



The Digital Signal Processing Handbook

SECOND EDITION

Video, Speech,
and Audio Signal
Processing
and Associated
Standards

EDITOR-IN-CHIEF
Vijay K. Madisetti



CRC Press
Taylor & Francis Group

Contents

Preface	vii
Editor	ix
Contributors	xi

PART I Digital Audio Communications

Nikil Jayant

1 Auditory Psychophysics for Coding Applications	1-1
<i>Joseph L. Hall</i>	
2 MPEG Digital Audio Coding Standards	2-1
<i>Schuyler R. Quackenbush and Peter Noll</i>	
3 Dolby Digital Audio Coding Standards	3-1
<i>Robert L. Andersen and Grant A. Davidson</i>	
4 The Perceptual Audio Coder	4-1
<i>Deepen Sinha, James D. Johnston, Sean Dorward, and Schuyler R. Quackenbush</i>	
5 Sony Systems	5-1
<i>Kenzo Akagiri, Masayuki Katakura, H. Yamauchi, E. Saito, M. Kohut, Masayuki Nishiguchi, Kyoya Tsutsui, and Keisuke Toyama</i>	

PART II Speech Processing

Richard V. Cox and Lawrence R. Rabiner

6 Speech Production Models and Their Digital Implementations	6-1
<i>M. Mohan Sondhi and Juergen Schroeter</i>	
7 Speech Coding.....	7-1
<i>Richard V. Cox</i>	
8 Text-to-Speech Synthesis	8-1
<i>Richard Sproat and Joseph Olive</i>	
9 Speech Recognition by Machine	9-1
<i>Lawrence R. Rabiner and Bing-Hwang Juang</i>	

10	Speaker Verification	10-1
	<i>Sadaaki Furui and Aaron E. Rosenberg</i>	
11	DSP Implementations of Speech Processing	11-1
	<i>Kurt Baudendistel</i>	
12	Software Tools for Speech Research and Development	12-1
	<i>John Shore</i>	

PART III Image and Video Processing

Jan Biemond and Russell M. Mersereau

13	Fundamentals of Image Processing	13-1
	<i>Ian T. Young, Jan J. Gerbrands, and Lucas J. van Vliet</i>	
14	Still Image Compression	14-1
	<i>Tor A. Ramstad</i>	
15	Image and Video Restoration	15-1
	<i>A. Murat Tekalp</i>	
16	Video Scanning Format Conversion and Motion Estimation	16-1
	<i>Gerard de Haan and Ralph Braspenning</i>	
17	Document Modeling and Source Representation in Content-Based Image Retrieval	17-1
	<i>Soo Hyun Bae and Biing-Hwang Juang</i>	
18	Technologies for Context-Based Video Search over the World Wide Web	18-1
	<i>Arshdeep Bahga and Vijay K. Madisetti</i>	
19	Image Interpolation	19-1
	<i>Yucel Altunbasak</i>	
20	Video Sequence Compression	20-1
	<i>Osama Al-Shaykh, Ralph Neff, David Taubman, and Avideh Zakhor</i>	
21	Digital Television	21-1
	<i>Kou-Hu Tzou</i>	
22	Stereoscopic Image Processing	22-1
	<i>Reginald L. Lagendijk, Ruggero E. H. Franich, and Emile A. Hendriks</i>	
23	A Survey of Image Processing Software and Image Databases	23-1
	<i>Stanley J. Reeves</i>	
24	VLSI Architectures for Image Communications	24-1
	<i>P. Pirsch and W. Gehrke</i>	
	Index	I-1