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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Histology and Pathology of 3D Atherosclerosis -- Clinical MRA of the Carotid Arteries -- Quantitative MR Imaging of the Carotids -- Contrast Agents in Carotid Angiography with Magnetic Resonance -- Quantitative Magnetic Resonance Analysis in the Assessment of Cardiac Diseases -- Atherosclerosis Plaque Stress Analysis: A Review -- Carotid Plaque Stress Analysis: Issues on Patient Specific Modelling -- Noninvasive Targeting of Vulnerable Carotid Plaques for Therapeutic Interventions -- Clinical CT Imaging of Carotid Arteries -- Quantitative CT Imaging of Carotid Arteries -- Quantitative Computed Tomography Analysis in the Assessment of Coronary Artery Disease -- A Gamma Mixture Model for IVUS Imaging -- Ultrasound Profile of Carotid Plaque. A New Approach Towards Stroke Prediction -- Ultrasonographic Quantification of Carotid Stenosis: A Reappraisal Using a New Gold Standard -- Histologic and Biochemical Composition of Carotid Plaque and Its Impact on Ultrasonographic Appearance -- Automated Carotid IMT Measurement and Its Validation in Low Contrast Ultrasound Database of 885 Patient Indian Population Epidemiological Study: Results of AtheroEdgeTM Software -- Carotid Artery Recognition System (CARS): A Comparison of Three Automated Paradigms for

Ultrasound Images -- Atherosclerotic Carotid Plaque Segmentation in Ultrasound Imaging of the Carotid Artery -- Relationship Between Plaque Echogenicity and Atherosclerosis Biomarkers -- Hypothesis Validation of Far Wall Brightness in Carotid Artery Ultrasound for Feature-Based IMT Measurement Using a Combination of Level Set Segmentation & Registration -- Segmentation of Carotid Ultrasound Images -- Imaging Occlusive Atherosclerosis -- Imaging of Aortic Aneurysms: What Do We Need to Know and Which Techniques Should Be Chosen? -- Molecular Imaging of Inflammation and Intraplaque Neovascularization -- Carotid Angioplasty and Stenting -- New Approaches for Plaque Component Analysis in Intravascular Ultrasound (IVUS) Images -- Visualization of Atherosclerotic Coronary Plaque by Using Optical Coherence Tomography -- Image Fusion Technology -- Generalized Symptomatic vs. Asymptomatic Plaque Characterization and Classification in Carotid Ultrasound Images.

Sommario/riassunto

Stroke is one of the leading causes of death in the world, resulting mostly from the sudden ruptures of atherosclerosis carotid plaques. Understanding why and how plaque develops and ruptures requires a multi-disciplinary approach such as radiology, biomedical engineering, medical physics, software engineering, hardware engineering, pathological and histological imaging. Multi-Modality Atherosclerosis Imaging, Diagnosis and Treatment presents a new dimension of understanding Atherosclerosis in 2D and 3D. This book presents work on plaque stress analysis in order to provide a general framework of computational modeling with atherosclerosis plaques. New algorithms based on 3D and 4D Ultrasound are presented to assess the atherosclerotic disease as well as very recent advances in plaque multimodality image fusion analysis. The goal of Multi-Modality Atherosclerosis Imaging, Diagnosis and Treatment is to fuse information obtained from different 3D medical image modalities, such as 3D US, CT and MRI, providing the medical doctor with some sort of augmented reality information about the atherosclerotic plaque in order to improve the accuracy of the diagnosis. Analysis of the plaque dynamics along the cardiac cycle is also a valuable indicator for plaque instability assessment and therefore for risk stratification. 4D Ultrasound, a sequence of 3D reconstructions of the region of interest along the time, can be used for this dynamic analysis. Multimodality Image Fusion is a very appealing approach because it puts together the best characteristics of each modality, such as, the high temporal resolution of US and the high spatial resolutions of MRI and CT.
