



Academic Press Library in Signal Processing:

Four Volume Set

Volume 1: Signal Processing Theory and Machine Learning

Volume 2: Communications and Radar Signal Processing

Volume 3: Array and Statistical Signal Processing

Volume 4: Image, Video Processing and Analysis, Hardware, Audio, Acoustic and Speech Processing

Edited by Sergios Theodoridis and Rama Chellappa

Oct 2013 • 4,940 pp • ISBN: 9780124166165

Introductory List Price: 4 Volume Set: \$800.00 • €575.00 • £485.00

<http://store.elsevier.com/9780124166165>

This four volume set, edited and authored by world leading experts, gives a review of the principles, methods and techniques of important and emerging research topics and technologies in machine learning, advanced signal processing theory, communications and radar signal processing, array and statistical signal processing, image, video, hardware, acoustic, audio and speech processing.

Features:

- **Quick tutorial reviews** of important and emerging topics of research
- **Presents core principles in signal processing theory** and shows their application
- **Reference content** on core principles, technologies, algorithms and applications
- **Comprehensive references** to journal articles and other literature on which to build further, more specific and detailed knowledge
- **Edited by leading people in the field** who, through their reputation, have been able to commission experts to write on a particular topic

With this reference source you will:

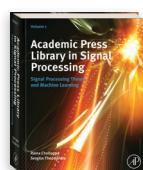
- Quickly grasp a new area of research
- Understand the underlying principles of a topic and its application
- Ascertain how a topic relates to other areas and learn of the research issues yet to be resolved

A representative selection of contributors from all four volumes based in the US, UK, Europe and APAC:

James B. Davis, Auburn University, USA; Philippe Loubaton, Universite de Marne la Vallee, France; Sergio Barbarossa, University of Rome, Italy; Georgios Giannakis, University of Minnesota, USA; Simon Godsill, Department of Engineering, University of Cambridge, UK; Ali H. Sayed, University of California, USA; William Melvin, Georgia Institute of Technology, USA; Hugh Griffiths, University College London, UK; Stefan V. Baumgartner, Germany; Andrew Carl Singer, College of Engineering, University of Illinois, USA; Fred Harris, San Diego State University, USA; Oscar Au, Hong Kong University of Science and Technology, Hong Kong, China; James Nagy, Emory University, USA; Christos Davatzikos, University of Pennsylvania, USA; Al Bovik, The University of Texas at Austin, Texas, USA; Tsuhan Chen, University of Ithaca, New York, USA; Marilyn Wolf, School of ECE, Georgia Institute of Technology, USA; Sven Nordholm, Curtin University, Australia; Visa Koivunen, Aalto University, Finland.

Looking to purchase just one volume? All volumes are available for individual purchase.

Academic Press Library in Signal Processing Volume 1:



Signal Processing Theory and Machine Learning

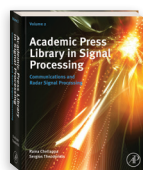
Edited by Paulo Sergio Ramirez Diniz and Johan Suykens

Oct 2013 • 1,480 pp • ISBN: 9780123965028

List Price: **\$295.00 • €215.00 • £180.00**

<http://store.elsevier.com/9780123965028>

Academic Press Library in Signal Processing Volume 2:



Communications and Radar Signal Processing

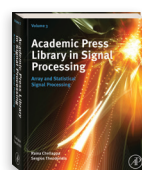
Edited by Nikos Sidiropoulos and Fulvio Gini

Oct 2013 • 1,350 pp • ISBN: 9780123965004

List Price: **\$295.00 • €215.00 • £180.00**

<http://store.elsevier.com/9780123965004>

Academic Press Library in Signal Processing Volume 3:



Array and Statistical Signal Processing

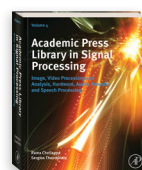
Edited by Abdelhak Zoubir and Mats Viberg

Oct 2013 • 1,022 pp • ISBN: 9780124115972

List Price: **\$225.00 • €165.00 • £140.00**

<http://store.elsevier.com/9780124115972>

Academic Press Library in Signal Processing Volume 4:



Image, Video Processing and Analysis, Hardware, Audio, Acoustic and Speech Processing

Edited by Joel Trussell, Anuj Srivastava, Amit K. Roy Chowdhury, Ankur Srivastava and Patrick Naylor

Oct 2013 • 1,088 pp • ISBN: 9780123965011

List Price: **\$225.00 • €165.00 • £140.00**

<http://store.elsevier.com/9780123965011>

Table of Contents

Volume I	Volume 2	Volume 3	Volume 4
Section I Signal Processing Theory CHAPTER 1 Introduction to Signal Processing Theory CHAPTER 2 Continuous-Time Signals and Systems CHAPTER 3 Discrete-Time Signals and Systems CHAPTER 4 Random Signals and Stochastic Processes CHAPTER 5 Sampling and Quantization CHAPTER 6 Digital Filter Structures and their Implementation CHAPTER 7 Multirate Signal Processing for Software Radio Architectures CHAPTER 8 Modern Transform Design for Practical Audio/Image/Video Coding Applications CHAPTER 9 Discrete Multi-Scale Transforms in Signal Processing CHAPTER 10 Frames in Signal Processing CHAPTER 11 Parametric Estimation CHAPTER 12 Adaptive Filters CHAPTER 13 Introduction to Machine Learning CHAPTER 14 Learning Theory CHAPTER 15 Neural Networks CHAPTER 16 Kernel Methods and Support Vector Machines CHAPTER 17 Online Learning in Reproducing Kernel Hilbert Spaces CHAPTER 18 Introduction to Probabilistic Graphical Models CHAPTER 19 A Tutorial Introduction to Monte Carlo Methods CHAPTER 20 Clustering CHAPTER 21 Unsupervised Learning Algorithms and Latent Variable Models: PCA/SVD, CCA/PLS, ICA, NMF, etc. CHAPTER 22 Semi-Supervised Learning CHAPTER 23 Sparsity-Aware Learning and Compressed Sensing: An Overview CHAPTER 24 Information Based Learning CHAPTER 25 A Tutorial on Model Selection CHAPTER 26 Music Mining	Communications and Radar Signal Processing CHAPTER 1 Introduction to Signal Processing for Communications CHAPTER 2 Synchronization CHAPTER 3 Channel Estimation, Equalization, Precoding, and Tracking CHAPTER 4 Blind Signal Separation for Digital Communication Data CHAPTER 5 OFDM and Multicarrier Signal Processing CHAPTER 6 Signal Processing for Vectored Multichannel VDSL CHAPTER 7 Distributed Detection and Estimation in Wireless Sensor Networks CHAPTER 8 Signal Processing and Optimal Resource Allocation for the Interference CHAPTER 9 Advances in Spectrum Sensing and Cross-Layer Design for Cognitive Radio Networks CHAPTER 10 Introduction to the Radar Signal Processing CHAPTER 11 Radar Clutter Modeling and Analysis CHAPTER 12 Space-Time Adaptive Processing for Radar CHAPTER 13 MIMO Radar with Widely Separated Antennas — From Concepts to Designs CHAPTER 14 Optimal Radar Waveform Design CHAPTER 15 Multitarget Multisensor Tracking CHAPTER 16 Passive Bistatic Radar CHAPTER 17 Through-the-Wall Radar Imaging: Theory and Applications CHAPTER 18 Multi-Channel SAR for Ground Moving Target Indication CHAPTER 19 Introduction to Inverse Synthetic Aperture Radar CHAPTER 20 SAR Interferometry and Tomography: Theory and Applications CHAPTER 21 Radar Polarimetry Basics and Selected Earth Remote Sensing Applications CHAPTER 22 Integrated Sensor Systems and Data Fusion for Homeland Protection	Array and Statistical Signal Processing CHAPTER 1 Introduction to Statistical Signal Processing CHAPTER 2 Model Order Selection CHAPTER 3 Non-Stationary Signal Analysis Time-Frequency Approach CHAPTER 4 Bayesian Computational Methods in Signal Processing CHAPTER 5 Distributed Signal Detection CHAPTER 6 Quickest Change Detection CHAPTER 7 Geolocation — Maps, Measurements, Models, and Methods CHAPTER 8 Performance Analysis and Bounds CHAPTER 9 Diffusion Adaptation Over Networks CHAPTER 10 Array Signal Processing: Overview of the Included Chapters CHAPTER 11 Introduction to Array Processing CHAPTER 12 Adaptive and Robust Beamforming CHAPTER 13 Broadband Beamforming and Optimization CHAPTER 14 DOA Estimation Methods and Algorithms CHAPTER 15 Subspace Methods and Exploitation of Special Array Structures CHAPTER 16 Performance Bounds and Statistical Analysis of DOA Estimation CHAPTER 17 DOA Estimation of Nonstationary Signals CHAPTER 18 Source Localization and Tracking CHAPTER 19 Array Processing in the Face of Nonidealities CHAPTER 20 Applications of Array Signal Processing	Image, Video Processing and Analysis, Hardware, Audio, Acoustic and Speech Processing CHAPTER 1 Digital Imaging: Capture, Display, Restoration, and Enhancement CHAPTER 2 Image Quality in Consumer Digital Cameras CHAPTER 3 Image and Document Capture—State-of-the-Art and a Glance into the Future CHAPTER 4 Image Display — Mobile Imaging and Interactive Image Processing CHAPTER 5 Image Display — Printing (Desktop, Commercial) CHAPTER 6 Image Restoration: Fundamentals of Image Restoration CHAPTER 7 Iterative Methods for Image Restoration CHAPTER 8 Image Processing at Your Fingertips: The New Horizon of Mobile Imaging CHAPTER 9 Image Analysis and Recognition CHAPTER 10 Multi-Path Marginal Space Learning for Object Detection CHAPTER 11 Markov Models and MCMC Algorithms in Image Processing CHAPTER 12 Identifying Multivariate Imaging Patterns: Supervised, Semi-Supervised, and Unsupervised Learning Perspectives CHAPTER 13 Video Processing —An Overview CHAPTER 14 Foveated Image and Video Processing and Search CHAPTER 15 Segmentation-Free Biometric Recognition Using Correlation Filters CHAPTER 16 Dynamical Systems in Video Analysis CHAPTER 17 Image-Based Rendering CHAPTER 18 Activity Retrieval in Large Surveillance Videos CHAPTER 19 Multi-Target Tracking in Video CHAPTER 20 Compressive Sensing for Video Applications CHAPTER 21 Virtual Vision for Camera Networks Research CHAPTER 22 Introduction: Hardware and Software CHAPTER 23 Distributed Smart Cameras for Distributed Computer Vision CHAPTER 24 Mapping Parameterized Dataflow Graphs onto FPGA Platforms CHAPTER 25 Distributed Estimation CHAPTER 26 Introduction to Audio Signal Processing CHAPTER 27 Music Signal Processing CHAPTER 28 Perceptual Audio Coding CHAPTER 29 Introduction to Acoustic Signal Processing CHAPTER 30 Acoustic Echo Control CHAPTER 31 Dereverberation CHAPTER 32 Sound Field Synthesis CHAPTER 33 Introduction to Speech Processing CHAPTER 34 Speech Production Modeling and Analysis CHAPTER 35 Enhancement

If you would like to purchase on behalf of an institution, please browse store.elsevier.com.



ACADEMIC
PRESS