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Nota di contenuto	Image Driven Modeling -- Fusion of Local Activation Time Maps and Image Data to Personalize Anatomical Atrial Models -- Initial Experience with a Dynamic Imaging-Derived Immersed Boundary Model of Human Left Ventricle -- 2D Intracardiac Flow Estimation by Combining Speckle Tracking with Navier-Stokes Based Regularization: A Study with Dynamic Kernels -- Biophysical Modeling -- A Computational Bilayer Surface Model of Human Atria -- The Effect of Active Cross-Fiber Stress on Shear-Induced Myofiber Reorientation -- Effect of Fibre Orientation Optimisation in an Electromechanical Model of Left Ventricular Contraction in Rat -- Comparison of Changes in

Effective Electrical Size with Activation Rate between Small Mammalian and Human Ventricular Models -- Image Analysis -- Detecting Rat Heart Myocardial Fiber Directions in X-ray Microtomography Using Coherence-Enhancing Diffusion Filtering -- Fast Fully Automatic Segmentation of the Myocardium in 2D Cine MR Images -- Cardiac Microstructure Estimation from Multi-photon Confocal Microscopy Images -- Atlas Construction for Cardiac Velocity Profiles Segmentation Using a Lumped Computational Model of Circulatory System -- Similarity Retrieval of Angiogram Images BASED on a Flexible Shape Model -- Biophysical Modeling -- Fast Simulation of Mitral Annuloplasty for Surgical Planning -- Effects of Anodal Cardiac Stimulation on V_m and Ca^{2+} i Distributions: -- A Bidomain Study -- Understanding Prenatal Brain Sparing by Flow Redistribution. Based on a Lumped Model of the Fetal Circulation -- Personalization of Cardiac Fiber Orientations from Image Data Using the Unscented Kalman Filter -- Cardiac Imaging -- High Resolution Extraction of Local Human Cardiac Fibre Orientations -- Three-Modality Registration for Guidance of Minimally Invasive Cardiac Interventions -- Noninvasive Localization of Ectopic Foci: A New Optimization Approach for Simultaneous Reconstruction of Transmembrane Voltages and Epicardial Potentials -- Image Analysis -- Multi-atlas Propagation Whole Heart Segmentation from MRI and CTA Using a Local Normalised Correlation Coefficient Criterion -- An Image-Based Catheter Segmentation Algorithm for Optimized Electrophysiology Procedure Workflow -- Fast Left Ventricle Tracking in 3D Echocardiographic Data Using Anatomical Affine Optical Flow -- Parameter Estimation -- Kalman Filter with Augmented Measurement Model: An ECG Imaging Simulation Study -- Estimation of In Vivo Myocardial Fibre Strain Using an Architectural Atlas of the Human Heart -- Changes in In Vivo Myocardial Tissue Properties Due to Heart Failure -- Estimation of Conductivity Tensors from Human Ventricular Optical Mapping Recordings -- Modeling Methods -- Data-Driven Reduction of a Cardiac Myofilament Model -- An Inverse Spectral Method to Localize Discordant Alternans Regions on the Heart from Body Surface Measurements -- From Medical Images to Fast Computational Models of Heart Electromechanics: An Integrated Framework towards Clinical Use -- Dimensional Reduction of Cardiac Models for Effective Validation and Calibration -- Image Analysis -- Automatic Electrode and CT/MR Image Co-localisation for Electrocardiographic Imaging -- Detection of Vortical Structures in 4D Velocity Encoded Phase Contrast MRI Data Using Vector Template Matching -- Myocardial Deformation from Local Frequency Estimation in Tagging MRI -- Spatio-temporal Registration of 2D US and 3D MR Images for the Characterization of Hypertrophic Cardiomyopathy -- A Semi-automatic Approach for Segmentation of Three-Dimensional Microscopic Image Stacks of Cardiac Tissue -- Motion Modeling -- Influence of the Grid Topology of Free-Form Deformation Models on the Performance of 3D Strain Estimation in Echocardiography -- Cardiac Motion and Deformation Estimation from Tagged MRI Sequences Using a Temporal Coherent Image Registration Framework -- Speckle Tracking in Interpolated Echocardiography to Estimate Heart Motion -- Variational Myocardial Tracking from Cine-MRI with Non-linear Regularization: Validation of Radial Displacements vs. Tagged-MRI -- Improving Efficiency of Data Assimilation Procedure for a Biomechanical Heart Model by Representing Surfaces as Currents -- Modeling Methods -- Surface-Based Electrophysiology Modeling and Assessment of Physiological Simulations in Atria -- Flow Analysis in Cardiac Chambers Combining Phase Contrast, 3D Tagged and Cine MRI -- Modelling Parameter Role on Accuracy of Cardiac Perfusion

Quantification -- Texture Mapping by Isometric Spherical Embedding for the Visualization and Assessment of Regional Myocardial Function -- Biophysical Modeling -- Evaluation of Different Mapping Techniques for the Integration of Electro-Anatomical Voltage and Imaging Data of the Left Ventricle -- Atrial Fibrosis and Atrial Fibrillation: A Computer Simulation in the Posterior Left Atrium -- Collagen Bundle Orientation Explains Aortic Valve Leaflet Coaptation -- A High-Fidelity and Micro-anatomically Accurate 3D Finite Element Model for Simulations of Functional Mitral Valve -- Image Analysis -- Determination of Atrial Myofibre Orientation Using Structure Tensor Analysis for Biophysical Modelling -- Large Scale Left Ventricular Shape Atlas Using Automated Model Fitting to Contours -- Atlases of Cardiac Fiber Differential Geometry -- Manifold Learning Characterization of Abnormal Myocardial Motion Patterns: Application to CRT-Induced Changes -- Motion Modeling -- Intraventricular Dyssynchrony Assessment Using Regional Contraction from LV Motion Models -- Applying a Level Set Method for Resolving Physiologic Motions in Free-Breathing and Non-gated Cardiac MRI -- Right Ventricular Strain Analysis from 3D Echocardiography by Using Temporally Diffeomorphic Motion Estimation -- Regional Analysis of Left Ventricle Function Using a Cardiac-Specific Polyaffine Motion Model.

Sommario/riassunto

This book constitutes the refereed proceedings of the 7th International Conference on Functional Imaging and Modeling of the Heart, held in London, UK, in June 2013. The 58 revised full papers were carefully reviewed and selected from numerous initial submissions. The focus of the papers is on following topics: image driven modeling, biophysical modeling, image analysis, biophysical modeling, cardiac imaging, parameter estimation, modeling methods, and biomedical engineering.
