# Table of Contents

Foreword ........................................................................................................................................... xv

Preface ............................................................................................................................................... xvii

Acknowledgment .............................................................................................................................. xxii

## Section 1
Basic Concepts, Frameworks and Techniques

### Chapter 1
Soft Computing and its Applications .................................................................................................. 1

*Siddhartha Bhattacharyya, The University of Burdwan, India*
*Ujjwal Maulik, Jadavpur University, India*
*Sanghamitra Bandyopadhyay, Indian Statistical Institute, India*

### Chapter 2
Particle Swarm Optimizer for High-Dimensional Data Clustering .................................................... 31

*Yanping Lu, Xiamen University, China*
*Shaozi Li, Xiamen University, China*

### Chapter 3
Text Mining for Analysis of Interviews and Questionnaires .............................................................. 52

*Yasuhiro Yamada, Shimane University, Japan*
*Kanji Kato, GK Sekkei Incorporated, Japan*
*Sachio Hirokawa, Kyushu University, Japan*

### Chapter 4
Intra-Class Threshold Selection in Face Space Using Set Estimation Technique ............................ 69

*Madhura Datta, University of Calcutta, India*
*C.A. Murthy, Indian Statistical Institute, India*
Chapter 5
DNA Computing ................................................................. 85
   Tao Song, Huazhong University of Science and Technology, China
   Xun Wang, University of Tsukuba, Japan
   Shudong Wang, Shandong University of Science and Technology, China
   Yun Jiang, Huazhong University of Science and Technology, China

Chapter 6
Kansei Database and AR*-Tree for Speeding up the Retrieval .......................... 111
   Yaokai Feng, Kyushu University, Japan

Chapter 7
Emotional Semantic Detection from Multimedia: A Brief Overview .................. 126
   Shang-fei Wang, University of Science and Technology of China, China
   Xu-fa Wang, University of Science and Technology of China, China

Chapter 8
Fuzzy Logic for Non-Smooth Dynamical Systems ........................................ 147
   Kamyar Mehran, Newcastle University, UK
   Bashar Zahawi, Newcastle University, UK
   Damian Giaouris, Newcastle University, UK

Chapter 9
An Intimate Relation: Human Beings with Humanoids .................................... 169
   Elisabeth Damour, Act & Be - Creative Management Consultancy, France

Section 2
Measurement, Analysis, and Representation of Kansei

Chapter 10
Music and Kansei: Relations between Modes, Melodic Ranges, Rhythms, and Kansei 180
   Shigekazu Ishihara, Hiroshima International University, Japan
   Mitsuo Nagamachi, Hiroshima International University, Japan
   Jun Masaki, Nagasaki Prefectural Government, Japan

Chapter 11
Analyses of People’s Perceptions on Sidewalk Environments Combining Factor Analysis and Rough Sets Approach ................................. 199
   Weijie Wang, Southeast University, China
   Wei Wang, Southeast University, China
   Moon Namgung, Wonkwang University, South Korea
Chapter 12
Affective Facial Expressions Using Auto-Associative Neural Network in Kansei Robot “Ifbot” ........................... 215
Masayoshi Kanoh, Chukyo University, Japan
Tsuyoshi Nakamura, Nagoya Institute of Technology, Japan
Shohei Kato, Nagoya Institute of Technology, Japan
Hidenori Itoh, Nagoya Institute of Technology, Japan

Chapter 13
Natural Effect of Spatial and Temporal Color Sequence on Human Color Impression .................. 237
Naotoshi Sugano, Tamagawa University, Japan

Chapter 14
Rural Scenery Narrative and Field Experiences: From an Aspect of Kansei ................................. 255
Tadashi Hasebe, Tohoku University, Japan
Michiaki Omura, Tohoku University, Japan
Hisashi Bannai, Rural Finance Research Institute, Japan

Chapter 15
Psychophysiological Applications in Kansei Design ........................................................................ 266
Pierre Lévy, Eindhoven University of Technology, The Netherlands & Chiba University, Japan
Toshimasa Yamanaka, University of Tsukuba, Japan
Oscar Tomico, Eindhoven University of Technology, The Netherlands

Chapter 16
Analyzing Coordinate Relations in Handwriting Activity: Tacit Skill and Individuality ............ 287
Yusuke Manabe, Chiba Institute of Technology, Japan
Kenji Sugawara, Chiba Institute of Technology, Japan

Chapter 17
Kansei’s Physiological Measurement and its Application (1): Salivary Biomarkers as a New Metric for Human Mental Stress ................................................................. 303
Shusaku Nomura, Nagaoka University of Technology, Japan

Chapter 18
Kansei’s Physiological Measurement and its Application (2): Estimation of Human States Using PCA and HMM ............................................................. 319
Santoso Handri, Nagaoka University of Technology, Japan
Shusaku Nomura, Nagaoka University of Technology, Japan
Chapter 19
The China Brain Project: An Evolutionary Engineering Approach to Building China’s First
Artificial Brain Consisting of 10,000s of Evolved Neural Net Minsky-Like Agents....................330
  Hugo de Garis, Xiamen University, China
  Xiaoxi Chen, Xiamen University, China
  Ben Goertzel, Novamente LLC, USA & Singularity Institute, USA & Xiamen University, China

Compilation of References ..............................................................................................................360

About the Contributors ...................................................................................................................395

Index...................................................................................................................................................406