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Nota di contenuto	Preface; Contents; Chapter 1 Modeling for Medical Image Analysis: Framework and Applications; 1. Introduction; 2. Model-Based Approach for Image Understanding; 3. Applications; 4. Conclusion; References; Chapter 2 Biomechanical Models for Image Analysis and Simulation; 1. Introduction; 2. Mesh Creation; 3. Mesh Registration: Fitting to the 3D Image; 4. Information Assignment; 5. Clinical Applications; 6. Conclusion and Perspectives; References; Chapter 3 Techniques in Fractal Analysis and their Applications in Brain MRI; 1. Introduction; 2. Background on Fractal Geometry 3. Fractal Analysis Algorithms4. Results and Discussion; 5. Conclusion and Future Work; References; Chapter 4 Techniques in Infrared Microspectroscopy and Advanced Computational Methods for Colon Cancer Diagnosis; 1. Introduction; 2. Histology of the Human Colonic Surface; 3. Methodology; 4. Overview of Spectral Data and Analysis; 5.

Diagnostic Potential of FTIR Microspectroscopy; 6. Discussion and Future Trends; References; Chapter 5 Advances in Computerized Image Analysis Methods on Breast Ultrasound; 1. Introduction; 2. Detection and Segmentation of Sonographic Breast Lesions 3. Feature Extraction 4. Discussion; 5. Concluding Remarks; References; Chapter 6 Techniques in Blind Deblurring of Spiral Computed Tomography Images and their Applications; 1. Introduction; 2. Review of Blind Deblurring Methods; 3. Application; 4. Summary; References; Chapter 7 Model-Based 3D Encoding/2D Decoding of Medical Imaging Data; 1. Introduction; 2. 3D/2D ROI-MLZC : A 3D Encoding/2D Decoding Object-Based Architecture; 3. Three-Dimensional Integer DWT via Lifting; 4. Object-Based IDWT; 5. Embedded Transform Coding; 6. Results and Discussion; 7. Conclusions; References Chapter 8 Interpolation Techniques in Multimodality Image Registration and their Application 1. Background; 2. How to Assess Similarity?; 3. Problems with Mutual Information: Local Maxima and Interpolation Artifacts; 4. Analysis of Interpolation Artifacts; 5. Strategies to Overcome Interpolation Artifacts; 6. Conclusions; References; Chapter 9 Automatic Construction of Cardiac Statistical Shape Models: Applications in SPECT and MR Imaging; 1. Introduction; 2. Automatic Landmarking Procedure; 3. Grid-Enabled Implementation; 4. Shape Model Characterization 5. Model-Based Segmentation of MRI and SPECT Studies 6. Conclusions; References; Chapter 10 Techniques for Mutual Information-Based Brain Image Registration and their Applications; 1. Introduction; 2. Mutual Information as a Similarity Measure; 3. Geometrical Transformation Model; 4. Joint Histogram Estimation; 5. Interpolation Induced Artifacts; 6. Interpolation Induced Artifact Reduction; 7. Optimization; 8. Applications; 9. Conclusions; References; Chapter 11 Iterative Algebraic Algorithms for Image Reconstruction; 1. Introduction; 2. Landweber Scheme 3. Convergence Results for Finite Dimensional Case

Sommario/riassunto

This scholarly set of well-harmonized volumes provides indispensable and complete coverage of the exciting and evolving subject of medical imaging systems. Leading experts on the international scene tackle the latest cutting-edge techniques and technologies in an in-depth but eminently clear and readable approach. Complementing and intersecting one another, each volume offers a comprehensive treatment of substantive importance to the subject areas. The chapters, in turn, address topics in a self-contained manner with authoritative introductions, useful summaries, and detailed reference lists. E