1. Record Nr. UNINA9910484780603321

Titolo	Information processing in medical imaging / / 19th International Conference, IPMI 2005, Glenwood Springs, CO, USA, July 10-15, 2005, proceedings ; Gary E. Christensen, Milan Sonka (eds.)
Pubbl/distr/stampa	Berlin ; ; New York, : Springer, 2005
Edizione	[1st ed. 2005.]
Descrizione fisica	1 online resource (XXI, 777 p.)
Collana	Lecture notes in computer science, , 0302-9743 ; ; 3565
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Disciplina	362.17/7
Soggetti	Diagnostic imaging - Digital techniques
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Shape and Population Modeling -- A Unified Information-Theoretic Approach to Groupwise Non-rigid Registration and Model Building -- Hypothesis Testing with Nonlinear Shape Models -- Extrapolation of Sparse Tensor Fields: Application to the Modeling of Brain Variability -- Bayesian Population Modeling of Effective Connectivity. -- Diffusion Tensor Imaging and Functional Magnetic Resonance -- Fiber Tracking in q-Ball Fields Using Regularized Particle Trajectories -- Approximating Anatomical Brain Connectivity with Diffusion Tensor MRI Using Kernel-Based Diffusion Simulations -- Maximum Entropy Spherical Deconvolution for Diffusion MRI -- From Spatial Regularization to Anatomical Priors in fMRI Analysis -- Segmentation and Filtering -- CLASSIC: Consistent Longitudinal Alignment and Segmentation for Serial Image Computing -- Robust Active Appearance Model Matching -- Simultaneous Segmentation and Registration of Contrast-Enhanced Breast MRI -- Multiscale Vessel Enhancing Diffusion in CT Angiography Noise Filtering -- Poster Session 1 -- Information Fusion in Biomedical Image Analysis: Combination of Data vs. Combination of Interpretations -- Parametric Medial Shape Representation in 3-D via the Poisson Partial Differential Equation with Non-linear Boundary Conditions -- Diffeomorphic Nonlinear Transformations: A Local Parametric Approach for Image Registration -- A Framework for Registration, Statistical Characterization and

Classification of Cortically Constrained Functional Imaging Data -- PET Image Reconstruction: A Robust State Space Approach -- Multi-dimensional Mutual Information Based Robust Image Registration Using Maximum Distance-Gradient-Magnitude -- Tissue Perfusion Diagnostic Classification Using a Spatio-temporal Analysis of Contrast Ultrasound Image Sequences -- Topology Preserving Tissue Classification with Fast Marching and Topology Templates -- Apparent Diffusion Coefficient Approximation and Diffusion Anisotropy Characterization in DWI -- Linearization of Mammograms Using Parameters Derived from Noise Characteristics -- Knowledge-Driven Automated Detection of Pleural Plaques and Thickening in High Resolution CT of the Lung -- Fundamental Limits in 3D Landmark Localization -- Computational Elastography from Standard Ultrasound Image Sequences by Global Trust Region Optimization -- Representing Diffusion MRI in 5D for Segmentation of White Matter Tracts with a Level Set Method -- Automatic Prediction of Myocardial Contractility Improvement in Stress MRI Using Shape Morphometrics with Independent Component Analysis -- Brain Segmentation with Competitive Level Sets and Fuzzy Control -- Coupled Shape Distribution-Based Segmentation of Multiple Objects -- Partition-Based Extraction of Cerebral Arteries from CT Angiography with Emphasis on Adaptive Tracking -- Regional Whole Body Fat Quantification in Mice -- Surface Matching via Currents -- A Genetic Algorithm for the Topology Correction of Cortical Surfaces -- Simultaneous Segmentation of Multiple Closed Surfaces Using Optimal Graph Searching -- A Generalized Level Set Formulation of the Mumford-Shah Functional for Brain MR Image Segmentation -- Integrable Pressure Gradients via Harmonics-Based Orthogonal Projection -- Design of Robust Vascular Tree Matching: Validation on Liver -- A Novel Parametric Method for Non-rigid Image Registration -- Transitive Inverse-Consistent Manifold Registration -- Cortical Surface Alignment Using Geometry Driven Multispectral Optical Flow -- Inverse Consistent Mapping in 3D Deformable Image Registration: Its Construction and Statistical Properties -- Poster Session 2 -- Robust Nonrigid Multimodal Image Registration Using Local Frequency Maps -- Imaging Tumor Microenvironment with Ultrasound -- PDE-Based Three Dimensional Path Planning for Virtual Endoscopy -- Elastic Shape Models for Interpolations of Curves in Image Sequences -- Segmenting and Tracking the Left Ventricle by Learning the Dynamics in Cardiac Images -- 3D Active Shape Models Using Gradient Descent Optimization of Description Length -- Capturing Anatomical Shape Variability Using B-Spline Registration -- A Riemannian Approach to Diffusion Tensor Images Segmentation -- Coil Sensitivity Estimation for Optimal SNR Reconstruction and Intensity Inhomogeneity Correction in Phased Array MR Imaging -- Many Heads Are Better Than One: Jointly Removing Bias from Multiple MRIs Using Nonparametric Maximum Likelihood -- Unified Statistical Approach to Cortical Thickness Analysis -- ZHARP: Three-Dimensional Motion Tracking from a Single Image Plane -- Analysis of Event-Related fMRI Data Using Diffusion Maps -- Automated Detection of Small-Size Pulmonary Nodules Based on Helical CT Images -- Nonparametric Neighborhood Statistics for MRI Denoising -- Construction and Validation of Mean Shape Atlas Templates for Atlas-Based Brain Image Segmentation -- Multi-figure Anatomical Objects for Shape Statistics -- The Role of Non-Overlap in Image Registration -- Multimodality Image Registration Using an Extensible Information Metric and High Dimensional Histogramming -- Spherical Navigator Registration Using Harmonic Analysis for Prospective Motion Correction -- Tunneling Descent Level Set Segmentation of Ultrasound Images -- Multi-object Segmentation

Using Shape Particles.

Sommario/riassunto

The nineteenth biennial International Conference on Information Processing in Medical Imaging (IPMI) was held July 11–15, 2005 in Glenwood Springs, CO, USA on the Spring Valley campus of the Colorado Mountain College. Following the successful meeting in beautiful Ambleside in England, this year's conference addressed important recent developments in a broad range of topics related to the acquisition, analysis and application of biomedical images. Interest in IPMI has been steadily growing over the last decade. This is p- tially due to the increased number of researchers entering the ?eld of medical imagingasaresultoftheWhitakerFoundationandtherecentlyformedNational Institute of Biomedical Imaging and Bioengineering. This year, there were 245 full manuscripts submitted to the conference which was twice the number s- mitted in 2003 and almost four times the number of submissions in 2001. Of these papers, 27 were accepted as oral presentations, and 36 excellent subm- sions that could not be accommodated as oral presentations were presented as posters. Selection of the papers for presentation was a di?cult task as we were unable to accommodate many of the excellent papers submitted this year. All accepted manuscripts were allocated 12 pages in these proceedings.