PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 7623

, "Front Matter: Volume 7623," Proc. SPIE 7623, Medical Imaging 2010: Image Processing, 762301 (9 April 2010); doi: 10.1117/12.861281

SPIE.

Event: SPIE Medical Imaging, 2010, San Diego, California, United States

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 11, No. 33

Medical Imaging 2010

Image Processing

Benoit M. Dawant

David R. Haynor

Editors

14–16 February 2010

San Diego, California, United States

Sponsored by

SPIE

Cosponsored by

Medtronic, Inc. • Aeroflex, Inc. (United States) • Hamamatsu Photonics K.K. • OpenXi (United States)
Tungsten Heavy Powder, Inc. (United States)

Cooperating Organizations

AAPM—American Association of Physicists in Medicine (United States) • APS—American Physiological Society (United States) • CARS—Computer Assisted Radiology and Surgery (Germany) • The Society for Imaging Science and Technology • Medical Image Perception Society (United States) • Radiological Society of North America (United States) • Society for Imaging Informatics in Medicine (United States) • SMI—The Society for Molecular Imaging
The DICOM Standards Committee (United States)

Published by

SPIE

Part One of Two Parts

Volume 7623

Proceedings of SPIE, 1605-7422, v. 7623

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

The papers included in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. The papers published in these proceedings reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from this book:

Author(s), "Title of Paper," in *Medical Imaging 2010: Image Processing*, edited by Benoit M. Dawant, David R. Haynor, Proceedings of SPIE Vol. 7623 (SPIE, Bellingham, WA, 2010) Article CID Number.

ISSN 1605-7422

ISBN 9780819480248

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

SPIE.org

Copyright © 2010, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 1605-7422/10/\$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon they are published online, and connects the same identifier to all online, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc.

The CID number appears on each page of the manuscript. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID number.

Contents

Part One

xxiii *Conference Committee*

ATLAS-BASED METHODS

- 7623 02 **Modeling and segmentation of intra-cochlear anatomy in conventional CT** [7623-01]
J. H. Noble, R. B. Rutherford, R. F. Labadie, Vanderbilt Univ. (United States); O. Majdani, Univ. of Hannover (Germany); B. M. Dawant, Vanderbilt Univ. (United States)
- 7623 03 **A structural-functional MRI-based disease atlas: application to computer-aided-diagnosis of prostate cancer** [7623-61]
G. Xiao, Rutgers Univ. (United States); B. Bloch, Boston Medical Ctr. (United States); J. Chappelow, Rutgers Univ. (United States); E. Genega, N. Rofsky, R. Lenkinski, Beth Israel Deaconess Medical Ctr. (United States); A. Madabhushi, Rutgers Univ. (United States)
- 7623 04 **Manifold parametrization of the left ventricle for a statistical modelling of its complete anatomy** [7623-02]
D. Gil, J. Garcia-Barnes, A. Hernández-Sabate, E. Marti, Univ. Autònoma de Barcelona (Spain)
- 7623 05 **Fully automatic cardiac segmentation from 3D CTA data: a multi-atlas based approach** [7623-03]
H. A. Kirisli, M. Schaap, S. Klein, L. A. Neefjes, A. C. Weustink, T. Van Walsum, Erasmus MC (Netherlands); W. J. Niessen, Erasmus MC (Netherlands) and Delft Univ. of Technology (Netherlands)
- 7623 06 **Model guided diffeomorphic demons for atlas based segmentation** [7623-05]
K. D. Fritscher, B. Schuler, Univ. of Health Sciences, Medical Informatics and Technology (Austria); T. Roth, C. Kammerlander, M. Blauth, Medical Univ. Innsbruck (Austria); R. Schubert, Univ. of Health Sciences, Medical Informatics and Technology (Austria)

REGISTRATION I

- 7623 07 **A statistical similarity measure for non-rigid multi-modal image registration** [7623-06]
J. Shi, Y. Chen, M. Rao, J. Lee, Univ. of Florida (United States)
- 7623 08 **Image processing and registration in a point set representation** [7623-45]
Y. Gao, A. Tannenbaum, Georgia Institute of Technology (United States)
- 7623 09 **Tissue volume and vesselness measure preserving nonrigid registration of lung CT images** [7623-08]
K. Cao, K. Ding, G. E. Christensen, J. M. Reinhardt, The Univ. of Iowa (United States)

- 7623 0A **Multimodal registration of MR images with a novel least-squares distance measure** [7623-09]
S. Heldmann, Fraunhofer MEVIS (Germany) and Univ. of Lübeck (Germany)
- 7623 0B **Extending the quadratic taxonomy of regularizers for nonparametric registration** [7623-10]
N. D. Cahill, Rochester Institute of Technology (United States); J. A. Noble, Univ. of Oxford (United Kingdom); D. J. Hawkes, Univ. College London (United Kingdom)
- 7623 0C **Coupling tumor growth with brain deformation: a constrained parametric non-rigid registration problem** [7623-11]
A. Mang, S. Becker, A. Toma, T. M. Buzug, Univ. of Lübeck (Germany)

MODEL-BASED SEGMENTATION

- 7623 0D **Correspondence free 3D statistical shape model fitting to sparse x-ray projections** [7623-12]
N. Baka, Leiden Univ. Medical Ctr. (Netherlands) and Erasmus Medical Ctr. (Netherlands); W. J. Niessen, Erasmus Medical Ctr. (Netherlands) and Delft Univ. of Technology (Netherlands); B. L. Kaptein, Leids Univ. Medisch Ctr. (Netherlands); T. van Walsum, Erasmus Medical Ctr. (Netherlands); L. Ferrarini, J. H. C. Reiber, Leids Univ. Medisch Ctr. (Netherlands); B. P. F. Lelieveldt, Leids Univ. Medisch Ctr. (Netherlands) and Delft Univ. of Technology (Netherlands)
- 7623 0E **4D reconstruction of cardiac gated SPECT images using a content-adaptive deformable mesh model** [7623-13]
T. Marin, M. N. Wernick, Y. Yang, J. G. Brankov, Illinois Institute of Technology (United States)
- 7623 0F **3D shape reconstruction of bone from two x-ray images using 2D/3D non-rigid registration based on moving least-squares deformation** [7623-14]
T. Cresson, D. Branchaud, R. Chav, B. Godbout, J. A. de Guise, Lab. de recherche en imagerie et orthopédie (Canada) and Ecole de technologie superieure (Canada) and Hospital Notre-Dame (Canada)
- 7623 0G **Abdominal arteries recognition in x-ray using a structural model** [7623-15]
O. Nempont, R. Florent, Philips Healthcare (France)
- 7623 0H **Robust extraction of the aorta and pulmonary artery from 3D MDCT image data** [7623-16]
P. Taeprasartsit, W. E. Higgins, The Pennsylvania State Univ. (United States)

IMAGE ENHANCEMENT

- 7623 0I **Combining short-axis and long-axis cardiac MR images by applying a super-resolution reconstruction algorithm** [7623-17]
S. u. Rahman, S. Wesarg, Technische Univ. Darmstadt (Germany)
- 7623 0J **Synthesizing MR contrast and resolution through a patch matching technique** [7623-18]
S. Roy, A. Carass, J. L. Prince, The Johns Hopkins Univ. (United States)

- 7623 OK **A variational approach for the correction of field-inhomogeneities in EPI sequences** [7623-19]
J. Olesch, Univ. of Lübeck (Germany); L. Ruthotto, H. Kugel, Univ. of Münster (Germany); S. Skare, Stanford Univ. (United States); B. Fischer, Univ. of Lübeck (Germany); C. H. Wolters, Univ. of Münster (Germany)
- 7623 OL **Denoising arterial spin labeling MRI using tissue partial volume** [7623-20]
J. Petr, INRA (France) and Univ. of Rennes I, CNRS, UMR 6074 (France) and INSERM (France); J.-C. Ferre, J.-Y. Gauvrit, INRA (France) and Univ. Hospital of Rennes (France) and Univ. of Rennes I, CNRS, UMR 6074 (France) and INSERM (France); C. Barillot, INRA (France) and Univ. of Rennes I, CNRS, UMR 6074 (France) and INSERM (France)
- 7623 OM **An adaptive nonlocal means scheme for medical image denoising** [7623-21]
T. Thaipanich, C.-C. J. Kuo, The Univ. of Southern California (United States)
- 7623 ON **Noise filtering in thin-slice 4D cerebral CT perfusion scans** [7623-22]
A. Mendrik, E. Vonken, J.-W. Dankbaar, M. Prokop, B. van Ginneken, Univ. Medical Ctr. Utrecht (Netherlands)

KEYNOTE AND VASCULAR IMAGE ANALYSIS

- 7623 OO **Affinity-based constraint optimization for nearly-automatic vessel segmentation** [7623-23]
O. Cooper, M. Freiman, L. Joskowicz, D. Lischinski, The Hebrew Univ. of Jerusalem (Israel)
- 7623 OP **A new 3D tubular intensity model for quantification of thin vessels in 3D tomographic images** [7623-24]
S. Wörz, Ruprecht-Karls-Univ. Heidelberg (Germany); H. von Tengg-Kobligh, Ruprecht-Karls-Univ. Heidelberg (Germany) and German Cancer Research Ctr. (Germany); K. Rohr, Ruprecht-Karls-Univ. Heidelberg (Germany)

SEGMENTATION I

- 7623 OR **Artifact aware tracking of left ventricular contours in 3D ultrasound** [7623-26]
K. Y. E. Leung, M. D. Danilouchkine, M. van Stralen, N. de Jong, A. F. W. van der Steen, J. G. Bosch, Erasmus MC (Netherlands)
- 7623 OS **Classification in medical images using adaptive metric k-NN** [7623-27]
C. Chen, K. Chernoff, G. Karemore, P. Lo, Univ. of Copenhagen (Denmark); M. Nielsen, Univ. of Copenhagen (Denmark) and Nordic Bioscience Imaging (Denmark); F. Lauze, Univ. of Copenhagen (Denmark)
- 7623 OT **Partial volume correction for volume estimation of liver metastases and lymph nodes in CT scans using spatial subdivision** [7623-28]
F. Heckel, V. Dicken, Fraunhofer MEVIS (Germany); T. Bostel, Johannes Gutenberg Univ. (Germany); M. Fabel, Christian-Albrechts-Univ. zu Kiel (Germany); A. Kiessling, Philipps-Univ. (Germany); H.-O. Peitgen, Fraunhofer MEVIS (Germany)

- 7623 0U **Microaneurysms detection with the radon cliff operator in retinal fundus images** [7623-29]
L. Giancardo, Oak Ridge National Lab. (United States) and Univ. de Bourgogne (France);
F. Mériaudeau, Univ. de Bourgogne (France); T. P. Karnowski, K. W. Tobin, Oak Ridge
National Lab. (United States); Y. Li, E. Chaum, The Univ. of Tennessee Health Science Ctr.
(United States)
- 7623 0V **Liver segmentation from registered multiphase CT data sets with EM clustering and GVF level
set** [7623-30]
G. Tao, A. Singh, L. Bidaut, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States)
- 7623 0W **Electric field theory based approach to search-direction line definition in image
segmentation: application to optimal femur-tibia cartilage segmentation in knee-joint 3D
MR** [7623-31]
Y. Yin, M. Sonka, The Univ. of Iowa (United States)

2D IMAGE SEGMENTATION

- 7623 0X **WCE video segmentation using textons** [7623-32]
G. Gallo, E. Granata, Univ. degli Studi di Catania (Italy)
- 7623 0Y **A weighted mean shift, normalized cuts initialized color gradient based geodesic active
contour model: applications to histopathology image segmentation** [7623-140]
J. Xu, Rutgers Univ. (United States); A. Janowczyk, Rutgers Univ. (United States) and Indian
Institute of Technology (India); S. Chandran, Indian Institute of Technology (India);
A. Madabhushi, Rutgers Univ. (United States)
- 7623 10 **Retinal atlas statistics from color fundus images** [7623-35]
S. Lee, The Univ. of Iowa (United States) and Indiana Univ. (United States); M. D. Abramoff,
The Univ. of Iowa (United States) and Veterans Administration Medical Ctr. (United States);
J. M. Reinhardt, The Univ. of Iowa (United States)
- 7623 11 **Automatic landmark detection and scan range delimitation for topogram images using
hierarchical network** [7623-36]
W. Zhang, Siemens Corp. Research (United States) and SET Corp. (United States); F. Mantlic,
S. K. Zhou, Siemens Corp. Research (United States)
- 7623 12 **Graph-based pigment network detection in skin images** [7623-37]
M. Sadeghi, Simon Fraser Univ. (Canada) and Cancer Control Research (Canada);
M. Razmara, M. Ester, Simon Fraser Univ. (Canada); T. K. Lee, Simon Fraser Univ. (Canada)
and Cancer Control Research (Canada) and Univ. of British Columbia (Canada);
M. S. Atkins, Simon Fraser Univ. (Canada)
- 7623 13 **Cervigram image segmentation based on reconstructive sparse representations** [7623-38]
S. Zhang, J. Huang, Rutgers Univ. (United States); W. Wang, X. Huang, Lehigh Univ. (United
States); D. Metaxas, Rutgers Univ. (United States)

SHAPE

- 7623 14 **Learning discriminative distance functions for valve retrieval and improved decision support in valvular heart disease** [7623-39]
I. Voigt, Siemens Corp. Technology (Germany) and Univ. of Erlangen-Nuremberg (Germany); D. Vitanovski, Siemens Corp. Technology (Germany); R. I. Ionasec, Siemens Corp. Research (United States) and Technical Univ. Munich (Germany); A. Tsymal, Siemens Corp. Technology (Germany); B. Georgescu, S. K. Zhou, Siemens Corp. Research (United States); M. Huber, Siemens Corp. Technology (Germany); N. Navab, Technische Univ. München (Germany); J. Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); D. Comaniciu, Siemens Corp. Research (United States)
- 7623 15 **Shape based MRI prostate image segmentation using local information driven directional distance Bayesian method** [7623-40]
Y. Gao, A. Tannenbaum, Georgia Institute of Technology (United States)
- 7623 16 **3D shape from silhouette points in registered 2D images using conjugate gradient method** [7623-41]
A. Szymczak, W. Hoff, Colorado School of Mines (United States); M. Mahfouz, The Univ. of Tennessee (United States)
- 7623 17 **A single scan skeletonization algorithm: application to medical imaging of trabecular bone** [7623-42]
A. Arlicot, Y. Amouriq, P. Evenou, Univ. de Nantes (France); N. Normand, Univ. de Nantes (France) and Monash Univ. (Australia); J. Guédon, Univ. de Nantes (France)
- 7623 18 **Coupled level set segmentation using a point-based statistical shape model relying on correspondence probabilities** [7623-43]
H. Hufnagel, J. Ehrhardt, Univ. Medical Ctr. Hamburg-Eppendorf (Germany); X. Pennec, INRIA Sophia Antipolis (France); A. Schmidt-Richberg, H. Handels, Univ. Medical Ctr. Hamburg-Eppendorf (Germany)

REGISTRATION II

- 7623 19 **Validation of a nonrigid registration framework that accommodates tissue resection** [7623-44]
P. Risholm, Harvard Medical School (United States) and Univ. of Oslo (Norway); E. Samset, Univ. of Oslo (Norway); W. Wells III, Harvard Medical School (United States)
- 7623 1A **A modified ICP algorithm for normal-guided surface registration** [7623-07]
D. Münch, B. Combès, S. Prima, INSERM (France) and INRIA (France) and Univ. of Rennes I, CNRS (France)
- 7623 1B **Structural template formation with discovery of subclasses** [7623-46]
X. Long, C. Wyatt, Virginia Tech. (United States)
- 7623 1D **Improved robust point matching with label consistency** [7623-48]
R. Bhagalia, J. V. Miller, GE Global Research (United States); A. Roy, GE Global Research (India)

- 7623 1E **A new combined surface and volume registration** [7623-49]
N. Lepore, Univ. of California, Los Angeles (United States) and Univ. of Southern California (United States); A. A. Joshi, Univ. of California, Los Angeles (United States); R. M. Leahy, The Univ. of Southern California (United States); C. Brun, Y.-Y. Chou, Univ. of California, Los Angeles (United States); X. Pennec, INRIA Sophia (France); A. D. Lee, M. Barysheva, Univ. of California, Los Angeles (United States); G. I. De Zubicaray, Univ. of Queensland (Australia); M. J. Wright, Queensland Institute of Medical Research (Australia); K. L. McMahon, Univ. of Queensland (Australia); A. W. Toga, P. M. Thompson, Univ. of California, Los Angeles (United States)

DIFFUSION TENSOR IMAGE ANALYSIS

- 7623 1F **Fast Hamilton-Jacobi equation solver and neural fiber bundle extraction** [7623-50]
Y. Gao, J. Melonakos, A. Tannenbaum, Georgia Institute of Technology (United States)
- 7623 1G **Directional assessment of fiber integrity in Q-ball imaging** [7623-51]
K. H. Fritzsche, F. B. Laun, B. Stieltjes, H.-P. Meinzer, German Cancer Research Ctr. (Germany)
- 7623 1H **Resolution of crossing fibers with constrained compressed sensing using traditional diffusion tensor MRI** [7623-52]
B. A. Landman, The Johns Hopkins Univ. (United States) and Vanderbilt Univ. (United States); H. Wan, J. A. Bogovic, P.-L. Bazin, J. L. Prince, The Johns Hopkins Univ. (United States)
- 7623 1I **Reconstruction of a geometrically correct diffusion tensor image of a moving human fetal brain** [7623-53]
K. Kim, P. A. Habas, Univ. of California, San Francisco (United States); F. Rousseau, LSIT, CNRS, Univ. of Strasbourg (France); O. A. Glenn, A. J. Barkovich, Univ. of California, San Francisco (United States); M. Koob, J.-L. Dietemann, LINC, CNRS, Univ. of Strasbourg (France); A. J. Robinson, K. J. Poskitt, Univ. of British Columbia (Canada); S. P. Miller, Univ. of California, San Francisco (United States) and Univ. of British Columbia (Canada); C. Studholme, Univ. of California, San Francisco (United States)
- 7623 1J **Discriminant analysis of resting-state functional connectivity patterns on the Grassmann manifold** [7623-54]
Y. Fan, Y. Liu, T. Jiang, Institute of Automation (China); Z. Liu, Y. Hao, H. Liu, Central South Univ. (China)

SEGMENTATION II

- 7623 1K **Automatic bone segmentation and alignment from MR knee images** [7623-55]
L. Shan, C. Zach, M. Styner, The Univ. of North Carolina at Chapel Hill (United States); C. Charles, Duke Univ. (United States); M. Niethammer, The Univ. of North Carolina at Chapel Hill (United States)
- 7623 1L **Subvoxel segmentation and representation of brain cortex using fuzzy clustering and gradient vector diffusion** [7623-56]
M.-C. Chang, X. Tao, GE Global Research Ctr. (United States)

- 7623 1M **An expectation-maximization approach to joint curve evolution for medical image segmentation** [7623-57]
M. Farzinfar, E. K. Teoh, Nanyang Technological Univ. (Singapore); Z. Xue, Cornell Univ. (United States)
- 7623 1N **Simultaneous truth and performance level estimation with incomplete, over-complete, and ancillary data** [7623-58]
B. A. Landman, The Johns Hopkins Univ. (United States) and Vanderbilt Univ. (United States); J. A. Bogovic, J. L. Prince, The Johns Hopkins Univ. (United States)
- 7623 1O **Fast globally optimal single surface segmentation using regional properties** [7623-59]
X. Dou, X. Wu, The Univ. of Iowa (United States)
- 7623 1P **Lung fissure detection in CT images using global minimal paths** [7623-60]
V. Appia, Georgia Tech (United States); U. Patil, Manipal Hospital (India); B. Das, GE Global Research (India)

POSTER SESSION: ATLASES

- 7623 1Q **Segmentation of lymph node regions in head-and-neck CT images using a combination of registration and active shape model** [7623-04]
A. Chen, Vanderbilt Univ. (United States); M. A. Deeley, K. J. Niernann, L. Moretti, Vanderbilt-Ingram Cancer Ctr. (United States); B. M. Dawant, Vanderbilt Univ. (United States)
- 7623 1R **A groupwise mutual information metric for cost efficient selection of a suitable reference in cardiac computational atlas construction** [7623-62]
C. Hoogendoorn, T. Whitmarsh, N. Duchateau, Univ. Pompeu Fabra (Spain) and Networking Biomedical Research Ctr. on Bioengineering (Spain); F. M. Sukno, Networking Biomedical Research Ctr. on Bioengineering (Spain) and Univ. Pompeu Fabra (Spain); M. De Craene, Univ. Pompeu Fabra (Spain) and Networking Biomedical Research Ctr. on Bioengineering (Spain); A. F. Frangi, Univ. Pompeu Fabra (Spain) and Networking Biomedical Research Ctr. on Bioengineering (Spain) and Institutio Catalana de Recerca i Estudis Avancats (Spain)
- 7623 1S **Effect of inter-subject variation on the accuracy of atlas-based segmentation applied to human brain structures** [7623-63]
N. T. Doan, Univ. Catholique de Louvain (Belgium) and Leiden Univ. Medical Ctr. (Netherlands); J. Orban de Xivry, B. Macq, Univ. Catholique de Louvain (Belgium)
- 7623 1T **An analysis of methods for the selection of atlases for use in medical image segmentation** [7623-64]
J. W. Prescott, The Ohio State Univ. (United States); T. M. Best, F. Haq, R. Jackson, The Ohio State Univ. Medical Ctr. (United States); M. Gurcan, The Ohio State Univ. (United States)
- 7623 1U **Combining morphometric evidence from multiple registration methods using dempster-shafer theory** [7623-65]
V. Rajagopalan, C. Wyatt, Virginia Tech. (United States)

POSTER SESSION: CLASSIFICATION

- 7623 1V **T1- and T2-weighted spatially constrained fuzzy c-means clustering for brain MRI segmentation** [7623-66]
I. Despotović, B. Goossens, E. Vansteenkiste, W. Philips, Ghent Univ. (Belgium)
- 7623 1W **3D tensor-based blind multispectral image decomposition for tumor demarcation** [7623-67]
I. Kopriva, A. Peršin, Ruđer Bošković Institute (Croatia)
- 7623 1X **Knowledge-based quantification of pericardial fat in non-contrast CT data** [7623-68]
R. Yalamanchili, Univ. of Houston (United States); D. Dey, Cedars-Sinai Medical Ctr. (United States); U. Kukure, Univ. of Houston (United States); R. Nakazato, D. S. Berman, Cedars-Sinai Medical Ctr. (United States); I. A. Kakadiaris, Univ. of Houston (United States)
- 7623 1Z **Automated detection of grayscale bar and distance scale in ultrasound images** [7623-70]
W. Ahmed, M. G. Eramian, Univ. of Saskatchewan (Canada)
- 7623 20 **CT slice localization via instance-based regression** [7623-71]
T. Emrich, F. Graf, H.-P. Kriegel, M. Schubert, M. Thoma, Ludwig-Maximilians-Univ. München (Germany); A. Cavallaro, Imaging Science Institute Erlangen (Germany)
- 7623 21 **A robust model order estimation and segmentation technique for classification of biopsies in breast cancer** [7623-72]
E. Corona, B. Nutter, S. Mitra, Texas Tech Univ. (United States)
- 7623 22 **Classification of cognitive states using functional MRI data** [7623-73]
Y. Yang, R. Pal, M. O'Boyle, Texas Tech Univ. (United States)
- 7623 23 **Surface smoothness: cartilage biomarkers for knee OA beyond the radiologist** [7623-74]
S. Tummala, Univ. of Copenhagen (Denmark); E. B. Dam, Nordic Bioscience Imaging (Denmark)

POSTER SESSION: DIFFUSION TENSOR IMAGE ANALYSIS

- 7623 24 **Changes of MR and DTI appearance in early human brain development** [7623-75]
C. Marc, C. Vachet, The Univ. of North Carolina at Chapel Hill (United States); G. Gerig, The Univ. of Utah (United States); J. Blocher, J. Gilmore, M. Styner, The Univ. of North Carolina at Chapel Hill (United States)
- 7623 25 **Evaluation of DTI property maps as basis of DTI atlas building** [7623-76]
Z. Liu, The Univ. of North Carolina at Chapel Hill (United States); C. Goodlett, G. Gerig, The Univ. of Utah (United States); M. Styner, The Univ. of North Carolina at Chapel Hill (United States)
- 7623 26 **Assessing fiber tracking accuracy via diffusion tensor software models** [7623-77]
S. Barbieri, J. Klein, Fraunhofer MEVIS (Germany); C. Nimsky, Univ. of Marburg (Germany); H. K. Hahn, Fraunhofer MEVIS (Germany)

- 7623 27 **Automatic clustering of white matter fibers based on symbolic sequence analysis** [7623-78]
B. Ge, Northwestern Polytechnical Univ. (China) and Shaanxi Normal Univ. (China); L. Guo, Northwestern Polytechnical Univ. (China); K. Li, Northwestern Polytechnical Univ. (China) and Univ. of Georgia (United States); H. Li, Northwestern Polytechnical Univ. (China); C. Faraco, Q. Zhao, S. Miller, T. Liu, The Univ. of Georgia (United States)
- 7623 28 **Improving RESTORE for robust diffusion tensor estimation: a simulation study** [7623-79]
L.-C. Chang, The Catholic Univ. of America (United States) and NICHD (United States)
- 7623 29 **White matter degeneration in schizophrenia: a comparative diffusion tensor analysis** [7623-80]
M. A. Ingahlhalikar, N. C. Andreasen, J. Kim, Univ. of Iowa (United States); A. L. Alexander, Univ. of Wisconsin (United States); V. A. Magnotta, Univ. of Iowa (United States)
- 7623 2A **Qualitative and quantitative analysis of probabilistic and deterministic fiber tracking** [7623-81]
J. Klein, A. Grötsch, D. Betz, S. Barbieri, O. Friman, Fraunhofer MEVIS (Germany); B. Stieltjes, German Cancer Research Ctr. (Germany); H. Hildebrandt, Clinical Ctr. Bremen-Ost (Germany) and Univ. of Oldenburg (Germany); H. K. Hahn, Fraunhofer MEVIS (Germany)

POSTER SESSION: MOTION ANALYSIS

- 7623 2B **3D motion analysis of keratin filaments in living cells** [7623-82]
G. Herberich, RWTH Aachen Univ. (Germany); R. Windoffer, R. Leube, Univ. Hospital Aachen (Germany); T. Aach, RWTH Aachen Univ. (Germany)
- 7623 2C **3D motion tracking of the heart using Harmonic Phase (HARP) isosurfaces** [7623-83]
A. S. Soliman, Nile Univ. (Egypt); N. F. Osman, Nile Univ. (Egypt) and Johns Hopkins Univ. (United States)
- 7623 2D **Development of a particle filter framework for respiratory motion correction in nuclear medicine imaging** [7623-84]
A. A. Abd. Rahni, E. Lewis, K. Wells, Univ. of Surrey (United Kingdom); M. Guy, Medway Maritime Hospital (United Kingdom) and Univ. of Surrey (United Kingdom); B. Goswami, Univ. of Surrey (United Kingdom)
- 7623 2E **A comparison of tracking methods for swimming *C. elegans*** [7623-85]
C. Restif, D. Metaxas, Rutgers Univ. (United States)
- 7623 2F **An observation model for motion correction in nuclear medicine** [7623-86]
M. R. Alnowami, E. Lewis, Univ. of Surrey (United Kingdom); M. Guy, Medway Maritime Hospital (United Kingdom); K. Wells, Univ. of Surrey (United Kingdom)
- 7623 2G **Image-based motion estimation for cardiac CT via image registration** [7623-87]
J. Cammin, K. Taguchi, The Johns Hopkins Univ. School of Medicine (United States)

Part Two

- 7623 2I **Third brain ventricle deformation analysis using fractional differentiation and evolution strategy in brain cine-MRI** [7623-89]
A. Nakib, F. Aiboud, Lab. Images, Signaux et Systèmes Intelligents (France); J. Hodel, Ctr. Hospitalier Univ. Henri Mondor, LBM ENSAM-CNRS (France); P. Siarry, Lab. Images, Signaux et Systèmes Intelligents (France); P. Decq, Ctr. Hospitalier Univ. Henri Mondor, LBM ENSAM-CNRS (France)
- 7623 2J **Endoscopic egomotion computation** [7623-90]
T. Bergen, S. Ruthotto, S. Rupp, C. Winter, C. Münzenmayer, Fraunhofer Institute for Integrated Circuits (Germany)

POSTER SESSION: REGISTRATION

- 7623 2K **Diffeomorphic demons using normalized mutual information, evaluation on multimodal brain MR images** [7623-91]
M. Modat, Univ. College London (United Kingdom); T. Vercauteren, Mauna Kea Technologies (France); G. R. Ridgway, D. J. Hawkes, N. C. Fox, S. Ourselin, Univ. College London (United Kingdom)
- 7623 2L **Evaluation of five non-rigid image registration algorithms using the NIREP framework** [7623-92]
Y. Wei, G. E. Christensen, J. H. Song, D. Rudrauf, J. Bruss, J. G. Kuhl, The Univ. of Iowa (United States); T. J. Grabowski, Univ. of Washington (United States)
- 7623 2M **Reliable fusion of knee bone laser scans to establish ground truth for cartilage thickness measurement** [7623-93]
M.-C. Chang, GE Global Research Ctr. (United States); N. H. Trinh, Brown Univ. (United States); B. C. Fleming, Brown Medical School (United States); B. B. Kimia, Brown Univ. (United States)
- 7623 2N **Multicontrast MRI registration of carotid arteries in atherosclerotic and normal subjects** [7623-94]
L. Biasioli, Univ. of Oxford (United Kingdom) and Oxford Ctr. for Clinical Magnetic Resonance Research (United Kingdom); J. A. Noble, Univ. of Oxford (United Kingdom); M. D. Robson, Univ. of Oxford (United Kingdom) and Oxford Ctr. for Clinical Magnetic Resonance Research (United Kingdom)
- 7623 2P **Cylindrical affine transformation model for image registration** [7623-96]
C. Tanner, ETH Zürich (Switzerland) and Univ. College London (United Kingdom); T. Carter, D. Hawkes, Univ. College London (United Kingdom); G. Székely, ETH Zürich (Switzerland)

- 7623 2Q **An improved 3D shape context registration method for non-rigid surface registration** [7623-97]
D. Xiao, Commonwealth Scientific and Industrial Research Organisation (Australia); D. Zahra, Australian Nuclear Science and Technology Organisation (Australia); P. Bourgeat, Commonwealth Scientific and Industrial Research Organisation (Australia); P. Berghofer, Australian Nuclear Science and Technology Organisation (Australia); O. Acosta Tamayo, Commonwealth Scientific and Industrial Research Organisation (Australia); C. Wimberley, M. Claude Gregoire, Australian Nuclear Science and Technology Organisation (Australia); O. Salvado, Commonwealth Scientific and Industrial Research Organisation (Australia)
- 7623 2R **Optical flow based deformable volume registration using a novel second-order regularization prior** [7623-98]
S. Grbić, M. Urschler, T. Pock, H. Bischof, Graz Univ. of Technology (Austria)
- 7623 2S **Automatic estimation of registration parameters: image similarity and regularization** [7623-99]
T. R. Langerak, U. A. van der Heide, A. N. T. J. Kotte, J. P. W. Pluim, Univ. Medical Ctr. Utrecht (Netherlands)
- 7623 2T **LCC demons with divergence term for liver MRI motion correction** [7623-100]
J. Oh, Georgia Institute of Technology (United States); D. Martin, Emory Univ. (United States); O. Skrinjar, Georgia Institute of Technology (United States)
- 7623 2U **Towards analysis of growth trajectory through multimodal longitudinal MR imaging** [7623-101]
N. Sadeghi, M. Prastawa, Univ. of Utah (United States); J. H. Gilmore, W. Lin, Univ. of North Carolina (United States); G. Gerig, Univ. of Utah (United States)
- 7623 2V **A fast rigid-registration method of inferior limb x-ray image and 3D CT images for TKA surgery** [7623-102]
F. Ito, P. O.D.A, I. Uwano, K. Ito, Iwate Prefectural Univ. (Japan)
- 7623 2W **Detection of stable mammographic features under compression using simulated mammograms** [7623-103]
Y. M. Jafar, J. H. Hipwell, C. Tanner, D. J. Hawkes, Univ. College London (United Kingdom)
- 7623 2X **Improving fluid registration through white matter segmentation in a twin study design** [7623-104]
Y.-Y. Chou, N. Lepore, C. Brun, M. Barysheva, Univ. of California, Los Angeles (United States); K. McMahon, G. I. de Zubicaray, The Univ. of Queensland (Australia); M. J. Wright, Queensland Institute of Medical Research (Australia); A. W. Toga, P. M. Thompson, Univ. of California, Los Angeles (United States)
- 7623 2Y **Direction-dependent regularization for improved estimation of liver and lung motion in 4D image data** [7623-105]
A. Schmidt-Richberg, J. Ehrhardt, R. Werner, H. Handels, Univ. Medical Ctr. Hamburg-Eppendorf (Germany)
- 7623 2Z **An intensity-based approach to x-ray mammography: MRI registration** [7623-106]
T. Mertzaniidou, J. H. Hipwell, Univ. College London (United Kingdom); C. Tanner, ETH Zürich (Switzerland); D. J. Hawkes, Univ. College London (United Kingdom)

- 7623 30 **3D ultrasound volume stitching using phase symmetry and harris corner detection for orthopaedic applications** [7623-107]
R. Dalvi, I. Hacıhaliloglu, R. Abugharbieh, The Univ. of British Columbia (Canada)
- 7623 31 **Multi-Modality fiducial marker for validation of registration of medical images with histology** [7623-108]
R. Shojaii, A. L. Martel, Univ. of Toronto (Canada) and Sunnybrook Health Sciences Ctr. (Canada)
- 7623 32 **Fast correspondences search in anatomical trees** [7623-109]
T. R. dos Santos, I. Gergel, H-P. Meinzer, L. Maier-Hein, German Cancer Research Ctr. (Germany)
- 7623 33 **Evaluation of an efficient GPU implementation of digitally reconstructed radiographs in 3D/2D image registration** [7623-110]
C. Zhang, M.-C. Villa-Urriol, Univ. Pompeu Fabra (Spain) and Networking Research Ctr. on Bioengineering (Spain); A. F. Frangi, Univ. Pompeu Fabra (Spain) and Networking Research Ctr. on Bioengineering (Spain) and Institució Catalana de Recerca i Estudis Avançats (Spain)
- 7623 34 **Markov random field optimization for intensity-based 2D-3D registration** [7623-111]
D. Zikic, B. Glocker, O. Kutter, M. Groher, Technische Univ. München (Germany); N. Komodakis, Univ. of Crete (Greece); A. Khamene, Siemens Corp. Research (United States); N. Paragios, Lab. MAS, Ecole Centrale Paris (France) and Equipe GALEN, INRIA Saclay (France); N. Navab, Technische Univ. München (Germany)
- 7623 35 **Image similarity metrics in image registration** [7623-112]
A. Melbourne, G. Ridgway, D. J. Hawkes, Univ. College London (United Kingdom)
- 7623 36 **Registration-based interpolation applied to cardiac MRI** [7623-113]
H. Ólafsdóttir, Technical Univ. of Denmark (Denmark); H. Pedersen, Technical Univ. of Denmark (Denmark) and Glostrup Hospital (Denmark); M. S. Hansen, M. Lyksborg, M. F. Hansen, S. Darkner, R. Larsen, Technical Univ. of Denmark (Denmark)
- 7623 37 **Automated algorithm for atlas-based segmentation of the heart and pericardium from non-contrast CT** [7623-114]
D. Dey, Cedars-Sinai Medical Ctr. (United States) and Univ. of California, Los Angeles (United States); A. Ramesh, Cedars-Sinai Medical Ctr. (United States); P. J. Slomka, Cedars-Sinai Medical Ctr. (United States) and Univ. of California, Los Angeles (United States); R. Nakazato, V. Y. Cheng, Cedars-Sinai Medical Ctr. (United States); G. Germano, D. S. Berman, Cedars-Sinai Medical Ctr. (United States) and Univ. of California, Los Angeles (United States)
- 7623 38 **Mosaicing of microscope images in the presence of large areas with insufficient information content** [7623-115]
Y. Arzhaeva, P. Vallotton, C. Sun, Commonwealth Scientific and Industrial Research Organisation (Australia)
- 7623 39 **Volume-constrained image registration for pre- and post-operative CT liver data** [7623-116]
B. Beuthien, Univ. of Lübeck (Germany); N. Papenberg, S. Heldmann, Fraunhofer MEVIS (Germany); B. Fischer, Univ. of Lübeck (Germany)

- 7623 3A **Medical image registration using the modified conditional entropy measure combining the spatial and intensity information** [7623-117]
M.-E. Lee, S.-H. Kim, W.-H. Cho, S.-W. Kim, J.-H. Park, Chonnam National Univ. (Korea, Republic of); S.-Y. Park, Mokpo National Univ. (Korea, Republic of); J.-S. Lim, Chonnam National Univ. (Korea, Republic of)

POSTER SESSION: IMAGE RESTORATION AND ENHANCEMENT

- 7623 3B **Improving arterial spin labeling data by temporal filtering** [7623-118]
J. Petr, INRIA (France) and Univ. of Rennes I, CNRS, UMR 6074 (France) and INSERM (France); J.-C. Ferre, J.-Y. Gauvrit, INRIA (France) and Univ. Hospital of Rennes (France) and Univ. of Rennes I, CNRS, UMR 6074 (France) and INSERM (France); C. Barillot, INRIA (France) and Univ. of Rennes I, CNRS, UMR 6074 (France) and INSERM (France)
- 7623 3C **Compact rotation invariant descriptor for non-local means** [7623-119]
N. Dowson, O. Salvado, Australian e-Health Research Ctr., CSIRO (Australia)
- 7623 3D **Novel registration-based image enhancement for x-ray fluoroscopy** [7623-120]
A. Dixon, R. Areste, K. N. Jabri, V. Walimbe, GE Healthcare (United States)
- 7623 3E **Application of a modified regularization procedure for estimating oxygen tension in large retinal blood vessels** [7623-121]
I. Yildirim, Univ. of Illinois at Chicago (United States) and Istanbul Teknik Üniv. (Turkey); R. Ansari, Univ. of Illinois at Chicago (United States); I. Samil Yetik, Illinois Institute of Technology (United States); M. Shahidi, Univ. of Illinois at Chicago (United States)

POSTER SESSION: SEGMENTATION

- 7623 3F **Automated extraction method for the center line of spinal canal and its application to the spinal curvature quantification in torso x-ray CT images** [7623-122]
T. Hayashi, X. Zhou, H. Chen, T. Hara, K. Miyamoto, T. Kobayashi, R. Yokoyama, M. Kanematsu, H. Hoshi, H. Fujita, Gifu Univ. School of Medicine (Japan)
- 7623 3G **Closing of interrupted vascular segmentations: an automatic approach based on shortest paths and level sets** [7623-123]
N. D. Forkert, A. Schmidt-Richberg, D. Säring, T. Illies, J. Fiehler, H. Handels, Univ. Medical Ctr. Hamburg-Eppendorf (Germany)
- 7623 3H **Multiscale topo-morphologic opening of arteries and veins: a validation study on phantoms and CT imaging of pulmonary vessel casting of pigs** [7623-124]
Z. Gao, C. Holtze, M. Sonka, E. Hoffman, P. K. Saha, The Univ. of Iowa (United States)
- 7623 3I **Image segmentation using the student's t-test and the divergence of direction on spherical regions** [7623-125]
G. Stetten, Univ. of Pittsburgh (United States) and Carnegie Mellon Univ. (United States); S. Horvath, Univ. of Pittsburgh (United States); J. Galeotti, Carnegie Mellon Univ. (United States); G. Shukla, B. Wang, B. Chapman, Univ. of Pittsburgh (United States)

- 7623 3J **Aorta segmentation in non-contrast cardiac CT images using an entropy-based cost function** [7623-126]
O. C. Avila-Montes, U. Kukure, I. A. Kakadiaris, Univ. of Houston (United States)
- 7623 3K **A skull segmentation method for brain MR images based on multiscale bilateral filtering scheme** [7623-127]
X. Yang, B. Fei, Emory Univ. (United States)
- 7623 3L **A skull stripping method using deformable surface and tissue classification** [7623-128]
X. Tao, M.-C. Chang, GE Global Research Ctr. (United States)
- 7623 3M **Intracranial aneurysm segmentation in 3D CT angiography: method and quantitative validation** [7623-129]
A. Firouzian, R. Manniesing, Z. H. Flach, R. Risselada, F. van Kooten, M. C. J. M. Sturkenboom, A. van der Lugt, Univ. Medical Ctr. Rotterdam (Netherlands); W. J. Niessen, Univ. Medical Ctr. Rotterdam (Netherlands) and Delft Univ. of Technology (Netherlands)
- 7623 3N **Segmentation of the thalamus in multi-spectral MR images using a combination of atlas-based and gradient graph cut methods** [7623-130]
R. Datteri, Vanderbilt Univ. (United States); C. Barillot, INRIA, IRISA, CNRS, INSERM (France); B. M. Dawant, Vanderbilt Univ. (United States); J. Lecoœur, INRIA, IRISA, CNRS, INSERM (France)
- 7623 3O **Automated lung tumor segmentation for whole body PET volume based on novel downhill region growing** [7623-131]
C. Ballangan, X. Wang, The Univ. of Sydney (Australia); S. Eberl, M. Fulham, The Univ. of Sydney (Australia) and Royal Prince Alfred Hospital (Australia); D. Feng, The Univ. of Sydney (Australia) and Hong Kong Polytechnic Univ. (Hong Kong, China)
- 7623 3P **'Active contour without edges', on parametric manifolds** [7623-132]
Y. Gao, A. Tannenbaum, Georgia Institute of Technology (United States)
- 7623 3Q **Blood vessel segmentation using line-direction vector based on Hessian analysis** [7623-133]
Y. Nimura, Nagoya Univ. (Japan); T. Kitasaka, Aichi Institute of Technology (Japan); K. Mori, Nagoya Univ. (Japan)
- 7623 3R **Brain segmentation performance using T1-weighted images versus T1 maps** [7623-134]
X. Li, C. Wyatt, Virginia Tech. (United States)
- 7623 3S **Detection of small human cerebral cortical lesions with MRI under different levels of Gaussian smoothing: applications in epilepsy** [7623-135]
D. Cantor-Rivera, M. Goubran, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada); A. Kraguljac, Robarts Research Institute (Canada); R. Bartha, T. Peters, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada)
- 7623 3T **Automated method for tracing leading and trailing processes of migrating neurons in confocal image sequences** [7623-136]
R. A. Kerekes, S. S. Gleason, Oak Ridge National Lab. (United States); N. Trivedi, D. J. Solecki, St. Jude Children's Research Hospital (United States)

- 7623 3U **Quantitative CT for volumetric analysis of medical images: initial results for liver tumors** [7623-137]
A. S. Behnaz, Georgetown Univ. (United States) and George Mason Univ. (United States); J. Snider, C. Eneh, G. Esposito, E. Wilson, Z. Yaniv, E. Cohen, K. Cleary, Georgetown Univ. (United States)
- 7623 3V **Multi-object segmentation using coupled shape space models** [7623-138]
T. Schwarz, German Cancer Research Ctr. (Germany); T. Heimann, INRIA Research Ctr. (France); D. Lossnitzer, C. Mohrhardt, H. Steen, Univ. Clinics Heidelberg (Germany); U. Rietdorf, German Cancer Research Ctr. (Germany); I. Wolf, Univ. of Mannheim (Germany); H.-P. Meinzer, German Cancer Research Ctr. (Germany)
- 7623 3W **Automatic recognition and validation of the common carotid artery wall segmentation in 100 longitudinal ultrasound images: an integrated approach using feature selection, fitting and classification** [7623-139]
F. Molinari, Politecnico di Torino (Italy); G. Zeng, Clemson Univ. (United States); J. S. Suri, Biomedical Technologies (United States) and Univ. of Idaho (United States)
- 7623 3X **Automated fat measurement and segmentation with intensity inhomogeneity correction** [7623-141]
D. L. Sussman, J. Yao, R. M. Summers, National Institutes of Health (United States)
- 7623 3Y **A novel fast liver segmentation method with graph cuts** [7623-142]
F. Yang, W. Zhai, Y. Zhao, H. Wang, P. Jia, Tsinghua Univ. (China)
- 7623 3Z **Thrombus segmentation by texture dynamics from microscopic image sequences** [7623-143]
N. Brieu, Technische Univ. München (Germany); J. Serbanovic-Canic, Wellcome Trust Sanger Institute (United Kingdom); A. Cvejic, D. Stemple, Wellcome Trust Sanger Institute (United Kingdom) and Univ. of Cambridge (United Kingdom); W. Ouwehand, Wellcome Trust Sanger Institute (United Kingdom) and Univ. of Cambridge (United Kingdom) and National Health Service Blood and Transplant (United Kingdom); N. Navab, M. Groher, Technische Univ. München (Germany)
- 7623 40 **Relaxed image foresting transforms for interactive volume image segmentation** [7623-144]
F. Malmberg, I. Nyström, Uppsala Univ. (Sweden); A. Mehnert, C. Engstrom, The Univ. of Queensland (Australia); E. Bengtsson, Uppsala Univ. (Sweden)
- 7623 41 **Digital bowel cleansing for virtual colonoscopy with probability map** [7623-145]
W. Hong, F. Qiu, Siemens Corp. Research (United States)
- 7623 42 **Optimal combination of multiple cortical surface parcellations** [7623-146]
X. Hu, L. Guo, G. Li, Northwestern Polytechnical Univ. (China); K. Li, Northwestern Polytechnical Univ. (China) and The Univ. of Georgia (United States); T. Liu, The Univ. of Georgia (United States)
- 7623 43 **A multi-scale approach to mass segmentation using active contour models** [7623-147]
H. Yu, L. Li, W. Xu, W. Liu, Hangzhou Dianzi Univ. (China)

- 7623 44 **Statistical fusion of surface labels provided by multiple raters** [7623-148]
J. A. Bogovic, Johns Hopkins Univ. (United States); B. A. Landman, Johns Hopkins Univ. (United States) and Vanderbilt Univ. (United States); P.-L. Bazin, J. L. Prince, Johns Hopkins Univ. (United States)
- 7623 45 **Ball-scale based hierarchical multi-object recognition in 3D medical images** [7623-149]
U. Bağci, The Univ. of Nottingham (United Kingdom); J. K. Udupa, Univ. of Pennsylvania (United States); X. Chen, National Institute of Health (United States)
- 7623 46 **Automatic segmentation of the aorta and the adjoining vessels** [7623-150]
T. Stutzmann, J. Hesser, Univ. of Heidelberg (Germany); W. Völker, M. Dobhan, Univ. of Würzburg (Germany)
- 7623 47 **A completely automated processing pipeline for lung and lung lobe segmentation and its application to the LIDC-IDRI data base** [7623-151]
T. Blaffert, R. Wiemker, H. Barschdorf, S. Kabus, T. Klinder, C. Lorenz, N. Schadeewaldt, Philips Research Europe (Germany); E. Dharaiya, Philips Healthcare CT (United States)
- 7623 48 **Gyrat parcellation of cortical surfaces via coupled flow field tracking** [7623-152]
G. Li, L. Guo, Northwestern Polytechnical Univ. (China); K. Li, Northwestern Polytechnical Univ. (China) and The Univ. of Georgia (United States); J. Nie, Northwestern Polytechnical Univ. (China); T. Liu, The Univ. of Georgia (United States)
- 7623 49 **Segmentation of deformable organs from medical images using particle swarm optimization and nonlinear shape priors (Cum Laude Poster Award)** [7623-153]
A. Afifi, T. Nakaguchi, N. Tsumura, Chiba Univ. (Japan)
- 7623 4A **Fuzzy affinity induced curve evolution** [7623-154]
Y. Zhuge, National Cancer Institute (United States); J. K. Udupa, Univ. of Pennsylvania (United States); R. W. Miller, National Cancer Institute (United States)
- 7623 4B **Multi-structure segmentation of multi-modal brain images using artificial neural networks** [7623-155]
E. Y. Kim, H. Johnson, The Univ. of Iowa (United States)
- 7623 4C **Segmentation of cervical cell images using mean-shift filtering and morphological operators** [7623-156]
C. Bergmeir, M. García Silvente, Univ. of Granada (Spain); J. Esquivias López-Cuervo, Hospital Univ. San Cecilio (Spain); J. M. Benítez, Univ. of Granada (Spain)
- 7623 4D **Multilevel wireless capsule endoscopy video segmentation** [7623-157]
S. Hwang, Univ. of Illinois at Springfield (United States); M. E. Celebi, Louisiana State Univ. (United States)
- 7623 4E **A probability tracking approach to segmentation of ultrasound prostate images using weak shape priors** [7623-158]
R. S. Xu, O. V. Michailovich, I. Solovey, M. M. A. Salama, Univ. of Waterloo (Canada)

- 7623 4F **A new osteophyte segmentation method with applications to an anterior cruciate ligament transection rabbit femur model via micro-CT imaging** [7623-159]
G. Liang, J. M. Elkins, The Univ. of Iowa (United States); A. Coimbra, L. T. Duong, D. S. Williams, Merck Research Labs. (United States); M. Sonka, P. K. Saha, The Univ. of Iowa (United States)
- 7623 4G **Segmentation of blurry object by learning from examples** [7623-160]
X. Yuan, Univ. of North Texas (United States)
- 7623 4H **Computer-aided detection of bladder tumors based on the thickness mapping of bladder wall in MR images** [7623-161]
H. Zhu, Stony Brook Univ. (United States); C. Duan, Stony Brook Univ. (United States) and Peking Univ. (China); R. Jiang, Stony Brook Univ. (United States); L. Li, City Univ. of New York at College of Staten Island (United States); Y. Fan, X. Yu, W. Zeng, X. Gu, Z. Liang, Stony Brook Univ. (United States)
- 7623 4I **Validation and detection of vessel landmarks by using anatomical knowledge** [7623-162]
T. Beck, Karlsruhe Institute of Technology (Germany) and Siemens Healthcare (Germany); D. Bernhardt, Siemens Healthcare (Germany); C. Biermann, Siemens Healthcare (Germany) and Eberhard-Karls-Univ. of Tuebingen (Germany); R. Dillmann, Karlsruhe Institute of Technology (Germany)
- 7623 4J **Automatic optic disc segmentation based on image brightness and contrast** [7623-163]
S. Lu, J. Liu, J. H. Lim, Z. Zhang, N. M. Tan, W. K. Wong, H. Li, Institute for Infocomm Research (Singapore); T. Y. Wong, Singapore National Eye Ctr. (Singapore)
- 7623 4K **Segmentation of blood clot from CT pulmonary angiographic images using a modified seeded region growing algorithm method** [7623-164]
B. Park, A. Furlan, A. Patil, K. T. Bae, Univ. of Pittsburgh (United States)
- 7623 4L **Development of an acquisition protocol and a segmentation algorithm for wounds of cutaneous Leishmaniasis in digital images** [7623-165]
K. Diaz, B. Castañeda, Pontificia Univ. Católica del Perú (Peru); C. Miranda, Univ. Peruana Cayetano Heredia (Peru); R. Lavarello, Univ. of Illinois at Urbana-Champaign (United States); A. Llanos, Univ. Peruana Cayetano Heredia (Peru)
- 7623 4M **Interactive segmentation method with graph cut and SVMs** [7623-166]
X. Zhang, J. Tian, D. Xiang, Y. Wu, Institute of Automation (China)
- 7623 4N **Segmentation of light and dark hair in dermoscopic images: a hybrid approach using a universal kernel** [7623-167]
N. H. Nguyen, Simon Fraser Univ. (Canada) and BC Cancer Agency (Canada); T. K. Lee, Simon Fraser Univ. (Canada) and BC Cancer Agency (Canada) and Univ. of British Columbia (Canada); M. S. Atkins, Simon Fraser Univ. (Canada)
- 7623 4O **Volumetric segmentation of trabecular bone into rods and plates: a new method based on local shape classification** [7623-168]
E. Brun, Univ. of California Santa Barbara (United States); J. Vicente, Lab. IUSTI, Univ. de Provence (France)
- 7623 4P **Image enhancement and edge-based mass segmentation in mammogram** [7623-169]
Y. Zhang, N. Tomuro, J. Furst, D. Stan Raicu, DePaul Univ. (United States)

POSTER SESSION: SHAPE

- 7623 4Q **Database guided detection of anatomical landmark points in 3D images of the heart** [7623-170]
T. Karavides, Erasmus MC Rotterdam (Netherlands) and Delft Univ. of Technology (Netherlands); K. Y. Esther Leung, Erasmus MC Rotterdam (Netherlands); P. Paclik, PR Sys Design (Netherlands); E. A. Hendriks, Delft Univ. of Technology (Netherlands); J. G. Bosch, Erasmus MC Rotterdam (Netherlands)
- 7623 4R **Partial volume correction using cortical surfaces** [7623-171]
K. R. Blaasvæ, C. D. Haubro, S. F. Eskildsen, Aalborg Univ. (Denmark); P. Borghammer, Aarhus Univ. Hospital (Denmark); D. Otzen, Aarhus Univ. (Denmark); L. R. Østergaard, Aalborg Univ. (Denmark)
- 7623 4S **Adaptive model based pulmonary artery segmentation in 3D chest CT** [7623-172]
M. Feuerstein, Nagoya Univ. (Japan); T. Kitasaka, Aichi Institute of Technology (Japan) and Nagoya Univ. (Japan); K. Mori, Nagoya Univ. (Japan)
- 7623 4T **A combined voxel and surface based method for topology correction of brain surfaces** [7623-173]
F. Gris, Australian e-Health Research Ctr. (Australia) and Ecole Nationale Supérieure de Physique de Strasbourg (France) and Univ. de Strasbourg (France); J-M. Favreau, Univ. Blaise Pascal (France); O. Acosta, Australian e-Health Research Ctr. (Australia); V. Barra, Univ. Blaise Pascal (France); O. Salvado, Australian e-Health Research Ctr. (Australia)
- 7623 4U **3D bone mineral density distribution and shape reconstruction of the proximal femur from a single simulated DXA image: an in vitro study** [7623-174]
T. Whitmarsh, L. Humbert, Univ. Pompeu Fabra (Spain) and Networking Research Ctr. on Bioengineering (Spain); M. De Craene, Networking Research Ctr. on Bioengineering (Spain) and Univ. Pompeu Fabra (Spain); L. M. del Río Barquero, CETIR Ctr. Mèdic (Spain); K. Fritscher, R. Schubert, Institute for Biomedical Image Analysis, UMIT (Austria); F. Eckstein, Paracelsus Medical Univ. (Austria); T. Link, Univ. of California, San Francisco (United States); A. F. Frangi, Univ. Pompeu Fabra (Spain) and Networking Research Ctr. on Bioengineering (Spain) and Institució Catalana de Recerca i Estudis Avançats (Spain)
- 7623 4V **Model-based segmentation of pathological lymph nodes in CT data** [7623-175]
L. Dornheim, Otto-von-Guericke-Univ. (Germany) and Dorheim Medical Images GmbH (Germany); J. Dornheim, I. Rössling, T. Mönch, Otto-von-Guericke-Univ. (Germany)
- 7623 4W **Evaluation of manual and computerized methods for the determination of axial vertebral rotation** [7623-176]
T. Vrtovec, F. Pernuš, B. Likar, Univ. of Ljubljana (Slovenia)
- 7623 4X **Sparse active shape models: influence of the interpolation kernel on segmentation accuracy and speed** [7623-177]
F. M. Sukno, Networking Research Ctr. on Bioengineering (Spain) and Univ. Pompeu Fabra (Spain); C. Butakoff, Univ. Pompeu Fabra (Spain) and Networking Research Ctr. on Bioengineering (Spain); B. H. Bijmens, Catalan Institution for Research and Advanced Studies (Spain) and Univ. Pompeu Fabra (Spain) and Networking Research Ctr. on Bioengineering (Spain); A. F. Frangi, Univ. Pompeu Fabra (Spain) and Networking Research Ctr. on Bioengineering (Spain) and Catalan Institution for Research and Advanced Studies (Spain)

- 7623 4Y **Smart manual landmarking of organs** [7623-178]
M. Erdt, Fraunhofer-IGD (Germany); M. Kirschner, S. Wesarg, Technische Univ. Darmstadt (Germany)
- 7623 4Z **Segmentation of the endocardial wall of the left atrium using local region-based active contours and statistical shape learning** [7623-179]
Y. Gao, B. Gholami, Georgia Institute of Technology (United States); R. S. MacLeod, J. Blauer, The Univ. of Utah (United States); W. M. Haddad, Georgia Institute of Technology (United States); A. R. Tannenbaum, Georgia Institute of Technology (United States) and Technion, IIT (Israel)
- 7623 50 **Automated determination of the centers of vertebral bodies and intervertebral discs in CT and MR lumbar spine images** [7623-180]
D. Štern, T. Vrtovec, F. Pernuš, B. Likar, Univ. of Ljubljana (Slovenia)
- 7623 52 **Construction of groupwise consistent shape parameterizations by propagation** [7623-182]
M. Kirschner, S. Wesarg, Technische Univ. Darmstadt (Germany)
- 7623 53 **A statistical shape and motion model for the prediction of respiratory lung motion** [7623-183]
J. Ehrhardt, R. Werner, A. Schmidt-Richberg, H. Handels, Univ. Medical Ctr. Hamburg-Eppendorf (Germany)

POSTER SESSION: TEXTURE

- 7623 54 **Assessing texture measures with respect to their sensitivity to scale-dependent higher order correlations in medical images using surrogates** [7623-184]
C. Rth, Max-Planck-Institut fr extraterrestrische Physik (Germany); D. Mller, Technische Univ. Mnchen (Germany); I. Sidorenko, R. Monetti, Max-Planck-Institut fr extraterrestrische Physik (Germany); J. Bauer, Technische Univ. Mnchen (Germany)

Author Index

Conference Committee

Symposium Chairs

Kevin R. Cleary, Georgetown University Medical Center (United States)
Maryellen L. Giger, The University of Chicago (United States)

Conference Chairs

Benoit M. Dawant, Vanderbilt University (United States)
David R. Haynor, University of Washington (United States)

Program Committee

Kyongtae T. Bae, University of Pittsburgh (United States)
Christian Barillot, Institut de Recherche en Informatique et Systèmes
Aléatoires (France)
Aaron Fenster, Robarts Research Institute (Canada)
Bernd Fischer, Universität zu Lübeck (Germany)
Alejandro F. Frangi, Universitat Pompeu Fabra (Spain)
Baowei Fei, Emory University School of Medicine (United States)
James C. Gee, University of Pennsylvania (United States)
Guido Gerig, The University of Utah (United States)
Tianhu Lei, The Children's Hospital of Philadelphia (United States)
Boudewijn P. F. Lelieveldt, Leids Universitair Medisch Centrum
(Netherlands)
Bostjan Likar, Univerza v Ljubljani (Slovenia)
Murray H. Loew, The George Washington University (United States)
Cristian Lorenz, Philips GmbH (Germany)
Frederik Maes, Katholieke Universiteit Leuven (Belgium)
Vincent A. Magnotta, The University of Iowa Hospitals and Clinics
(United States)
Sunanda D. Mitra, Texas Tech University (United States)
Kensaku Mori, Nagoya University (Japan)
Mads Nielsen, Københavns Universitet (Denmark)
Sébastien Ourselin, University College London (United Kingdom)
Josien P. Pluim, Universitair Medisch Centrum Utrecht (Netherlands)
Joseph M. Reinhardt, The University of Iowa (United States)
Daniel Rueckert, Imperial College London (United Kingdom)
Punam K. Saha, The University of Iowa (United States)
Olivier Salvado, Commonwealth Scientific and Industrial Research
Organisation (Australia)
Julia A. Schnabel, University of Oxford (United Kingdom)
Colin Studholme, University of California, San Francisco (United States)

Martin A. Styner, The University of North Carolina at Chapel Hill (United States)

Philippe Thevenaz, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

Jayaram K. Udupa, University of Pennsylvania (United States)

Bram van Ginneken, Universitair Medisch Centrum Utrecht (Netherlands)

Andreas Wahle, The University of Iowa (United States)

Session Chairs

- 1 Atlas-based Methods
Colin Studholme, University of California, San Francisco (United States)
- 2 Registration I
Sébastien Ourselin, University College London (United Kingdom)
- 3 Model-based Segmentation
Olivier Salvado, Australian e-Health Research Center (Australia) and CSIRO (Australia)
- 4 Image Enhancement
Bram van Ginneken, Universitair Medisch Centrum Utrecht (Netherlands)
- 5 Keynote and Vascular Image Analysis
David R. Haynor, University of Washington (United States)
Joseph M. Reinhardt, The University of Iowa (United States)
- 6 Segmentation I
Tianhu Lei, The Children's Hospital of Philadelphia (United States)
- 7 2D Image Segmentation
Sunanda D. Mitra, Texas Tech University (United States)
- 8 Shape
Jayaram K. Udupa, The University of Pennsylvania Health System (United States)
- 9 Registration II
Baowei Fei, Emory University School of Medicine (United States)
- 10 Diffusion Tensor Image Analysis
James C. Gee, University of Pennsylvania (United States)
- 11 Segmentation II
Aaron Fenster, Robarts Research Institute (Canada)