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Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Part I – Advanced Computational Methods -- Chap. 1 – Graph Algorithmic Techniques for Biomedical Image Segmentation -- Chap. 2 – Information Theoretic Clustering for Medical Image Segmentation -- Chap. 3 – Multiobjective Differential Evolution Based Fuzzy Clustering for MR Brain Image Segmentation -- Chap. 4 – Spectral and Non-linear Analysis of Thalamocortical Neural Mass Model Oscillatory Dynamics -- Chap. 5 – A Meta-learning Approach for Protein Function Prediction --

Part II – Biomedical Applications -- Chap. 6 – Segmentation of the Carotid Arteries from 3D Ultrasound Images -- Chap. 7 – Contemporary Problems in Quantitative Image Analysis in Structural Neuronal Plasticity -- Chap. 8 – Advanced MRI of Cartilage and Subchondral Bone in Osteoarthritis -- Chap. 9 – Computer Vision Based Hairline Mandibular Fracture Detection from Computed Tomography Images.

Sommario/riassunto

There has been rapid growth in biomedical engineering in recent decades, given advancements in medical imaging and physiological modelling and sensing systems, coupled with immense growth in computational and network technology, analytic approaches, visualization and virtual-reality, man-machine interaction, and automation. Biomedical engineering involves applying engineering principles to the medical and biological sciences, and it comprises several topics including biomedicine, medical imaging, physiological modelling and sensing, instrumentation, real-time systems, automation and control, signal processing, image reconstruction, processing and analysis, pattern recognition, and biomechanics. It holds great promise for the diagnosis and treatment of complex medical conditions, in particular, as we can now target direct clinical applications, research and development in biomedical engineering is helping us to develop innovative implants and prosthetics, create new medical imaging technologies, and improve tools and techniques for the detection, prevention and treatment of diseases. The contributing authors in this edited book present representative surveys of advances in their respective fields, focusing in particular on techniques for the analysis of complex biomedical data. The book will be a useful reference for graduate students, researchers, and industrial practitioners in computer science, biomedical engineering, and computational and molecular biology.