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Inverse Synthetic Aperture Radar Imaging With MATLAB Algorithms

Principles and Applications of RF/Microwave in Healthcare and Biosensing

Small and Short-Range Radar Systems

Through-the-Wall Radar Imaging

Fusion of Data from Heterogeneous Sensors with Distributed Fields of View and Situation Evaluation for Advanced Driver Assistance Systems

MIMO Radar Signal Processing

A System Simulation Approach

Principles of Synthetic Aperture Radar Imaging

Inverse Synthetic Aperture Radar Imaging

Inverse Synthetic Aperture Radar Imaging With MATLAB Algorithms

Signal Processing Algorithms

Basic Radar Analysis, Second Edition

Radar Signal Analysis and Processing Using MATLAB

The Micro-Doppler Effect in Radar

Advances in SAR: Sensors, Methodologies, and Applications

Fundamentals of Radar Signal Processing

Bistatic SAR System and Signal Processing Technology

Introduction to Radar Using Python and MATLAB

Radar Handbook

Fundamental Principles of Radar

Advanced Microsystems for Automotive Applications 2017

A Signal Processing Approach

Proceedings of the 2015 International Conference on Communications, Signal Processing, and Systems

Detecting and Classifying Low Probability of Intercept Radar

Spotlight-Mode Synthetic Aperture Radar: A Signal Processing Approach

Synthetic Aperture Radar
Advanced Computing and Intelligent Technologies
Radar Networks
Radar Principles
Smart Systems Transforming the Automobile
Advances in Signal Processing and Communication
Principles, Algorithms and Applications
Motion Compensation for Near-Range Synthetic Aperture Radar Applications
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Basic Principles
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*Inverse Synthetic Aperture Radar Imaging
With MATLAB Algorithms* CRC Press
This edition is the most comprehensive
and informative available on radar
systems and technology. Thoroughly
revised and updated to reflect the
advances made in radar over the past two
decades. Charts/graphs.
*Principles and Applications of
RF/Microwave in Healthcare and
Biosensing* McGraw-Hill Professional
Publishing

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
Small and Short-Range Radar Systems
Springer
Radar networks are increasingly regarded
as an efficient approach to enhancing
radar capabilities in the face of popular
anti-radar techniques and hostile
operating environments. Reader-friendly
and self-contained, this book provides a
comprehensive overview of the latest
radar networking technologies. The text
addresses basic, relevant aspects of radar
signal processing and statistical theories,
including both civilian and military radar
applications. It also discusses emerging
topics that directly relate to networks,

such as multiple-input-multiple-output (MIMO) radars, waveform design, and diversity via multiple transmitters. Other topics covered include target recognition and imaging using radar networks. Features Gives a comprehensive view of the latest radar network technologies Covers both civilian and military applications of radar Provides basic statistics and signal processing necessary for understanding radar networks Includes up-to-date information on MIMO radars Presents waveform design and diversity for radar networks with multiple transmitters

Through-the-Wall Radar Imaging KIT Scientific Publishing

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. *Fusion of Data from Heterogeneous Sensors with Distributed Fields of View and Situation Evaluation for Advanced*

Driver Assistance Systems CRC Press 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.

MIMO Radar Signal Processing IET

A near real-time radar-based imaging system is developed in this dissertation. This system uses the combination of a spatially diverse antenna array, a high sensitivity range-gated frequency-modulated continuous wave (FMCW) radar system, and an airborne synthetic aperture radar (SAR) imaging algorithm to produce near real-time high resolution imagery of what is behind a dielectric wall. This system is capable of detecting and providing accurate imagery of target scenes made up of objects as small as 6 inch tall metallic rods and cylinders behind a 4 inch thick dielectric slab. A study is conducted of through-dielectric slab imaging by the development of a 2D model of a dielectric slab and cylinder. The SAR imaging algorithm is developed and tested on this model for a variety of simulated imaging scenarios and the

results are then used to develop an unusually high sensitivity range-gated FMCW radar architecture. An S-band rail SAR imaging system is developed using this architecture and used to image through two different dielectric slabs as well as free-space. All results are in agreement with the simulations. It is found that free-space target scenes could be imaged using low transmit power, as low as 5 picowatts. From this result it was decided to develop an X-band front end which mounts directly on to the S-band rail SAR so that objects as small as groups of pushpins and aircraft models in free-space could be imaged. These results are compared to previous X-band direct conversion FMCW rail SAR work. It was found that groups of pushpins and models could be imaged at transmit powers as low as 10 nanowatts. A spatially diverse S-band antenna array will be shown to be developed for use with the S-band radar; thereby providing the ability for near real-time SAR imaging of objects behind dielectric slabs with the same performance characteristics of the S-band rail SAR. The research presented in this dissertation will show that near real-time radar imaging

through lossy-dielectric slabs is accomplished when using a highly sensitive radar system located at a stand-off range from the slab using a free-space SAR imaging algorithm.

[A System Simulation Approach](#) McGraw Hill Professional

This book explains concepts behind fractional subsampling-based frequency synthesis that is re-shaping today's art in the field of low-noise LO generation. It covers advanced material, giving clear guidance for development of background-calibrated environments capable of spur-free synthesis and wideband phase modulation. It further expands the concepts into the field of subsampling polar transmission, where the newly developed architecture enables unprecedented spectral efficiency levels, unquestionably required by the upcoming generation of wireless standards.

[Principles of Synthetic Aperture Radar Imaging](#) Artech House

This book brings together papers presented at the 4th International Conference on Communications, Signal Processing, and Systems, which provides a venue to disseminate the latest

developments and to discuss the interactions and links between these multidisciplinary fields. Spanning topics ranging from Communications, Signal Processing and Systems, this book is aimed at undergraduate and graduate students in Electrical Engineering, Computer Science and Mathematics, researchers and engineers from academia and industry as well as government employees (such as NSF, DOD, DOE, etc). *Inverse Synthetic Aperture Radar Imaging* Wiley-Interscience

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.

Inverse Synthetic Aperture Radar Imaging With MATLAB Algorithms CRC Press

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 in

[Signal Processing Algorithms](#) MDPI

This book is a collection of selected peer-reviewed papers presented at the International Conference on Signal Processing and Communication (ICSC 2018). It covers current research and developments in the fields of communications, signal processing, VLSI circuits and systems, and embedded systems. The book offers in-depth discussions and analyses of latest

problems across different sub-fields of signal processing and communications. The contents of this book will prove to be useful for students, researchers, and professionals working in electronics and electrical engineering, as well as other allied fields.

Basic Radar Analysis, Second Edition Springer Nature

The book gives an excellent theoretical and practical background of SAR in general and specifically of spotlight SAR. The rich experience of the authors in spotlight SAR processing is reflected by a very detailed summary of the associated theory as well as a lot of SAR image examples. These images illustrate the techniques described in the book and provide a valuable connection to practice. This book can be highly recommended to all scientists and engineers involved in SAR system design and SAR data evaluation. International Journal of Electronics and Communications

Radar Signal Analysis and Processing Using MATLAB Artech House

This book is a printed edition of the Special Issue "Advances in SAR: Sensors, Methodologies, and Applications" that was

published in Remote Sensing
The Micro-Doppler Effect in Radar CRC Press

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.

Advances in SAR: Sensors, Methodologies, and Applications CRC Press

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

Fundamentals of Radar Signal Processing Academic Press

This book gathers selected high-quality research papers presented at International Conference on Advanced Computing and Intelligent Technologies (ICACIT 2021) held at NCR New Delhi, India, during March 20-21, 2021, jointly organized by Galgotias University, India, and Department of Information Engineering and Mathematics Università Di Siena, Italy. It discusses emerging topics pertaining to advanced computing, intelligent

technologies, and networks including AI and machine learning, data mining, big data analytics, high-performance computing network performance analysis, Internet of things networks, wireless sensor networks, and others. The book offers a valuable asset for researchers from both academia and industries involved in advanced studies.

Bistatic SAR System and Signal Processing Technology Springer

A Low-power Radar Imaging System Gregory Charvat
CRC Press

What is radar? What systems are currently in use? How do they work? Understanding Radar Systems provides engineers and scientists with answers to these critical questions, focusing on actual radar systems in use today. It's the perfect resource for those just entering the field or a quick refresher for experienced practitioners. The book leads readers through the specialized language and calculations that comprise the complex world of modern radar engineering as seen in dozens of state-of-the-art radar systems. The authors stress practical concepts that apply to all radar, keeping

math to a minimum. Most of the book is based on real radar systems rather than theoretical studies. The result is a valuable, easy-to-use guide that makes the difficult parts of the field easier and helps readers do performance calculations quickly and easily.

Introduction to Radar Using Python and MATLAB A Low-power Radar Imaging System

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/soume kh> * Provides 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 Radar Handbook SciTech Publishing Synthetic Aperture Radar Processing simply and methodically presents principles and techniques of Synthetic Aperture Radar (SAR) image generation by

analyzing its system transfer function. The text considers the full array of operation modes from strip to scan, emphasizes processing techniques, enabling the design of operational SAR codes. A simple example then follows. This book will be invaluable to all SAR scientists and engineers working in the field. It may be used as the basis for a course on SAR image generation or as a reference book on remote sensing. It contains a wide spectrum of information presented with clarity and rigor.

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