

The Digital Signal Processing Handbook

SECOND EDITION

Wireless, Networking,
Radar, Sensor Array
Processing, and
Nonlinear Signal
Processing

EDITOR-IN-CHIEF
Vijay K. Madisetti



CRC Press
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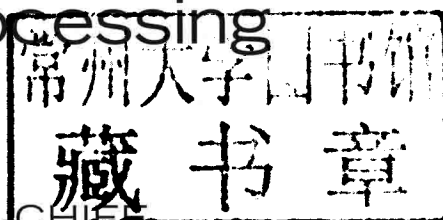
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The Digital Signal Processing Handbook, Second Edition

Digital Signal Processing Fundamentals

Video, Speech, and Audio Signal Processing and Associated Standards

Wireless, Networking, Radar, Sensor Array Processing, and Nonlinear Signal Processing

Preface

Digital signal processing (DSP) is concerned with the theoretical and practical aspects of representing information-bearing signals in a digital form and with using computers, special-purpose hardware and software, or similar platforms to extract information, process it, or transform it in useful ways. Areas where DSP has made a significant impact include telecommunications, wireless and mobile communications, multimedia applications, user interfaces, medical technology, digital entertainment, radar and sonar, seismic signal processing, and remote sensing, to name just a few.

Given the widespread use of DSP, a need developed for an authoritative reference, written by the top experts in the world, that would provide information on both theoretical and practical aspects in a manner that was suitable for a broad audience—ranging from professionals in electrical engineering, computer science, and related engineering and scientific professions to managers involved in technical marketing, and to graduate students and scholars in the field. Given the abundance of basic and introductory texts on DSP, it was important to focus on topics that were useful to engineers and scholars without overemphasizing those topics that were already widely accessible. In short, the DSP handbook was created to be relevant to the needs of the engineering community.

A task of this magnitude could only be possible through the cooperation of some of the foremost DSP researchers and practitioners. That collaboration, over 10 years ago, produced the first edition of the successful DSP handbook that contained a comprehensive range of DSP topics presented with a clarity of vision and a depth of coverage to inform, educate, and guide the reader. Indeed, many of the chapters, written by leaders in their field, have guided readers through a unique vision and perception garnered by the authors through years of experience.

The second edition of the DSP handbook consists of *Digital Signal Processing Fundamentals*; *Video, Speech, and Audio Signal Processing and Associated Standards*; and *Wireless, Networking, Radar, Sensor Array Processing, and Nonlinear Signal Processing* to ensure that each part is dealt with in adequate detail, and that each part is then able to develop its own individual identity and role in terms of its educational mission and audience. I expect each part to be frequently updated with chapters that reflect the changes and new developments in the technology and in the field. The distribution model for the DSP handbook also reflects the increasing need by professionals to access content in electronic form anywhere and at anytime.

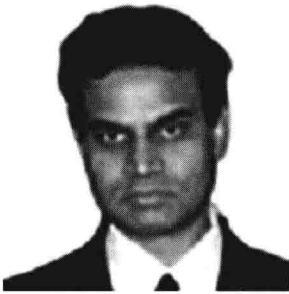
Wireless, Networking, Radar, Sensor Array Processing, and Nonlinear Signal Processing, as the name implies, provides a comprehensive coverage of the foundations of signal processing related to wireless, radar, space-time coding, and mobile communications, together with associated applications to networking, storage, and communications.

This book needs to be continuously updated to include newer aspects of these technologies, and I look forward to suggestions on how this handbook can be improved to serve you better.

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Fax: 508-647-7001
E-mail: info@mathworks.com
Web: www.mathworks.com

Editor



Vijay K. Madisetti is a professor in the School of Electrical and Computer Engineering at the Georgia Institute of Technology in Atlanta. He teaches graduate and undergraduate courses in digital signal processing and computer engineering, and leads a strong research program in digital signal processing, telecommunications, and computer engineering.

Dr. Madisetti received his BTech (Hons) in electronics and electrical communications engineering in 1984 from the Indian Institute of Technology, Kharagpur, India, and his PhD in electrical engineering and computer sciences in 1989 from the University of California at Berkeley.

He has authored or edited several books in the areas of digital signal processing, computer engineering, and software systems, and has served extensively as a consultant to industry and the government. He is a fellow of the IEEE and received the 2006 Frederick Emmons Terman Medal from the American Society of Engineering Education for his contributions to electrical engineering.

Contributors

Naofal Al-Dhahir

Department of Electrical Engineering
The University of Texas at Dallas
Richardson, Texas

Mishal Al-Gharabally

Electrical Engineering Department
College of Engineering and Petroleum
Safat, Kuwait

K. Balemarthy

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

Victor A. N. Barroso

Department of Electrical and Computer
Engineering
Instituto Superior Tecnico
Instituto de Sistemas e Robótica
Lisbon, Portugal

John R. Barry

School of Electrical and Computer Engineering
Georgia Institute of Technology
Atlanta, Georgia

Robert J. Baxley

Georgia Tech Research Institute
Atlanta, Georgia

Kevin M. Buckley

Department of Electrical and Computer
Engineering
Villanova University
Villanova, Pennsylvania

Robert Calderbank

Department of Electrical Engineering
Princeton University
Princeton, New Jersey

Chaitali Chakrabarti

School of Electrical, Computer and Energy
Engineering
Arizona State University
Tempe, Arizona

Jean-Yves Chouinard

Department of Electronic Engineering
and Computer Science
Laval University
Quebec, Quebec, Canada

Jimmy Chui

Department of Electrical Engineering
Princeton University
Princeton, New Jersey

Kevin M. Cuomo

Lincoln Laboratory
Massachusetts Institute of Technology
Lexington, Massachusetts

Pankaj Das

Department of Electrical and Computer
Engineering
University of California
San Diego, California

Sushanta Das

Phillips Research N.A.
New York, New York

J. Debardeleben

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

R. D. DeGroat

Broadcom Corporation
Denver, Colorado

N. Desai

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

Suhas Diggavi

Ecole Polytechnique
Lausanne, Switzerland

E. M. Dowling

Department of Electrical Engineering
The University of Texas at Dallas
Richardson, Texas

Lan-Rong Dung

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

T. Egolf

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

Atef Z. Elsherbeni

Department of Electrical Engineering
University of Mississippi
Oxford, Mississippi

S. Famorzadeh

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

Daniel R. Fuhrmann

Department of Electrical and System Engineering
Washington University
St. Louis, Missouri

Egemen Gönen

Globalstar
San Jose, California

Martin Haardt

Communication Research Laboratory
Ilmenau University of Technology
Ilmenau, Germany

Emile A. Hendriks

Information and Communication Theory Group
Delft University of Technology
Delft, the Netherlands

R. Hezar

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

Steven H. Isabelle

Department of Electrical Engineering
and Computer Science
Massachusetts Institute of Technology
Cambridge, Massachusetts

Yong-kyu Jung

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

D. I. Kaklamani

Department of Electrical and Computer
Engineering
National Technical University of Athens
Athens, Greece

D. A. Kateros

Department of Electrical and Computer
Engineering
National Technical University of Athens
Athens, Greece

Mostafa Kaveh

Department of Electrical and Computer
Engineering
University of Minnesota
Minneapolis, Minnesota

A. Kavipurapu

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

Brian Kelley

Department of Electrical and Computer
Engineering
The University of Texas at San Antonio
San Antonio, Texas

M. Khan

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

Yuan Lin

Advanced Computer Architecture Laboratory
University of Michigan at Ann Arbor
Ann Arbor, Michigan

D. A. Linebarger

Department of Electrical Engineering
The University of Texas at Dallas
Richardson, Texas

K. J. Ray Liu

Department of Electrical and Computer
Engineering
University of Maryland
College Park, Maryland

Xiaoli Ma

School of Electrical and Computer Engineering
Georgia Institute of Technology
Atlanta, Georgia

Vijay K. Madiseti

School of Electrical and Computer Engineering
Georgia Institute of Technology
Atlanta, Georgia

Bassem R. Mahafza

Deceibel Research, Inc.
Huntsville, Alabama

Scott Mahlke

Advanced Computer Architecture Laboratory
University of Michigan at Ann Arbor
Ann Arbor, Michigan

Petros Maragos

Department of Electrical and Computer
Engineering
National Technical University of Athens
Athens, Greece

Cherian P. Mathews

Department of Electrical and Computer
Engineering
University of the Pacific
Stockton, California

Jerry M. Mendel

Department of Electrical Engineering
University of Southern California
Los Angeles, California

David L. Milliner

School of Electrical and Computer Engineering
Georgia Institute of Technology
Atlanta, Georgia

José M. F. Moura

Department of Electrical and Computer
Engineering
Carnegie Mellon University
Pittsburgh, Pennsylvania

Trevor Mudge

Advanced Computer Architecture Laboratory
University of Michigan at Ann Arbor
Ann Arbor, Michigan

Arye Nehorai

Department of Electrical and Computer
Engineering
The University of Illinois at Chicago
Chicago, Illinois

Alan V. Oppenheim

Department of Electrical Engineering
and Computer Science
Massachusetts Institute of Technology
Cambridge, Massachusetts

Eytan Paldi

Department of Mathematics
Israel Institute of Technology
Technion City, Haifa, Israel

C. B. Papadias

Broadband Wireless
Athens Information Technology
Peania Attikis, Greece

Panos Papamichalis

Texas Instruments
Dallas, Texas

A. Paulraj

Department of Electrical Engineering
Stanford University
Stanford, California

Athina P. Petropulu

Department of Electrical and Computer
Engineering
Drexel University
Philadelphia, Pennsylvania

M. Pettigrew

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

G. N. Prezerakos

Department of Electrical and Computer
Engineering
National Technical University of Athens
Athens, Greece

and

Technological Education Institute of Piraeus
Athens, Greece

Javier Ramos

Department of Signal Processing
and Communications
Universidad Rey Juan Carlos
Madrid, Spain

André Redert

Philips Research Europe
Eindhoven, the Netherlands

Zoltan Safar

Department of Innovation
IT University of Copenhagen
Copenhagen, Denmark

Sangwon Seo

Advanced Computer Architecture Laboratory
University of Michigan at Ann Arbor
Ann Arbor, Michigan

Andrew C. Singer

Sanders (A Lockheed Martin Company)
Manchester, New Hampshire

Mohanned O. Sinnokrot

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

Brian J. Smith

U.S. Army Aviation and Missile Command
Redstone Arsenal, Alabama

P. Stoica

Information Technology Department
Uppsala University
Uppsala, Sweden

Weifeng Su

Department of Electrical Engineering
State University of New York at Buffalo
Buffalo, New York

Barry Van Veen

Department of Electrical and Computer
Engineering
University of Wisconsin
Madison, Wisconsin

Mats Viberg

Department of Signal and Systems
Chalmers University of Technology
Goteborg, Sweden

Hong Wang

Department of Electrical and Computer
Engineering
Syracuse University
Syracuse, New York

Xianbin Wang

Department of Electrical and Computer
Engineering
University of Western Ontario
London, Ontario, Canada

Douglas B. Williams

School of Electrical and Computer Engineering
Georgia Institute of Technology
Atlanta, Georgia

Mark Woh

Advanced Computer Architecture Laboratory
University of Michigan at Ann Arbor
Ann Arbor, Michigan

M. Wong

Department of Electrical and Computer
Engineering
McMaster University
Hamilton, Ontario, Canada

Gregory W. Wornell

Department of Electrical Engineering
and Computer Science
Massachusetts Institute of Technology
Cambridge, Massachusetts

Q. Wu

CELWAVE
Claremont, North Carolina

Yiyan Wu

Communications Research Centre
Ottawa, Ontario, Canada

D. A. Zarbouti

Department of Electrical and Computer
Engineering
National Technical University of Athens
Athens, Greece

Wei Zhang

School of Electrical and Computer Engineering
Georgia Institute of Technology
Atlanta, Georgia

G. Tong Zhou

Department of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta, Georgia

Michael D. Zoltowski

School of Electrical and Computer Engineering
Purdue University
West Lafayette, Indiana

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University of Minnesota

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