Computer Vision – International Conference on Emerging Trends in Engineering (ICETE)”. It includes state-of-the-art technical contributions in the areas of electronics and communication engineering and electrical and electronics engineering, discussing the latest sustainable developments in fields such as signal processing and communications; GNSS and VLSI; microwaves and antennas; signal, speech and image processing; power systems; and power electronics.

[MATLAB Simulations for Radar Systems Design](#) - Bassem R. Mahafza 2003-12-17

Simulation is integral to the successful design of modern radar systems, and there is arguably no better software for this purpose than MATLAB. But software and the ability to use

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it does not guarantee success. One must also: Understand radar operations and design philosophy Know how to select the radar parameters to meet the design req

Sparse Representations for Radar with MATLAB

Examples - Peter Knee 2012

Although the field of sparse representations is relatively new, research activities in academic and industrial research labs are already producing encouraging results. The sparse signal or parameter model motivated several researchers and practitioners to explore high complexity/wide bandwidth applications such as Digital TV, MRI processing, and certain defense applications. The potential signal processing advancements in this area may influence radar technologies. This book presents the basic mathematical concepts along with a number of useful MATLAB(r) examples to emphasize the practical implementations both inside and outside the radar field.

Radar Systems Analysis and

Design Using MATLAB -

Bassem R. Mahafza 2016-04-19

Developed from the author's graduate-level courses, the first edition of this book filled the need for a comprehensive, self-contained, and hands-on treatment of radar systems analysis and design. It quickly became a bestseller and was widely adopted by many professors. The second edition built on this successful format by rearranging and updating

Advanced Research on

Industry, Information

System and Material

Engineering, IISME2011 -

Helen Zhang 2011-02-21

Volume is indexed by Thomson Reuters CPCI-S (WoS). In this special collection of over 470 peer-reviewed papers are to be found many original ideas and new angles on aspects of industry, information systems and materials engineering. It offers a good basis upon which researchers can exchange their innovative ideas from a new perspective. In addition, the proceedings provide guidance for scientists, physicists, chemists, teachers, etc. all over

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the world.

MTI Radar - D. Curtis
Schleher 1978

**Detection, Estimation, and
Modulation Theory, Set
(Volumes: I,II, III,IV)** - Harry

L. Van Trees 2003-02-07
Signal processing plays an important role in many diverse application areas, including radar, sonar, communications, seismology, radio astronomy, tomography, and communications. Now, by popular demand, acclaimed author Harry Van Trees' four-part encyclopedic treatment of signal processing is now collected into a set offering 25 years of information in a single source.

**Synthetic Aperture Radar
Signal Processing with
MATLAB Algorithms** -
Mehrdad Soumekh 1999-04-27

An up-to-date analysis of the SAR wavefront reconstruction signal theory and its digital implementation With the advent of fast computing and digital information processing techniques, synthetic aperture radar (SAR) technology has

become both more powerful and more accurate. Synthetic Aperture Radar Signal Processing with MATLAB Algorithms addresses these recent developments, providing a complete, up-to-date analysis of SAR and its associated digital signal processing algorithms. This book introduces the wavefront reconstruction signal theory that underlies the best SAR imaging methods and provides clear guidelines to system design, implementation, and applications in diverse areas- from airborne reconnaissance to topographic imaging of ocean floors to surveillance and air traffic control to medical imaging techniques, and numerous others. Enabling professionals in radar signal and image processing to use synthetic aperture technology to its fullest potential, this work: * Includes M-files to supplement this book that can be retrieved from The MathWorks anonymous FTP server at <ftp://ftp.mathworks.com/pub/books/soumekh> * Provides

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practical examples and results from real SAR, ISAR, and CSAR databases * Outlines unique properties of the SAR signal that cannot be found in other information processing systems

* Examines spotlight SAR, stripmap SAR, circular SAR, and monopulse SAR modalities

* Discusses classical SAR processing issues such as motion compensation and radar calibration

Remote Sensing of Volcanic Processes and Risk - Francesca Cigna 2021-03-17

Remote sensing data and methods are increasingly being implemented in assessments of volcanic processes and risk.

This happens thanks to their capability to provide a spectrum of observation and measurement opportunities to accurately sense the dynamics, magnitude, frequency, and impacts of volcanic activity.

This book includes research papers on the use of satellite, aerial, and ground-based remote sensing to detect thermal features and anomalies, investigate lava and pyroclastic flows, predict the

flow path of lahars, measure gas emissions and plumes, and estimate ground deformation.

The multi-disciplinary character of the approaches employed for volcano monitoring and the combination of a variety of sensor types, platforms, and methods that come out from the papers testify to the current scientific and technology trends toward multi-data and multi-sensor monitoring solutions. The added value of the papers lies in the demonstration of how remote sensing can improve our knowledge of volcanoes that pose a threat to local communities; back-analysis and critical revision of recent volcanic eruptions and unrest periods; and improvement of modeling and prediction methods. Therefore, the selected case studies also demonstrate the societal impact that this scientific discipline can potentially have on volcanic hazard and risk management.

Aircraft Performance -
Mohammad H. Sadraey

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Aircraft Performance: An Engineering Approach introduces flight performance analysis techniques that enable readers to determine performance and flight capabilities of aircraft. Flight performance analysis for prop-driven and jet aircraft is explored, supported by examples and illustrations, many in full color. MATLAB programming for performance analysis is included, and coverage of modern aircraft types is emphasized. The text builds a strong foundation for

advanced coursework in aircraft design and performance analysis. *Detecting and Classifying Low Probability of Intercept Radar* - Phillip E. Pace 2009
This revised and expanded second edition brings you to the cutting edge with new chapters on LPI radar design, including over-the-horizon radar, random noise radar, and netted LPI radar. You also discover critical LPI detection techniques, parameter extraction signal processing techniques, and anti-radiation missile design strategies to counter LPI radar.