

Ew 102 A Second Course In Electronic Warfare

Author David Adamy Published On August 2004

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Compressive Sensing Based Algorithms for Electronic Defence Amit Kumar Mishra 2016-12-22 This book details some of the major developments in the implementation of compressive sensing in radio applications for electronic defense and warfare communication use. It provides a comprehensive background to the subject and at the same time describes some novel algorithms. It also investigates application value and performance-related parameters of compressive sensing in scenarios such as direction finding, spectrum monitoring, detection, and classification.

EW 105: Space Electronic Warfare David L. Adamy 2021-01-31 The fifth book in the bestselling Artech House EW 100 series explores electronic warfare (EW) in space. Practical problems – including intercept and jamming of hostile signals transmitted from the Earth's surface and the vulnerability of satellite links to attack from the Earth's surface are discussed. Spherical trigonometry is covered to provide the background necessary to understand the scope of satellite problems. Orbit mechanics, specifically the way the Earth and its satellites revolve around one another, is also explained. The basics of radio propagation and how it applies to communications Electronic Warfare are demonstrated, as well as the special considerations that apply to radio transmission to and from an Earth satellite. Satellite links and link vulnerability are discussed. Readers learn how to calculate the distance over which a satellite can view as a function of its orbital parameters, how long the satellite can see that point, and the frequency shift in signals received by the satellite or an Earth based receiver. EW applications of orbit mechanics, satellite links, radio propagation and link vulnerability. Written by an expert in the field, this book is useful for technical and non-technical professionals.

Special Design Topics in Digital Wideband Receivers James B. Y. Tsui 2010 Offering engineers a thorough examination of special, more advanced aspects of digital wideband receiver design, this practical book builds on fundamental resources on the topic, helping you gain a more comprehensive understanding of the subject. This in-depth volume presents a detailed look at a complete receiver design, including the encoder. Moreover, it discusses the detection of exotic signals and provides authoritative guidance on designing receivers used in electronic warfare. From frequency modulation and biphase shifting keys, to parameter encoders in electronic warfare receivers and the use of the simulation and probability density function to predict the false alarm parameter, this book focuses on critical topics and techniques that help you design digital wideband receivers for top performance. The authoritative reference is supported with over 310 illustrations and more than 180 equations.

EW 102 David Adamy 2004-01-01 Serving as a continuation of the bestselling book EW 101: A First Course in Electronic Warfare, this new volume is a second book based on the popular tutorials featured in the Journal of Electronic Defense. Without delving into complex mathematics, this book lets you understand important concepts central to EW, so you gain a basic working knowledge of the technologies and techniques deployed in today's EW systems.

The Micro-Doppler Effect in Radar, Second Edition Victor C. Chen 2019-02-28 Written by a prominent expert in the field, this updated and expanded second edition of an Artech House classic includes the

most recent breakthroughs in vital sign and gender recognition via micro-radar, as well as covering basic principles of Doppler effect and micro-Doppler effect and describing basic applications of micro-Doppler signatures in radar. The book presents detailed procedures about how to generate and analyze micro-Doppler signatures from radar signals. Readers will learn how to model and animate an object (such as human, spinning top, rotating rotor blades) with movement, simulation of radar returns from the object, and generating micro-Doppler signature. The book includes coverage of the Google project "Soli", which demonstrated the use of radar micro-Doppler effect to sense and recognize micro motions of human hand gesture for controlling devices. It also discusses noncontact detection of human vital sign (micro motions of breathing and heart beating) using radar, another important application of radar micro-Doppler sensors. Detailed MATLAB source codes for simulation of radar backscattering from targets with various motions are provided, along with source codes for generating micro-Doppler signatures and analyzing characteristics of targets.

Signal Digitization and Reconstruction in Digital Radios Yefim Poberezhskiy 2018-12-31 This comprehensive resource provides the latest information on digitization and reconstruction (D&R) of analog signals in digital radios. Readers learn how to conduct comprehensive analysis, concisely describe the major signal processing procedures carried out in the radios, and demonstrate the dependence of these procedures on the quality of D&R. The book presents and analyzes the most promising and theoretically sound ways to improve the characteristics of D&R circuits and illustrate the influence of these improvements on the capabilities of digital radios. The book is intended to bridge the gap that exists between theorists and practical engineers developing D&R techniques by introducing new signal transmission and reception methods that can effectively utilize the unique capabilities offered by novel digitization and reconstruction techniques.

Signal Detection and Estimation Mourad Barkat 2005 This newly revised edition of a classic Artech House book provides you with a comprehensive and current understanding of signal detection and estimation. Featuring a wealth of new and expanded material, the second edition introduces the concepts of adaptive CFAR detection and distributed CA-CFAR detection. The book provides complete explanations of the mathematics you need to fully master the material, including probability theory, distributions, and random processes.

Communications, Radar and Electronic Warfare Adrian Graham 2011-01-04 A practical guide to the principles of radio communications for both civilian and military applications In this book, the author covers both the civilian and military uses of technology, focusing particularly on the applications of radio propagation and prediction. Divided into two parts, the author introduces the basic theory of radio prediction before providing a step-by-step explanation of how this theory can be translated into real-life applications. In addition, the book presents up-to-date systems and methods to illustrate how these applications work in practice. This includes systems working in the HF bands and SHF. Furthermore, the author examines the performance of these systems, and also the effects of noise, interference and deliberate jamming, as well as the performance of jamming, detection and intercept systems. Particular attention is paid to the problems caused by Radio Controlled Improvised Explosive Devices (RCIEDs).
Key Features: A practical handbook on the topic of radio communications and propagation Written by an expert in both the civilian and military applications of the technology Focuses on methods such as radio and radar jamming, and radio-controlled improvised explosive devices (IEDs) Contains problems and solutions to clarify key topics

Introduction to LabVIEW FPGA for RF, Radar, and Electronic Warfare Applications Terry Stratoudakis 2021-01-31 Real-time testing and simulation of open- and closed-loop radio frequency (RF) systems for signal generation, signal analysis and digital signal processing require deterministic, low-latency, high-throughput capabilities afforded by user reconfigurable field programmable gate arrays (FPGAs). This comprehensive book introduces LabVIEW FPGA, provides best practices for multi-FPGA solutions, and guidance for developing high-throughput, low-latency FPGA based RF systems. Written by a recognized expert with a wealth of real-world experience in the field, this is the first book written on the subject of FPGAs for radar and other RF applications.

Data-Centric Business and Applications Tamara Radivilova 2020-06-20 This book addresses the challenges and opportunities of information/data processing and management. It also covers a range of methods, techniques and strategies for making it more efficient, approaches to increasing its usage, and ways to minimize information/data loss while improving customer satisfaction. Information and Communication Technologies (ICTs) and the Service Systems associated with them have had an

enormous impact on businesses and our day-to-day lives over the past three decades, and continue to do so. This development has led to the emergence of new application areas and relevant disciplines, which in turn present new challenges and opportunities for service system usage. The book provides practical insights into various aspects of ICT technologies for service systems: Techniques for information/data processing and modeling in service systems Strategies for the provision of information/data processing and management Methods for collecting and analyzing information/data Applications, benefits, and challenges of service system implementation Solutions to increase the performance of various service systems using the latest ICT technologies

Radio Wave Propagation Fundamentals, Second Edition Artem Saakian 2020-12-31 This completely updated second edition of an Artech House classic provides a thorough introduction to the basic principles of electromagnetic wave propagation of radio frequencies in real-world conditions, fully updated by including new achievements in theory and technology. It serves as an invaluable daily reference for practitioners in the field and as a complete, organized text on the subject. This comprehensive resource covers a wide range of essential topics, from the classification of radio waves, electromagnetic wave theory, and antennas for RF radio links, to the impact of the earth surface on the propagation of ground waves, atmospheric effects in radio wave propagation, and radio wave reception. The book explores the propagation of the ground radio waves, namely the waves that propagate in vicinity of the earth's surface (e.g., guided by that interface), without involvement of any atmospheric effects. Specifics of the high-frequency (HF) radio propagation due to reflections from ionospheric layers is studied, based on commonly used models of the ionospheric vertical profiles. Scattering of the radio waves of UHF and higher frequency bands from the random variations of the tropospheric refraction index (from tiny air turbulences) are also considered by using the principles of statistical radio-physics. Analysis of propagation conditions on real propagation paths, including analysis of the power budget of the VHF/UHF link to assure its stability (percentage of availability within observation time frame), terrestrial, broadcast, mobile, and satellite RF links are presented. The engineering design of the cellular networks, including LTE 4G, 5G and upcoming higher generations is explored. HF propagation predictions for extremely long-range links design for commercial and military applications are explained. Packed with examples and problems, this book provides a theoretical background for astrophysical, aeronomy and geophysical instrumentation design.

Trends in Wireless Communication and Information Security Mithun Chakraborty 2021-04-22 This book presents best selected papers presented at the International Conference on Emerging Wireless Communication Technologies and Information Security (EWCIS 2020), held from 8th & 9th October 2020 at Amity University Jharkhand, Ranchi, India. The book includes papers in the research area of wireless communications and intelligent systems, signal and image processing in engineering applications, data communication and information security, IoT and cloud computing. The contribution ranges from scientists, engineers and technologists from academia as well as from industry.

RFID and Sensor Networks Yan Zhang 2009-11-04 The escalating demand for ubiquitous computing along with the complementary and flexible natures of Radio Frequency Identification (RFID) and Wireless Sensor Networks (WSNs) have sparked an increase in the integration of these two dynamic technologies. Although a variety of applications can be observed under development and in practical use, there

Handbook of Defence Electronics and Optronics Anil K. Maini 2018-03-26 Handbook of Defence Electronics and Optronics Anil K. Maini, Former Director, Laser Science and Technology Centre, India First complete reference on defence electronics and optronics Fundamentals, Technologies and Systems This book provides a complete account of defence electronics and optronics. The content is broadly divided into three categories: topics specific to defence electronics; topics relevant to defence optronics; and topics that have both electronics and optronics counterparts. The book covers each of the topics in their entirety from fundamentals to advanced concepts, military systems in use and related technologies, thereby leading the reader logically from the operational basics of military systems to involved technologies and battlefield deployment and applications. Key features: • Covers fundamentals, operational aspects, involved technologies and application potential of a large cross-section of military systems. Discusses emerging technology trends and development and deployment status of next generation military systems wherever applicable in each category of military systems. • Amply illustrated with approximately 1000 diagrams and photographs and around 30 tables. • Includes salient features, technologies and deployment aspects of hundreds of military systems, including: military radios; ground

and surveillance radars; laser range finder and target designators; night vision devices; EW and EO jammers; laser guided munitions; and military communications equipment and satellites. Handbook of Defence Electronics and Optronics is an essential guide for graduate students, R&D scientists, engineers engaged in manufacturing defence equipment and professionals handling the operation and maintenance of these systems in the Armed Forces.

FMCW Radar Design M. Jankiraman 2018-07-31 Frequency Modulated Continuous Wave (FMCW) radars are a fast expanding area in radar technology due to their stealth features, extremely high resolutions, and relatively clutter free displays. This groundbreaking resource offers engineers expert guidance in designing narrowband FMCW radars for surveillance, navigation, and missile seeking. It also provides professionals with a thorough understanding of underpinnings of this burgeoning technology. Moreover, readers find detailed coverage of the RF components that form the basis of radar construction. Featuring clear examples, the book presents critical discussions on key applications. Practitioners learn how to use time-saving MATLAB® and SystemVue design software to help them with their challenging projects in the field. Additionally, this authoritative reference shows engineers how to analyze FMCW radars of various types, including missile seekers and missile altimeters. Packed with over 600 equations, the book presents discussions on key radar algorithms and their implementation, as well as designing modern radar to meet given operational requirements.

EW 103 David L. Adamy 2009 the tutorials, this authoritative book features a complete set of problems with solutions." --Book Jacket.

SiGe-based Re-engineering of Electronic Warfare Subsystems Wynand Lambrechts 2016-10-19 This book provides readers a thorough understanding of the applicability of new-generation silicon-germanium (SiGe) electronic subsystems for electronic warfare and defensive countermeasures in military contexts. It explains in detail the theoretical and technical background, and addresses all aspects of the integration of SiGe as an enabling technology for maritime, land, and airborne / spaceborne electronic warfare, including research, design, development, and implementation. The coverage is supported by mathematical derivations, informative illustrations, practical examples, and case studies. While SiGe technology provides speed, performance, and price advantages in many markets, to date only limited information has been available on its use in electronic warfare systems, especially in developing nations. Addressing that need, this book offers essential engineering guidelines that especially focus on the speed and reliability of current-generation SiGe circuits and highlight emerging innovations that help to ensure the sustainable long-term integration of SiGe into electronic warfare systems.

Emerging Methods in Predictive Analytics: Risk Management and Decision-Making Hsu, William H. 2014-01-31 Decision making tools are essential for the successful outcome of any organization. Recent advances in predictive analytics have aided in identifying particular points of leverage where critical decisions can be made. Emerging Methods in Predictive Analytics: Risk Management and Decision Making provides an interdisciplinary approach to predictive analytics; bringing together the fields of business, statistics, and information technology for effective decision making. Managers, business professionals, and decision makers in diverse fields will find the applications and cases presented in this text essential in providing new avenues for risk assessment, management, and predicting the future outcomes of their decisions.

EW 104: Electronic Warfare Against a New Generation of Threats David L. Adamy 2015-02-01 The fourth book in the bestselling Artech House EW 100 series is dedicated to reviewing legacy threats and discussing new threats which have arisen since Y2K in communications, radar, and IR threats. Like its predecessors, EW 104 presents a series of highly informative and easy-to-comprehend tutorials, along with insightful introductory and connective material that helps you understand how each aspect fits together. This reference starts with a review of the generalities of legacy threats, from the technical point of view, with a focus on what makes the new threats more challenging. Readers are provided with details of threats in three major areas -Communications, Radars, and IR Threats.

Ew 103 David L. Adamy 2008 The third book in the bestselling Artech House EW 100 series is dedicated entirely to the practical aspects of electronic warfare against enemy communication. From communications math (mainly simple dB formulas), receiving systems, and signals, to communications emitter location, intercept, and jamming, this comprehensive volume covers all the key topics in the field.

Review of Modern Engineering Solutions for the Industry Zhen Yu Du 2012-10-26 These proceedings of the 2012 International Conference on Mechatronic Systems and Automation Systems (MSAS 2012), held on July 21st 2012 in Wuhan (China), comprise 102 peer-reviewed papers grouped into 6 chapters:

Mechatronic Devices and Systems; Signal Processing and Measurement; Control and Automation Systems; Sensors; Material Science and Processing Technology in Manufacturing; Mechanical Engineering and Electrical Power

Cognitive Radar: The Knowledge-Aided Fully Adaptive Approach, Second Edition Joseph R. Guerci 2020-06-30 This highly-anticipated second edition of the bestselling Cognitive Radar: The Knowledge-Aided Fully Adaptive Approach, the first book on the subject, provides up-to-the-minute advances in the field of cognitive radar (CR). Adaptive waveform methods are discussed in detail, along with optimum resource allocation and radar scheduling. Chronicling the field of cognitive radar (CR), this cutting-edge resource provides an accessible introduction to the theory and applications of CR, and presents a comprehensive overview of the latest developments in this emerging area. It covers important breakthroughs in advanced radar systems, and offers new and powerful methods for combating difficult clutter environments. You find details on specific algorithmic and real-time high-performance embedded computing (HPEC) architectures. This practical book is supported with numerous examples that clarify key topics, and includes more than 370 equations.

EW 102 David Adamy 2004 Serving as a continuation of the bestselling book EW 101: A First Course in Electronic Warfare, this new volume is a second book based on the popular tutorials featured in the Journal of Electronic Defense. Without delving into complex mathematics, this book lets you understand important concepts central to EW, so you gain a basic working knowledge of the technologies and techniques deployed in today's EW systems.

Symmetry Measures on Complex Networks Angel Garrido 2018-07-09 This book is a printed edition of the Special Issue "Symmetry Measures on Complex Networks" that was published in Symmetry Progress in Industrial Mathematics at ECMI 2014 Giovanni Russo 2017-09-04 This book presents a collection of papers emphasizing applications of mathematical models and methods to real-world problems of relevance for industry, life science, environment, finance and so on. The biannual Conference of ECMI (the European Consortium of Mathematics in Industry) held in 2014 focused on various aspects of industrial and applied mathematics. The five main topics addressed at the conference were mathematical models in life science, material science and semiconductors, mathematical methods in the environment, design automation and industrial applications, and computational finance. Several other topics have been treated, such as, among others, optimization and inverse problems, education, numerical methods for stiff pdes, model reduction, imaging processing, multi physics simulation, mathematical models in textile industry. The conference, which brought together applied mathematicians and experts from industry, provided a unique opportunity to exchange ideas, problems and methodologies, bridging the gap between mathematics and industry and contributing to the advancement of science and technology. The conference has included a presentation of EU-Maths-In (European Network of Mathematics for Industry and Innovation), a recent joint initiative of ECMI and EMS. The proceedings from this conference represent a snapshot of the current activity in industrial mathematics in Europe, and are highly relevant to anybody interested in the latest applications of mathematics to industrial problems.

Introduction to Unmanned Aircraft Systems R. Kurt Barnhart 2021-03-04 Introduction to Unmanned Aircraft Systems, Third Edition surveys the basics of unmanned aircraft systems (UAS), from sensors, controls, and automation to regulations, safety procedures, and human factors. Featuring chapters by leading experts, this fully updated bestseller fills the need for an accessible and effective university textbook. Focussing on the civilian applications of UAS, the text begins with an historical overview of unmanned aerial vehicles, and proceeds to examine each major UAS subsystem. Its combination of understandable technical coverage and up-to-date information on policy and regulation makes the text appropriate for both Aerospace Engineering and Aviation programs.

Radar System Analysis and Modeling David K. Barton 2004-10-01 A thorough update to the Artech House classic Modern Radar Systems Analysis, this reference is a comprehensive and cohesive introduction to radar systems design and performance estimation. It offers you the knowledge you need to specify, evaluate, or apply radar technology in civilian or military systems. The book presents accurate detection range equations that let you realistically estimate radar performance in a variety of practical situations. With its clear, easy-to-understand language, you quickly learn the tradeoffs between choice of wavelength and radar performance and see the inherent advantages and limitations associated with each radar band. You find modeling procedures to help you analyze enemy systems or evaluate radar integrated into new weapon systems. The book covers ECM and ECCM for both surveillance and

tracking to help you estimate the effects of active and passive ECM, select hardware/software for reconnaissance or jamming, and plan the operation of EW systems. As radar systems evolve, this book provides the equations needed to calculate and evaluate the performance of the latest advances in radar technology.

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.

One Flew Over the Cuckoo's Nest Ken Kesey 2015-03-04 De tirannieke Nurse Ratched regeert haar afdeling in de psychiatrische inrichting van Oregon State met beklemmende discipline. De patiënten houden zich gedeisd door geestdodende medicatie en de dreiging van elektroshocktherapie. Haar strikte regime wordt verstoord door de komst van McMurphy, een levenslustige crimineel die doet alsof hij gek geworden is om kans te maken op een makkelijk leventje in een inrichting. Wanneer McMurphy ziet hoe de patiënten hun dagen hier doorbrengen en hoe hun levens verpieteren, besluit hij in opstand te komen. Hij begint opmerkingen te maken over het figuur van de Big Nurse, en introduceert kaartspellen bij zijn medepatiënten. Hij organiseert een ongeoorloofd uitje en weet zelfs twee prostituees de afdeling binnen te smokkelen. Hij betaalt daar niet alleen zelf de prijs voor, maar ziet ook hoe zijn vrienden meer en meer beginnen te lijden nu ze in aanraking komen met de buitenwereld. In de soms onderhuidse, soms uitgesproken of zelfs fysieke strijd tussen McMurphy en Ratched vervagen de grenzen tussen goed en kwaad, mentaal gezond of gek, leven en dood. One Flew Over the Cuckoo's Nest is een van de grootste, meest indrukwekkende romans van de twintigste eeuw. Een ode aan het leven en de vrijheid.

EW 101 David Adamy 2001 This popular series of tutorials, featured over a period of years in the *Journal of Electronic Defense*, is now available in a single volume. Organized into chapters with new introductory and supplementary material from the author, you get clear, concise and well-illustrated examinations of critical topics such as antenna parameters, receiver sensitivity, processing tasks, and search strategies, LPI signals, jamming, communication links, and simulation. The chapters define key terms and explain how and why particular technologies are relevant to electronic defense. Detailed charts, diagrams and formulas give you the practical knowledge you need to apply specific techniques in the field.

Battlespace Technologies Richard S. Deakin 2010 The era of mechanized warfare is rapidly giving way to the battle for information superiority OCo enabled by electronic technologies that provide data for detailed analysis of enemy forces and capabilities. Supported with over 400 four-color photographs and illustrations, this new book is written and designed specifically to help non-specialists quickly understand the complexities of Network Enabled Capability (NEC). It offers you expert guidance on how to achieve information dominance throughout the battlespace by effectively employing the technologies, concepts, and decision-making processes of network enabled warfare. Written in clear, nontechnical language with minimum mathematics, the book explains how to use sensor technologies, including radar and electronic warfare systems, to disseminate information to key decision makers in timely and relevant manner. You learn how these technologies allow for the effective acquisition and dissemination of intelligence, while denying the collection, dissemination and use of intelligence by enemy forces. Providing a complete understanding of the advantages and weaknesses of information warfare, this practical book shows you what factors need to be taken into account when designing systems and equipment for use in a network-enabled environment. Moreover, this forward-looking reference explores what evolving requirements to consider for future air, land, and sea battlespace scenarios. This is an extraordinarily valuable and useful resource for military staff, defense industry engineers and managers, and government officials involved with defense funding decisions."

Monopulse Radar Theory and Practice, Second Edition Samuel M. Sherman 2011 Monopulse is a type of radar that sends additional information in the signal in order to avoid problems caused by rapid changes in signal strength. Monopulse is resistant to jamming which is one of the main reasons it is used in most radar systems today. This updated and expanded edition of an Artech House classic offers you a current and comprehensive treatment of monopulse radar principles, techniques, and applications. The Second

Edition features two brand new chapters, covering monopulse countermeasures and counter-countermeasures and monopulse for airborne radar and homing seekers. This essential volume categorizes and describes the various forms of monopulse radar, and analyzes their capabilities and limitations. The book also devotes considerable space to monopulse circuits and hardware components, explaining their functions and performance. This practical resource features numerous photographs and illustrations drawn from actual radar systems and components. This book serves as a valuable reference for both experienced radar engineers and those new to the field.

The Security of Critical Infrastructures Marcus Matthias Keupp 2020-05-05 This book analyzes the security of critical infrastructures such as road, rail, water, health, and electricity networks that are vital for a nation's society and economy, and assesses the resilience of these networks to intentional attacks. The book combines the analytical capabilities of experts in operations research and management, economics, risk analysis, and defense management, and presents graph theoretical analysis, advanced statistics, and applied modeling methods. In many chapters, the authors provide reproducible code that is available from the publisher's website. Lastly, the book identifies and discusses implications for risk assessment, policy, and insurability. The insights it offers are globally applicable, and not limited to particular locations, countries or contexts. Researchers, intelligence analysts, homeland security staff, and professionals who operate critical infrastructures will greatly benefit from the methods, models and findings presented. While each of the twelve chapters is self-contained, taken together they provide a sound basis for informed decision-making and more effective operations, policy, and defense.

Deep Learning Applications of Short-Range Radars Avik Santra 2020-09-30 This exciting new resource covers various emerging applications of short range radars, including people counting and tracking, gesture sensing, human activity recognition, air-drawing, material classification, object classification, vital sensing by extracting features such as range-Doppler Images (RDI), range-cross range images, Doppler Spectrogram or directly feeding raw ADC data to the classifiers. The book also presents how deep learning architectures are replacing conventional radar signal processing pipelines enabling new applications and results. It describes how deep convolutional neural networks (DCNN), long-short term memory (LSTM), feedforward networks, regularization, optimization algorithms, connectionist This exciting new resource presents emerging applications of artificial intelligence and deep learning in short-range radar. The book covers applications ranging from industrial, consumer space to emerging automotive applications. The book presents several human-machine interface (HMI) applications, such as gesture recognition and sensing, human activity classification, air-writing, material classification, vital sensing, people sensing, people counting, people localization and in-cabin automotive occupancy and smart trunk opening. The underpinnings of deep learning are explored, outlining the history of neural networks and the optimization algorithms to train them. Modern deep convolutional neural network (DCNN), popular DCNN architectures for computer vision and their features are also introduced. The book presents other deep learning architectures, such as long-short term memory (LSTM), auto-encoders, variational auto-encoders (VAE), and generative adversarial networks (GAN). The application of human activity recognition as well as the application of air-writing using a network of short-range radars are outlined. This book demonstrates and highlights how deep learning is enabling several advanced industrial, consumer and in-cabin applications of short-range radars, which weren't otherwise possible. It illustrates various advanced applications, their respective challenges, and how they are been addressed using different deep learning architectures and algorithms.

Developments and Advances in Defense and Security Álvaro Rocha 2019-06-13 This book gathers the proceedings of the Multidisciplinary International Conference of Research Applied to Defense and Security (MICRADS), held at the Military Engineering Institute, Rio de Janeiro, Brazil, from 8 to 10th May 2019. It covers a variety of topics in systems, communication and defense; strategy and political-administrative vision in defense; and engineering and technologies applied to defense. Given its scope, it offers a valuable resource for practitioners, researchers, and students alike.

Signal Processing for Passive Bistatic Radar Mateusz Malanowski 2019-08-31 This cutting-edge resource introduces the basic concepts of passive bistatic radar, such as bistatic geometry, bistatic radar equation and analysis of different illuminating signals. These techniques, although known for almost a century, have not been developed intensively for decades, mainly due to technical limitations, but today, the passive radar concept can be realized in practice, and is of great interest for military and civilian users. This book provides insight into understanding the potential and limitations of passive radar systems, as well as the differences between signal processing in active and passive radar. Each of the

signal processing stages typically applied in passive radar is described, including digital beamforming, clutter removal, target detection, localization and tracking. These concepts are illustrated with both simulated and measured data along with examples of passive radar systems. Correlation processing, which is crucial for passive radar operation, is presented, as well as practical approaches for calculating the cross-ambiguity function. The problems of range and velocity-cell migration are also introduced. The book analyzes and compares different antenna array geometries to show readers the appropriate solution for a particular scenario of passive radar. Cartesian tracking is also presented, based on the extended Kalman filter. Parallel and sequential updating approaches are introduced and compared. These concepts are illustrated with both simulated and measured data along with examples of passive radar systems, making this book useful for both novice and advanced practitioners.

Inwijding Veronica Roth 2012-03-14 Futuristisch Chicago. De wereld van de zestienjarige Tris is opgedeeld in vijf facties: Oprechtheid, Zelfverloochening, Onverschrokkenheid, Vriendschap en Eruditie. Ieder jaar moeten alle zestienjarigen kiezen bij welke factie zij de rest van hun leven willen horen. Voor Beatrice betekent dit dat ze een keus moet maken tussen haar familie en haar ware identiteit. Haar beslissing verrast iedereen, vooral haarzelf. Deze spannende youngadult-serie van Veronica Roth wordt verfilmd! Vanaf maart 2014 is Divergent te zien in de bioscoop.

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 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.

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.

The Technical Collection of Intelligence Robert M. Clark 2010-07-13 Technical collection represents the largest asymmetric edge that technologically advanced countries such as the United States and its allies have in the intelligence business. Intelligence veteran Robert M. Clark's new book offers a succinct, logically organized, and well written overview of technical collection, explained at a non technical level for those new to the field. Filling a void in the literature, The Technical Collection of Intelligence is the only book that comprehensively examines the collection, processing, and exploitation of non-literal intelligence information, including laser, acoustic, and infrared signals; non-imaging optical intelligence sources; and radar tracking and measurement of aerospace vehicles. A compelling final chapter addresses the substantial challenges that come with managing technical collection. A stunning full-color interior design features high quality graphics while a handy "tabs" feature keeps content at the ready. A useful list of recommended books and reports, a glossary of terms, and a list of acronyms make this guide a go-to resource. Technical Collection will prove invaluable to all source analysts, managers of technical collection, customers of intelligence, and recruiters for the intelligence community.