

Miniature And Micro Doppler Sensors

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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.

Introduction to Wireless Communications and Networks - Krishnamurthy Raghunandan 2022

This book provides an intuitive and accessible introduction to the fundamentals of wireless communications and their tremendous impact on nearly every aspect of our lives. The author starts with basic information on physics and mathematics and then expands on it, helping readers understand fundamental concepts of RF systems and how they are designed. Covering diverse topics in wireless communication

systems, including cellular and personal devices, satellite and space communication networks, telecommunication regulation, standardization and safety, the book combines theory and practice using problems from industry, and includes examples of day-to-day work in the field. It is divided into two parts -- basic (fundamentals) and advanced (elected topics). Drawing on the author's extensive training and industry experience in standards, public safety and regulations, the book includes information on what checks and balances are used by wireless engineers around the globe and address questions concerning safety, reliability and long-term operation. A full suite of classroom information is included.

Advances in Guidance, Navigation and Control - Liang Yan 2021-11-12

This book features the latest theoretical results and techniques in the field of guidance, navigation, and control (GNC) of vehicles and aircraft. It covers a range of topics, including, but not limited to, intelligent computing communication and control; new methods of navigation, estimation, and tracking; control of multiple moving objects; manned and autonomous unmanned systems; guidance, navigation, and control of miniature aircraft; and sensor systems for guidance, navigation, and control. Presenting recent advances in the form of illustrations, tables, and text, it also provides detailed information of a number of the studies, to offer readers insights for their own research. In addition, the book addresses fundamental concepts and studies in the development of GNC,

making it a valuable resource for both beginners and researchers wanting to further their understanding of guidance, navigation, and control.

2FOLLY - John Edwards 2016-11-13

2Folly: Waking from the dream before life, before you can remember such things and falling head first into battle for Queen and family she struggles to keep her family alive. While at the same time, find an enemy in which she must defeat-an enemy that is both raging a war, and hidden in shadows.

40th AIAA Aerospace Sciences Meeting & Exhibit - 2002

Contactless Human Activity Analysis - Md Atiqur Rahman Ahad
2021-03-23

This book is a truly comprehensive, timely, and very much needed treatise on the conceptualization of analysis, and design of contactless & multimodal sensor-based human activities, behavior understanding & intervention. From an interaction design perspective, the book provides views and methods that allow for more safe, trustworthy, efficient, and more natural interaction with technology that will be embedded in our daily living environments. The chapters in this book cover sufficient grounds and depth in related challenges and advances in sensing, signal processing, computer vision, and mathematical modeling. It covers multi-domain applications, including surveillance and elderly care that will be an asset to entry-level and practicing engineers and scientists. (See inside for the reviews from top experts)

[Proceedings of Sixth International Congress on Information and Communication Technology](#) - Xin-She Yang 2021

This book gathers selected high-quality research papers presented at the Sixth International Congress on Information and Communication Technology, held at Brunel University, London, on February 25-26, 2021. It discusses emerging topics pertaining to information and communication technology (ICT) for managerial applications, e-governance, e-agriculture, e-education and computing technologies, the Internet of Things (IoT) and e-mining. Written by respected experts and

researchers working on ICT, the book offers a valuable asset for young researchers involved in advanced studies. The book is presented in four volumes.

[Phigix ...](#) [A Crank's Perspective](#) [High Voltage ...](#) [With Coffee ...](#) [Milk ...](#) [Sugar ...](#) [and Some Common Sense ...](#) - Abhijeet Madhukar Deshpande ... 2020-06-01

Phigix & Me... Me a Cranck.... All of my life's observations, thinking, reminiscing, etc.. put in a book for everyone to read for anytime of their lives... A must have... since it signifies and denotes the technological wizardry, which I have created and developed as systems, including my economics, and the scientific discipline of biology as advanced communication bio tech engineering. Which is in a different book, Bio - Techno works, of bio engineering and its principles, which will, and as per the factual worldwide records, as my achievements, has and have, paved and pave, the way, for the regenerative bio technology. Also now for everyone, why you must purchase this book, ;P other than the fact that I have cursed everyone to buy it or else... Is that I have explained the entire subject of physics and particle matter in such an elucidative manner and style, that even an ordinary person, even without any, or zero, or even a minus knowledge, of the subject matter of physics and particle physics, can very well and easily, understand the same. Including children, right from kindergarten, itself. So that everyone, can now become an Expert on Physics... My book, contains the entire factual information, on physics and its theories. It also outlines the principles of particle physics, which factually prove that infinite speeds, in infinite exponential speeds, in excess of the speed of light, itself, are possible, for light and matter, to travel anywhere, in the universe or creation, itself. Now... My Role.. as me being myself... and since being .. the unusual personality that I am... Created this EMRFC processor, which can utilize and create and store energy and particle RF transfer state as infinite informational perpetual processing system ... Can store infinite information in parallel, random and sequential processing each within one another about the entire information of all of creation, right from its start to its end... Within a single processing chip the size less than the tip

of my fingernail... Further more, My book, details, the factual creation, the engineering, and the developmental structure, of the process, of the system, and the mechanism, and of particle physics, Of Time Travel, Itself... □ So you can have the opportunity of a life time to become a Time Traveler... And I am the factual creator and developer of The Time Machine... This book reveals, how to make one, and become a Time Traveler.. Itself.. Reality, is now bent ... The Adventure of a Life time.... Tactics and Technology for 21st Century Military Superiority - Theodore S. Gold 1998-06-01

Explores new ways to make rapidly deployable forces much more effective than they are today. The report states that substantial, possibly revolutionary, improvements in the effectiveness of rapidly deployable forces are feasible. The essence is an ability to mass fire rather than forces; it relies on remote sensors, processors and weapons. Also discusses how to achieve new capabilities as well as meet other challenges including command, force insertion and training. Describes how this new force concept could operate to perform various missions in different environments. Illustrated.

Environmental Instrumentation and Analysis Handbook - Randy D. Down 2005-11-22

A comprehensive resource for information about different technologies and methods to measure and analyze contamination of air, water, and soil. * Serves as a technical reference in the field of environmental science and engineering * Includes information on instrumentation used for measurement and control of effluents and emissions from industrial facilities that can directly influence the environment * Focuses on applications, making it a practical reference tool

Proceedings of the ... Annual AIAA/USU Conference on Small Satellites -

Cognitive Systems and Signal Processing - Fuchun Sun 2021-05-04

This book constitutes the refereed post-conference proceedings of the 5th International Conference on Cognitive Systems and Signal

Processing, ICCSIP 2020, held in Zhuhai, China, in December 2020. The 59 revised papers presented were carefully reviewed and selected from 120 submissions. The papers are organized in topical sections on algorithm; application; manipulation; bioinformatics; vision; and autonomous vehicles.

International Conference on Intelligent Data Communication Technologies and Internet of Things (ICICI) 2018 - Jude Hemanth 2018-12-20

This book discusses data communication and computer networking, communication technologies and the applications of IoT (Internet of Things), big data, cloud computing and healthcare informatics. It explores, examines and critiques intelligent data communications and presents inventive methodologies in communication technologies and IoT. Aimed at researchers and academicians who need to understand the importance of data communication and advanced technologies in IoT, it offers different perspectives to help readers increase their knowledge and motivates them to conduct research in the area, highlighting various innovative ideas for future research.

Handbook of Modern Sensors - Jacob Fraden 2006-04-29

Seven years have passed since the publication of the previous edition of this book. During that time, sensor technologies have made a remarkable leap forward. The sensitivity of the sensors became higher, the dimensions became smaller, the sensitivity became better, and the prices became lower. What have not changed are the fundamental principles of the sensor design. They are still governed by the laws of Nature.

Arguably one of the greatest geniuses who ever lived, Leonardo Da Vinci, had his own peculiar way of praying. He was saying, "Oh Lord, thanks for Thou do not violate your own laws. " It is comforting indeed that the laws of Nature do not change as time goes by; it is just our appreciation of them that is being re?ned. Thus, this new edition examines the same good old laws of Nature that are employed in the designs of various sensors. This has not changed much since the previous edition. Yet, the sections that describe the practical designs are revised substantially.

Recent ideas and developments have been added, and less important and

nonessential designs were dropped. Probably the most dramatic recent progress in the sensor technologies relates to wide use of MEMS and MEOMS (micro-electro-mechanical systems and micro-electro-opto-mechanical systems). These are examined in this new edition with greater detail. This book is about devices commonly called sensors. The invention of a microprocessor has brought highly sophisticated instruments into our everyday lives.

Handbook of Optoelectronics (Two-Volume Set) - John P. Dakin
2010-12-12

A field as diverse as optoelectronics needs a reference that is equally versatile. From basic physics and light sources to devices and state-of-the-art applications, the Handbook of Optoelectronics provides comprehensive, self-contained coverage of fundamental concepts and practical applications across the entire spectrum of disciplines encompassed by optoelectronics. The handbook unifies a broad array of current research areas with a forward-looking focus on systems and applications. Beginning with an introduction to the relevant principles of physics, materials science, engineering, and optics, the book explores the details of optoelectronic devices and techniques including semiconductor lasers, optical detectors and receivers, optical fiber devices, modulators, amplifiers, integrated optics, LEDs, and engineered optical materials. Applications and systems then become the focus, with sections devoted to industrial, medical, and commercial applications, communications, imaging and displays, sensing and data processing, spectroscopic analysis, the art of practical optoelectronics, and future prospects. This extensive resource comprises the efforts of more than 70 world-renowned experts from leading industrial and academic institutions around the world and includes many references to contemporary works. Whether used as a field reference, as a research tool, or as a broad and self-contained introduction to the field, the Handbook of Optoelectronics places everything you need in a unified, conveniently organized format.

Optical Instruments for Weather Forecasting - Gary W. Kamerman 1996

Micro-Doppler Characteristics of Radar Targets - Qun Zhang

2016-10-31

Micro-Doppler Characteristics of Radar Targets is a monograph on radar target's micro-Doppler effect theory and micro-Doppler feature extraction techniques. The micro-Doppler effect is presented from two aspects, including micro-Doppler effect analysis and micro-Doppler feature extraction, with micro-Doppler effects induced by different micro-motional targets in different radar systems analyzed and several methods of micro-Doppler feature extraction and three-dimensional micro-motion feature reconstruction presented. The main contents of this book include micro-Doppler effect in narrowband radar, micro-Doppler effect in wideband radar, micro-Doppler effect in bistatic radar, micro-Doppler feature analysis and extraction, and three-dimensional micro-motion feature reconstruction, etc. This book can be used as a reference for scientific and technical personnel engaged in radar signal processing and automatic target recognition, etc. It is especially suitable for beginners who are interested in research on micro-Doppler effect in radar. Presents new views on micro-Doppler effects, analyzing and discussing micro-Doppler effect in wideband radar rather than focusing on narrowband. Provides several new methods for micro-Doppler feature extraction which are very helpful and practical for readers. Includes practical cases that align with main MATLAB codes in each chapter, with detailed program annotations.

Digital Health - Homero Rivas 2018-01-02

This book presents a comprehensive state-of-the-art approach to digital health technologies and practices within the broad confines of healthcare practices. It provides a canvas to discuss emerging digital health solutions, propelled by the ubiquitous availability of miniaturized, personalized devices and affordable, easy to use wearable sensors, and innovative technologies like 3D printing, virtual and augmented reality and driverless robots and vehicles including drones. One of the most significant promises the digital health solutions hold is to keep us healthier for longer, even with limited resources, while truly scaling the delivery of healthcare. Digital Health: Scaling Healthcare to the World addresses the emerging trends and enabling technologies contributing to

technological advances in healthcare practice in the 21st Century. These areas include generic topics such as mobile health and telemedicine, as well as specific concepts such as social media for health, wearables and quantified-self trends. Also covered are the psychological models leveraged in design of solutions to persuade us to follow some recommended actions, then the design and educational facets of the proposed innovations, as well as ethics, privacy, security, and liability aspects influencing its acceptance. Furthermore, sections on economic aspects of the proposed innovations are included, analyzing the potential business models and entrepreneurship opportunities in the domain.

Multi-User Gesture Recognition with Radar Technology - Ninos, Alexandros 2022-10-27

The aim of this work is the development of a Radar system for consumer applications. It is capable of tracking multiple people in a room and offers a touchless human-machine interface for purposes that range from entertainment to hygiene.

Microengineering of Metals and Ceramics - Henry Baltes 2008-09-26
Microstructures, electronics, nanotechnology - these vast fields of research are growing together as the size gap narrows and many different materials are combined. Current research, engineering successes and newly commercialized products hint at the immense innovative potentials and future applications that open up once mankind controls shape and function from the atomic level right up to the visible world without any gaps. Continuing from the previous volume, authors from three major competence centres for microengineering here cover all aspects of specialized replication techniques and how to employ state-of-the-art technologies for testing and characterizing micro-scale components, and illustrate quality control aspects and strategies for automation of production procedures in view of future industrial production and commercialisation.

Topics in Modal Analysis, Volume 7 - Randall Allemang 2013-07-03
Topics in Modal Analysis, Volume 7: Proceedings of the 31st IMAC, A Conference and Exposition on Structural Dynamics, 2013, the seventh volume of seven from the Conference, brings together contributions to

this important area of research and engineering. The collection presents early findings and case studies on fundamental and applied aspects of Structural Dynamics, including papers on: Fluid Structure Interaction Adaptive Structures Experimental Techniques Analytical Methods Damage Detection Damping of Materials & Members Modal Parameter Identification Modal Testing Methods System Identification Active Control Modal Parameter Estimation Processing Modal Data
International Journal of Mini & Microcomputers - 1978

Millimeter Wave Radar - Stephen L. Johnston 1980

Advances in 3D Image and Graphics Representation, Analysis, Computing and Information Technology - Roumen Kountchev 2020-04-20

This book gathers selected papers presented at the conference "Advances in 3D Image and Graphics Representation, Analysis, Computing and Information Technology," one of the first initiatives devoted to the problems of 3D imaging in all contemporary scientific and application areas. The aim of the conference was to establish a platform for experts to combine their efforts and share their ideas in the related areas in order to promote and accelerate future development. This second volume discusses algorithms and applications, focusing mainly on the following topics: 3D printing technologies; naked, dynamic and auxiliary 3D displays; VR/AR/MR devices; VR camera technologies; microprocessors for 3D data processing; advanced 3D computing systems; 3D data-storage technologies; 3D data networks and technologies; 3D data intelligent processing; 3D data cryptography and security; 3D visual quality estimation and measurement; and 3D decision support and information systems.

Proceedings of the ASME Fluids Engineering Division Summer Meeting - American Society of Mechanical Engineers. Fluids Engineering Division. Summer Meeting 1996

Small and Short-Range Radar Systems - Gregory L. Charvat 2014-04-04

Radar Expert, Esteemed Author Gregory L. Charvat on CNN and CBS Author Gregory L. Charvat appeared on CNN on March 17, 2014 to discuss whether Malaysia Airlines Flight 370 might have literally flown below the radar. He appeared again on CNN on March 20, 2014 to explain the basics of radar, and he explored the hope and limitations of the technology involved in the search for Flight 370 on CBS on March 22, 2014. Get His Book Now Coupling theory with reality, from derivation to implementation of actual radar systems, Small and Short-Range Radar Systems analyzes and then provides design procedures and working design examples of small and short-range radar systems. Discussing applications from automotive to through-wall imaging, autonomous vehicle, and beyond, the practical text supplies high-level descriptions, theoretical derivations, back-of-envelope calculations, explanations of processing algorithms, and case studies for each type of small radar system covered, including continuous wave (CW), ultrawideband (UWB) impulse, linear frequency modulation (FM), linear rail synthetic aperture radar (SAR), and phased array. This essential reference: Explains how to design your own radar devices Demonstrates how to process data from small radar sensors Provides real-world, measured radar data to test algorithms before investing development time Complete with downloadable MATLAB® scripts and actual radar measurements, Small and Short-Range Radar Systems empowers you to rapidly develop small radar technology for your application.

Laser Techniques Applied to Fluid Mechanics - R.J. Adrian
2012-12-06

In the tradition of its predecessors, this volume comprises a selection of the best papers presented at the Ninth International Symposium on Applications of Laser Techniques to Fluid Mechanics, held in Lisbon in July 2000. The papers reflect the state-of-the-art in laser applications of laser techniques in fluid mechanics describing novel ideas for instrumentation, instrumentation developments, results of measurements of wall-bounded flows, free flows and flames and flow and combustion in engines. The papers demonstrate the continuing interest in the development of an understanding of new methodologies and

implementation in terms of new instrumentation.

FPGA-Based Embedded System Developer's Guide - A. Arockia Basil Raj
2018-04-09

The book covers various aspects of VHDL programming and FPGA interfacing with examples and sample codes giving an overview of VLSI technology, digital circuits design with VHDL, programming, components, functions and procedures, and arithmetic designs followed by coverage of the core of external I/O programming, algorithmic state machine based system design, and real-world interfacing examples. • Focus on real-world applications and peripherals interfacing for different applications like data acquisition, control, communication, display, computing, instrumentation, digital signal processing and top module design • Aims to be a quick reference guide to design digital architecture in the FPGA and develop system with RTC, data transmission protocols
Handbook of Robotic and Image-Guided Surgery - Mohammad Abedin-Nasab 2019-09-25

Handbook of Robotic and Image-Guided Surgery provides state-of-the-art systems and methods for robotic and computer-assisted surgeries. In this masterpiece, contributions of 169 researchers from 19 countries have been gathered to provide 38 chapters. This handbook is 744 pages, includes 659 figures and 61 videos. It also provides basic medical knowledge for engineers and basic engineering principles for surgeons. A key strength of this text is the fusion of engineering, radiology, and surgical principles into one book. A thorough and in-depth handbook on surgical robotics and image-guided surgery which includes both fundamentals and advances in the field A comprehensive reference on robot-assisted laparoscopic, orthopedic, and head-and-neck surgeries Chapters are contributed by worldwide experts from both engineering and surgical backgrounds

Radar Micro-Doppler Signatures - Victor C. Chen 2014-05-30

Radar Micro-Doppler Signatures: Processing and applications concentrates on the processing and application of radar micro-Doppler signatures in real world situations, providing readers with a good working knowledge on a variety of applications of radar micro-Doppler

signatures.

BioMEMS and Biomedical Nanotechnology - Rashid Bashir

2007-04-03

Annotation Volume 4 is a balanced review of key aspects of BioMEMS sensors, including (i) BioMEMS sensors and materials, (ii) means of manipulating biological entities at the microscale, and (iii) micro-fluidics and characterization. These three sections provide a succinct review of important topics within one volume of this series.

Integrated Ground-Based Observing Systems - Domenico Cimini

2010-09-15

The book is a collection of the lectures delivered during the 7th International Summer School on Atmospheric and Oceanic Sciences (ISSAOS) titled "Integrated Ground-Based Observing Systems Applications for Climate, Meteorology, and Civil Protection". Its aim is to contribute to the scientific understanding of basic concepts and applications of integrated ground-based observing systems. The first part describes the most common instrumentations showing their strengths and limitations. Furthermore, strategic plans for the deployment of an observation site are discussed along with an overview of techniques for integrating heterogeneous data. The second part introduces cutting-edge applications, including assimilation in numerical weather prediction, climate benchmarking, air quality monitoring and meteo/hydrological warnings.

Military Thought - 2013

Ultrasonic Transducers - K Nakamura 2012-08-23

Ultrasonic transducers are key components in sensors for distance, flow and level measurement as well as in power, biomedical and other applications of ultrasound. Ultrasonic transducers reviews recent research in the design and application of this important technology. Part one provides an overview of materials and design of ultrasonic transducers. Piezoelectricity and basic configurations are explored in depth, along with electromagnetic acoustic transducers, and the use of ceramics, thin film and single crystals in ultrasonic transducers. Part two

goes on to investigate modelling and characterisation, with performance modelling, electrical evaluation, laser Doppler vibrometry and optical visualisation all considered in detail. Applications of ultrasonic transducers are the focus of part three, beginning with a review of surface acoustic wave devices and air-borne ultrasound transducers, and going on to consider ultrasonic transducers for use at high temperature and in flaw detection systems, power, biomedical and micro-scale ultrasonics, therapeutic ultrasound devices, piezoelectric and fibre optic hydrophones, and ultrasonic motors are also described. With its distinguished editor and expert team of international contributors, Ultrasonic transducers is an authoritative review of key developments for engineers and materials scientists involved in this area of technology as well as in its applications in sectors as diverse as electronics, wireless communication and medical diagnostics. Reviews recent research in the design and application of ultrasonic transducers Provides an overview of the materials and design of ultrasonic transducers, with an in-depth exploration of piezoelectricity and basic configurations Investigates modelling and characterisation, applications of ultrasonic transducers, and ultrasonic transducers for use at high temperature and in flaw detection systems

Motion Compensation for Near-Range Synthetic Aperture Radar Applications - Huaming Wu 2014-07-30

The work focuses on the analysis of influences of motion errors on near-range SAR applications and design of specific motion measuring and compensation algorithms. First, a novel metric to determine the optimum antenna beamwidth is proposed. Then, a comprehensive investigation of influences of motion errors on the SAR image is provided. On this ground, new algorithms for motion measuring and compensation using low cost inertial measurement units (IMU) are developed and successfully demonstrated.

Short-Range Micro-Motion Sensing with Radar Technology - Changzhan Gu 2019-08

Covering radar sensor hardware, digital signal processing and machine learning, the book provides researchers and practitioners with insights

into the latest advancements in the field.

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, 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.

Micro-optical Technologies for Measurement, Sensors, and Microsystems II and Optical Fiber Sensor Technologies and Applications - Society of Photo-optical Instrumentation Engineers 1997

Small Machine Tools for Small Workpieces - Jens Peter Wulfsberg 2017-03-07

This contributed volume presents the research results of the program "Small machine tools for small work pieces" (SPP 1476), funded by the German Research Society (DFG). The book contains the final report of the priority program, presenting novel approaches for size-adapted, reconfigurable micro machine tools. The target audience primarily comprises research experts and practitioners in the field of micro machine tools, but the book may also be beneficial for graduate students.

Symposium on Trends and Applications 1976, Micro and Mini Systems, Gaithersburg, Maryland, May 27, 1976 - 1976