Table of Contents

Preface ..................................................................................................................................................... xv

Section 1  
Multidisciplinary Advancements in Signal Processing

Chapter 1  
Signal Processing for Optical Wireless Communications and Sensing .................................................. 1  
Roger J. Green, University of Warwick, UK  
Matthew Higgins, University of Warwick, UK  
Harita Joshi, University of Warwick, UK

Chapter 2  
Application of Novel Signal Processing Algorithms for the Detection and Minimization of Skywave Interfering Signals in Loran Receivers ................................................................. 28  
Abbas Mohammed, Blekinge Institute of Technology, Sweden  
David Last, University of Bangor, UK

Chapter 3  
Application of Space-Time Signal Processing and Active Control Algorithms for the Suppression of Electromagnetic Fields .................................................................................................. 45  
Tommy Hult, Lund University, Sweden  
Abbas Mohammed, Blekinge Institute of Technology, Sweden

Chapter 4  
Data Broadcast Management in Wireless Communication: An Emerging Research Area .................. 61  
Seema Verma, Bansathali University, India  
Rakhee Kulshrestha, Birla Institute of Technology and Science, India  
Savita Kumari, University of Seventh April, Libya

Chapter 5  
Blind Equalization for Broadband Access using the Constant Modulus Algorithm .......................... 76  
Mark S. Leeson, University of Warwick, UK  
Eugene Iwu, DHL Supply Chain, UK & Ireland Consumer Division, Solstice House, 251
Chapter 6
Field Asymmetric Ion Mobility Spectrometry Based Plant Disease Detection: Intelligent Systems Approach ................................................................. 102
  Fu Zhang, School of Engineering, University of Warwick, UK
  Reza Ghaffari, School of Engineering, University of Warwick, UK
  Daciana Iliescu, School of Engineering, University of Warwick, UK
  Evor Hines, School of Engineering, University of Warwick, UK
  Mark Leeson, School of Engineering, University of Warwick, UK
  Richard Napier, Warwick HRI, University of Warwick, UK

Chapter 7
The Analysis of Plant’s Organic Volatiles Compounds with Electronic Nose and Pattern Recognition Techniques......................................................... 115
  Reza Ghaffari, School of Engineering, University of Warwick, UK
  Fu Zhang, School of Engineering, University of Warwick, UK
  Daciana Iliescu, School of Engineering, University of Warwick, UK
  Evor Hines, School of Engineering, University of Warwick, UK
  Mark Leeson, School of Engineering, University of Warwick, UK
  Richard Napier, Warwick HRI, University of Warwick, UK

Chapter 8
Advanced Signal Processing Techniques in Non-Destructive Testing ............................................................. 127
  Ali Al-Ataby, University of Liverpool, UK
  Waleed Al-Nuaimy, University of Liverpool, UK

Chapter 9
Low Frequency Array (LOFAR) Potential and Challenges ................................................................. 147
  Mark J. Bentum, ASTRON, The Netherlands & University of Twente, The Netherlands
  André W. Gunst, ASTRON, The Netherlands
  Albert Jan Boonstra, ASTRON, The Netherlands

Section 2
Multidisciplinary Advancements in Image Processing

Chapter 10
Advances in Moving Face Recognition ........................................................................................................ 167
  Hui Fang, Swansea University, UK
  Nicolas Costen, Manchester Metropolitan University, UK
  Phil Grant, Swansea University, UK
  Min Chen, Swansea University, UK
Chapter 11
Facial Image Processing in Computer Vision

Moi Hoon Yap, University of Bradford, UK
Hassan Ugail, University of Bradford, UK

Chapter 12
A Multispectral and Multiscale View of the Sun

Thierry Dudok de Wit, LPC2E, CNRS and University of Orléans, France

Chapter 13
Automated Solar Feature Detection for Space Weather Applications

David Pérez-Suárez, Trinity College Dublin, Ireland
Paul A. Higgins, Trinity College Dublin, Ireland
D. Shaun Bloomfield, Trinity College Dublin, Ireland
R.T. James McAteer, Trinity College Dublin, Ireland
Larisa D. Krista, Trinity College Dublin, Ireland
Jason P. Byrne, Trinity College Dublin, Ireland
Peter T. Gallagher, Trinity College Dublin, Ireland

Chapter 14
Image Processing Applications Based on Texture and Fractal Analysis

Radu Dobrescu, Politehnica University of Bucharest, Romania
Dan Popescu, Politehnica University of Bucharest, Romania

Chapter 15
Real-Time Primary Image Processing

Radu Dobrescu, Politehnica University of Bucharest, Romania
Dan Popescu, Politehnica University of Bucharest, Romania

Chapter 16
Recent Advances in Corneal Imaging

Abdulhakim Elbita, Bradford University, UK
Rami Qahwaji, Bradford University, UK
Stanley Ipson, Bradford University, UK
Taha Y. Ahmed, Bradford University, UK
K. Ramaesh, Bradford University, UK
T. Colak, Bradford University, UK

Chapter 17
Parameter Based Multi-Objective Optimization of Video CODECs

Fatma Al-Abri, Loughborough University, UK
Eran A. Edirisinghe, Loughborough University, UK
Christos Grecos, University of the West of Scotland, UK
Chapter 18
Towards Rapid 3D Reconstruction using Conventional X-Ray for Intraoperative Orthopaedic Applications

Simant Prakoonwit, University of Reading, UK

309

Chapter 19
Arabic Optical Character Recognition: Recent Trends and Future Directions

Husni Al-Muhtaseb, King Fahd University of Petroleum and Minerals, Saudi Arabia
Rami Qahwaji, University of Bradford, UK

324

Compilation of References

347

About the Contributors

378

Index

387