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7259 2B **Improved vessel enhancement for fully automatic coronary modeling** [7259-86]
V. Auvray, Philips Healthcare (France); U. Jandt, Philips Research Europe (Germany); R. Florent, Philips Healthcare (France); D. Schäfer, Philips Research Europe (Germany)

POSTERS: MOTION

7259 2C **Consistency of flow quantifications in tridirectional phase-contrast MRI** [7259-87]
R. Unterhinninghofen, Univ. of Karlsruhe (Germany); S. Ley, Univ. Hospital of Heidelberg (Germany); R. Dillmann, Univ. of Karlsruhe (Germany)

7259 2D **Detection of non-uniform multi-body motion in image time-series using saccades-enhanced phase correlation** [7259-88]
E. Gladilin, R. Eils, German Cancer Research Ctr. (Germany)

7259 2E **Motion-compensated post-processing of gated cardiac SPECT images using a deformable mesh model** [7259-89]
T. Marin, M. N. Wernick, Y. Yang, J. G. Brankov, Illinois Institute of Technology (United States)

7259 2G **A fast and accurate method for echocardiography strain rate imaging** [7259-91]
V. Tavakoli, Univ. of Louisville (United States); N. Sahba, Islamic Azad Univ. (Iran, Islamic Republic of); N. Hajebi, Shahed Univ. (Iran, Islamic Republic of); M. S. Nambakhsh, Kings College London (United Kingdom)

POSTERS: REGISTRATION

7259 2H **Automatic bone registration in MR knee images for cartilage morphological analysis** [7259-92]
J. H. Yoo, S. K. Kim, H. Hong, Seoul Women's Univ. (Korea, Republic of); H. Shim, Seoul National Univ. (Korea, Republic of); C. K. Kwoh, K. T. Bae, Univ. of Pittsburgh (United States)

7259 2I **Evaluation of moving least squares as a technique for non-rigid medical image registration** [7259-93]
V. Sathyanarayanan, R. E. Bodenheimer, Vanderbilt Univ. (United States)

7259 2J **Registration of EEG electrode positions to PET and fMRI images** [7259-94]
Z. Špiclin, B. Likar, F. Pernuš, Univ. of Ljubljani (Slovenia)

7259 2K **An image warping technique for rodent brain MRI-histology registration based on thin-plate splines with landmark optimization** [7259-95]
Y. Liu, M. Uberti, H. Dou, R. L. Mosley, H. E. Gendelman, M. D. Boska, Univ. of Nebraska Medical Ctr. (United States)

Part Two

7259 2L **Optimized graph-based mosaicking for virtual microscopy** [7259-96]
D. G. Steckhan, Fraunhofer Institute for Integrated Circuits IIS (Germany) and International Max-Planck Research School for Optics and Imaging (Germany); T. Wittenberg, Fraunhofer Institute for Integrated Circuits IIS (Germany)

7259 2M **Automated alignment of MRI brain scan by anatomic landmarks** [7259-97]
L. Zhang, Siemens Corporate Research (United States); Q. Xu, Vanderbilt Univ. (United States); C. Chen, Univ. of Illinois at Chicago (United States); C. L. Novak, Siemens Corporate Research (United States)

7259 2N **COLLINARUS: collection of image-derived non-linear attributes for registration using splines** [7259-98]
J. Chappelow, Rutgers Univ. (United States); B. N. Bloch, N. Rofsky, E. Genega, R. Lenkinski, W. DeWolf, Harvard Univ. (United States); S. Viswanath, A. Madabhushi, Rutgers Univ. (United States)

7259 2O **New GPU optimizations for intensity-based registration** [7259-99]
R. Yousfi, G. Bousquet, C. Chefd'hotel, Siemens Corporate Research (United States)

7259 2P **Nonrigid correction of interleaving artefacts in pelvic MRI** [7259-100]
J. Dowling, P. Bourgeat, D. Raffelt, J. Fripp, CSIRO, Australian e-Health Research Ctr. (Australia); P. B. Greer, Calvary Mater Newcastle Hospital (Australia) and Univ. of Newcastle (Australia); J. Patterson, Calvary Mater Newcastle Hospital (Australia); J. Denham, Calvary Mater Newcastle Hospital (Australia) and Univ. of Newcastle (Australia); S. Gupta, C. Tang, Calvary Mater Newcastle Hospital (Australia); P. Stanwell, Brigham and Woman's Hospital, Harvard Medical School (United States); S. Ourselin, Ctr. for Medical Imaging Computing, Univ. College London (United Kingdom); O. Salvado, CSIRO, Australian e-Health Research Ctr. (Australia)

7259 2Q **Gene to mouse atlas registration using a landmark-based nonlinear elasticity smoother** [7259-101]
T. Lin, Univ. of California, Los Angeles (United States); C. Le Guyader, Institut National des Sciences Appliquées de Rennes (France); E.-F. Lee, I. D. Dinov, P. M. Thompson, A. W. Toga, UCLA School of Medicine (United States); L. A. Vese, Univ. of California, Los Angeles (United States)

7259 2R **Mass preserving registration for lung CT (Cum Laude Poster Award)** [7259-102]
V. Gorbunova, P. Lo, Univ. of Copenhagen (Denmark); M. Loeve, H. A. Tiddens, Erasmus Medical Ctr. Sophia Children's Hospital (Netherlands); J. Sporring, Univ. of Copenhagen (Denmark); M. Nielsen, Univ. of Copenhagen (Denmark) and Nordic Bioscience A/S (Denmark); M. de Bruijne, Univ. of Copenhagen (Denmark) and Erasmus MC - Univ. Medical Ctr. Rotterdam (Netherlands)

7259 2S **Bead-based mosaicing of single plane illumination microscopy images using geometric local descriptor matching** [7259-103]
S. Preibisch, S. Saalfeld, Max Planck Institute of Molecular Cell Biology and Genetics (Germany); T. Rohlfing, SRI International (United States); P. Tomancak, Max Planck Institute of Molecular Cell Biology and Genetics (Germany)

7259 2T **Linear time algorithms for exact distance transform: elaboration on Maurer et al. algorithm** [7259-104]
K. C. Ciesielski, West Virginia Univ. (United States) and Univ. of Pennsylvania (United States); J. K. Udupa, X. Chen, Univ. of Pennsylvania (United States); G. J. Grevera, Univ. of Pennsylvania (United States) and Saint Joseph's Univ. (United States)

7259 2U **A simple penalty that encourages local invertibility and considers sliding effects for respiratory motion** [7259-105]
S. Y. Chun, J. A. Fessler, M. L. Kessler, Univ. of Michigan (United States)

7259 2V **Hierarchical unbiased group-wise registration for atlas construction and population comparison** [7259-106]
Y. Chen, D. Shen, H. Zhu, H. An, J. Gilmore, W. Lin, Univ. of North Carolina at Chapel Hill (United States)

7259 2W **A new method for assessing PET-MRI coregistration** [7259-107]
C. DeLorenzo, A. Klein, A. Mikhno, N. Gray, Columbia Univ. (United States); F. Zanderigo, New York State Psychiatric Institute (United States); J. J. Mann, R. V. Parsey, Columbia Univ. (United States) and New York State Psychiatric Institute (United States)

7259 2X **Nonrigid registration framework for bronchial tree labeling using robust point matching** [7259-108]
A. S. Roy, GE Global Research (India); U. Patil, Manipal Hospital (India); B. Das, GE Global Research (India)

7259 2Y **Intra-operative adaptive FEM-based registration accommodating tissue resection** [7259-109]
P. Risholm, E. L. Melvær, K. Mørken, Univ. of Oslo (Norway); E. Samset, Univ. of Oslo (Norway) and Rikshospitalet Univ. Hospital (Norway)

7259 2Z **Feature detector and descriptor for medical images** [7259-110]
D. Sargent, STI Medical Systems (United States); C.-I. Chen, C.-M. Tsai, Y.-F. Wang, Univ. of California, Santa Barbara (United States); D. Koppel, STI Medical Systems (United States)

7259 30 **Mapping ventricular expansion and its clinical correlates in Alzheimer's disease and mild cognitive impairment using multi-atlas fluid image alignment** [7259-111]
Y.-Y. Chou, N. Leporé, C. Avedissian, S. K. Madsen, X. Hua, Univ. of California, Los Angeles (United States); C. R. Jack, Jr., Mayo Clinic College of Medicine (United States); M. W. Weiner, Univ. of California, San Francisco (United States); A. W. Toga, P. M. Thompson, Univ. of California, Los Angeles (United States)

7259 31 **Freesurfer-initialized large deformation diffeomorphic metric mapping with application to Parkinson's disease** [7259-112]
J. Chen, Simon Fraser Univ. (Canada); S. J. Palmer, Brain Research Ctr., Univ. of British Columbia (Canada); A. R. Khan, Simon Fraser Univ. (Canada); M. J. Mckeown, Brain Research Ctr., Univ. of British Columbia (Canada); M. F. Beg, Simon Fraser Univ. (Canada)

7259 32 **Improving an affine and non-linear image registration and/or segmentation task by incorporating characteristics of the displacement field** [7259-113]
K. Ens, Univ. of Lübeck (Germany) and Philips Research Europe (Germany); S. Heldmann, Univ. of Lubeck (Germany); J. Modersitzki, McMaster Univ. (Canada); B. Fischer, Univ. of Lübeck (Germany)

7259 33 **Design of a synthetic database for the validation of non-linear registration and segmentation of magnetic resonance brain images** [7259-114]
K. Ens, Univ. of Lübeck (Germany) and Philips Research Europe (Germany); F. Wenzel, S. Young, Philips Research Europe (Germany); J. Modersitzki, McMaster Univ. (Canada); B. Fischer, Univ. of Lübeck (Germany)

7259 34 **Improving inter-fragmentary alignment for virtual 3D reconstruction of highly fragmented bone fractures** [7259-115]
B. Zhou, A. Willis, Y. Sui, The Univ. of North Carolina at Charlotte (United States); D. Anderson, T. Thomas, T. Brown, The Univ. of Iowa (United States)

7259 35 **Evaluation of the accuracy of deformable registration of prostate MRI for targeted prostate cancer radiotherapy** [7259-116]
K. Krishnan, Kitware, Inc. (United States); R. Cheung, The Univ. of Texas M.D. Anderson Cancer Ctr. (United States)

7259 36 **Validation of nonrigid registration for multi-tracer PET-CT treatment planning in rectal cancer radiotherapy** [7259-117]
P. Slagmolen, S. Roels, D. Loeckx, K. Haustermans, F. Maes, Univ. of Gasthuisberg (Belgium)

7259 37 **A tool for registration verification based on gradient correspondence** [7259-118]
P. Markelj, F. Pernuš, B. Likar, Univ. of Ljubljani (Slovenia)

7259 38 **Worst-case analysis of target localization errors in fiducial-based rigid body registration** [7259-119]
R. R. Shamir, L. Joskowicz, The Hebrew Univ. of Jerusalem (Israel)

7259 39 **Recent improvements in tensor scale computation and its applications to medical imaging** [7259-120]
Z. Xu, M. Sonka, P. K. Saha, Univ. of Iowa (United States)

POSTERS: SEGMENTATION

7259 3A **Segmentation of brain PET-CT images based on adaptive use of complementary information** [7259-03]
Y. Xia, The Univ. of Sydney (Australia) and Hong Kong Polytechnic Univ. (Hong Kong, China); L. Wen, The Univ. of Sydney (Australia), Hong Kong Polytechnic Univ. (Hong Kong, China), and Royal Prince Alfred Hospital (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)

7259 3B **Level-set segmentation of pulmonary nodules in radiographs using a CT prior** [7259-121]
J. S. Schildkraut, S. Chen, M. Heath, Carestream Health, Inc. (United States); W. G. O'Dell, P. Okunieff, M. C. Schell, Univ. of Rochester Medical Ctr. (United States); N. Paul, Toronto General Hospital (Canada)

7259 3D **A topology-oriented and tissue-specific approach to detect pleural thickenings from 3D CT data** [7259-123]
C. Buerger, RWTH Aachen Univ. (Germany); K. Chaisaowong, RWTH Aachen Univ. (Germany) and King Mongkut's Univ. of Technology (Thailand); A. Knepper, RWTH Aachen Univ. (Germany); T. Kraus, Univ. Hospital Aachen (Germany); T. Aach, RWTH Aachen Univ. (Germany)

7259 3F **Automated detection and delineation of lung tumors in PET-CT volumes using a lung atlas and iterative mean-SUV threshold** [7259-125]
C. Ballangan, X. Wang, Univ. of Sydney (Australia); S. Eberl, Univ. of Sydney (Australia) and Royal Prince Alfred Hospital (Australia); M. Fulham, Univ. of Sydney (Australia) and Royal Prince Alfred Hospital (Australia); D. Feng, Univ. of Sydney (Australia) and Hong Kong Polytechnic Univ. (Hong Kong, China)

7259 3G **A combined watershed and level set method for segmentation of brightfield cell images** [7259-126]
S. Tse, L. Bradbury, J. W. L. Wan, Univ. of Waterloo (Canada); H. Djambazian, R. Sladek, McGill Univ. and Genome Quebec Innovation Ctr. (Canada); T. Hudson, Ontario Institute for Cancer Research (Canada)

7259 3I **Pleural effusion segmentation in thin-slice CT** [7259-128]
R. Donohue, A. Shearer, National Univ. of Ireland, Galway (Ireland); J. Bruzzi, H. Khosa, Univ. College Hospital, Galway (Ireland)

7259 3L **3D contour based local manual correction of tumor segmentations in CT scans** [7259-131]
F. Heckel, J. H. Moltz, L. Bornemann, V. Dicken, Fraunhofer MEVIS (Germany); H.-C. Bauknecht, Charité, Institute for Radiology (Germany); M. Fabel, Christian-Albrechts- Univ. (Germany); M. Hittinger, Ludwig-Maximilians-Univ. (Germany); A. Kießling, Philipps-Univ. Marburg (Germany); S. Meier, Johannes Gutenberg Univ. (Germany); M. Püsken, Westfälische Wilhelms-Univ. Münster (Germany); H.-O. Peitgen, Fraunhofer MEVIS (Germany)

7259 3M **Cell boundary analysis using radial search for dual staining techniques** [7259-132]
S. Iftikhar, A. A. Bharath, Imperial College London (United Kingdom)

7259 3N **Maximize uniformity summation heuristic (MUSH): a highly accurate simple method for intracranial delineation** [7259-133]
R. Pierson, G. Harris, H. J. Johnson, S. Dunn, V. A. Magnotta, Univ. of Iowa (United States)

7259 3O **Robust model-based centerline extraction of vessels in CTA data** [7259-134]
T. Beck, Siemens Healthcare (Germany) and Univ. of Karlsruhe (Germany); C. Biermann, Siemens Healthcare (Germany) and Eberhard-Karls-Univ. of Tuebingen (Germany); D. Fritz, Siemens Healthcare (Germany); R. Dillmann, Univ. of Karlsruhe (Germany)

7259 3P **Simultaneous 3D segmentation of three bone compartments on high resolution knee MR images from osteoarthritis initiative (OAI) using graph cuts** [7259-135]
H. Shim, Seoul National Univ. (Korea, Republic of); C. K. Kwoh, Univ. of Pittsburgh (United States); I. D. Yun, Hankuk Univ. of Foreign Studies (Korea, Republic of); S. U. Lee, Seoul National Univ. (Korea, Republic of); K. Bae, Univ. of Pittsburgh (United States)

7259 3Q **User-assisted aortic aneurysm analysis** [7259-136]
A. Ouvrard, Siemens Corporate Research (United States); R. Renapuraar, R. M. Setser, S. Flamm, The Cleveland Clinic Foundation (United States); T. O'Donnell, Siemens Corporate Research (United States)

7259 3R **Efficient multigrid solver for the 3D random walker algorithm** [7259-137]
X. Wang, German Cancer Research Ctr. (Germany); T. Heimann, INRIA Sophia Antipolis (France); A. Naegel, G. Wittum, Ruprecht-Karls-Univ. of Heidelberg (Germany); H.-P. Meinzer, German Cancer Research Ctr. (Germany)

7259 3S **Automated segmentation and recognition of the bone structure in non-contrast torso CT images using implicit anatomical knowledge** [7259-139]
X. Zhou, T. Hayashi, M. Han, H. Chen, T. Hara, H. Fujita, Gifu Univ. School of Medicine (Japan); R. Yokoyama, M. Kanematsu, Gifu Univ. Hospital (Japan); H. Hoshi, Gifu Univ. School of Medicine (Japan)

7259 3T **Curve evolution with a dual shape similarity and its application to segmentation of left ventricle** [7259-140]
J. Woo, Univ. of Southern California (United States); B.-W. Hong, Chung-Ang Univ. (Korea, Republic of); A. Ramesh, G. Germano, Cedars-Sinai Medical Ctr. (United States); C.-C. Jay Kuo, Univ. of Southern California (United States); P. Slomka, Cedars-Sinai Medical Ctr. (United States)

7259 3U **Pulmonary airways tree segmentation from CT examinations using adaptive volume of interest** [7259-141]
S. C. Park, Univ. of Pittsburgh (United States); W. P. Kim, Chosun College of Science and Technology (Korea, Republic of); B. Zheng, J. K. Leader, J. Pu, J. Tan, D. Gur, Univ. of Pittsburgh (United States)

7259 3V **Left ventricle endocardium segmentation for cardiac CT volumes using an optimal smooth surface** [7259-142]
Y. Zheng, B. Georgescu, Siemens Corporate Research (United States); F. Vega-Higuera, Siemens Healthcare (Germany); D. Comaniciu, Siemens Corporate Research (United States)

7259 3W **Computer-assisted scheme for automated determination of imaging planes in cervical spinal cord MRI** [7259-143]
M. Tsurumaki, Nakajo Central Hospital (Japan); D.-Y. Tsai, Y. Lee, M. Sekiya, School of Health Sciences, Niigata Univ. (Japan); K. Kazama, Nakajo Central Hostpital (Japan)

7259 3X **Multi-channel MRI segmentation with graph cuts using spectral gradient and multidimensional Gaussian mixture model** [7259-144]
J. Lecoeur, INRIA, IRISA (France), Univ. of Rennes I, CNRS IRISA (France), and INSERM, IRISA (France); J. Ferré, Pontchaillou Univ. Hospital (France), INRIA, IRISA (France), and Univ. of Rennes 1, CNRS IRISA (France); D. L. Collins, Montreal Neurological Institute, McGill Univ. (Canada); S. P. Morrisey, Pontchaillou Univ. Hospital (France), INRIA, IRISA (France), and Univ. of Rennes I, CNRS IRISA (France); C. Barillot, INRIA, IRISA (France), Univ. of Rennes I, CNRS IRISA (France), and INSERM, IRISA (France)

7259 3Y **Employing anatomical knowledge in vertebral column labeling** [7259-145]
J. Yao, R. M. Summers, National Institutes of Health (United States)

7259 3Z **A coupled level-set framework for bladder wall segmentation with application to MRI-based virtual cystoscopy** [7259-146]
C. Duan, Peking Univ. (China) and SUNY at Stony Brook (United States);
S. Bao, Peking Univ. (China); Z. Liang, SUNY at Stony Brook (United States)

7259 40 **Segmentation of low contrast-to-noise ratio images applied to functional imaging using adaptive region growing** [7259-147]
J. Cabello, A. Bailey, I. Kitchen, Univ. of Surrey (United Kingdom); M. Guy, Royal Surrey County Hospital (United Kingdom); K. Wells, Univ. of Surrey (United Kingdom)

7259 41 **Novel level-set based segmentation method of the lung at HRCT images of diffuse interstitial lung disease (DILD)** [7259-148]
J. Lee, Catholic Univ. of Korea (Korea, Republic of); J. B. Seo, N. Kim, S. O. Park, Univ. of Ulsan College of Medicine (Korea, Republic of); H. Lee, Y. G. Shin, Seoul National Univ. (Korea, Republic of); S.-H. Kim, Sangmyung Univ. (Korea, Republic of)

7259 42 **Brain tissue segmentation of neonatal MR images using a longitudinal subject-specific probabilistic atlas** [7259-149]
F. Shi, Y. Fan, S. Tang, J. Gilmore, W. Lin, D. Shen, Univ. of North Carolina, Chapel Hill (United States)

7259 43 **Evaluation of atlas based mouse brain segmentation** [7259-150]
J. Lee, Univ. of North Carolina, Chapel Hill (United States); J. Jomier, S. Aylward, Kitware, Inc. (United States); M. Tyszka, California Institute of Technology (United States); S. Moy, Univ. of North Carolina, Chapel Hill (United States); J. Lauder, School of Medicine, Univ. of North Carolina, Chapel Hill (United States); M. Styner, Univ. of North Carolina, Chapel Hill (United States)

7259 44 **Decision algorithm for 3D blood vessel loop based on a route edit distance** [7259-151]
D. Kobayashi, Saitama Univ. (Japan); H. Yokota, RIKEN (Japan); S. Morishita, Univ. of Tokyo (Japan); K. Hiraoka, Saitama Univ. (Japan); K. Fukasaku, Himon-ya Hospital (Japan); R. Himeno, T. Mishima, Saitama Univ. (Japan)

7259 45 **Automated probabilistic segmentation of tumors from CT data using spatial and intensity properties** [7259-152]
J. L. Foo, Iowa State Univ. (United States); T. Lobe, Blank Children's Hospital (United States); E. Winer, Iowa State Univ. (United States)

7259 46 **Probabilistic boosting trees for automatic bone removal from CT angiography images (Honorable Mention Poster Award)** [7259-153]
A. Militzer, Friedrich-Alexander Univ. Erlangen-Nuremberg (Germany) and Siemens Healthcare (Germany); F. Vega-Higuera, Siemens Healthcare (Germany)

7259 47 **Mammography mass detection: a multi-stage hybrid approach** [7259-154]
N. Sahba, Islamic Azad Univ. (Iran, Islamic Republic of); V. Tavakoli, Univ. of Louisville (United States); A. Ahmadian, M. Giti, Tehran Univ. (Iran, Islamic Republic of)

7259 48 **An automated image segmentation and classification algorithm for immunohistochemically stained tumor cell nuclei** [7259-155]
H. Yeo, V. Sheinin, IBM Thomas J. Watson Research Ctr. (United States); Y. Sheinin, Mayo Clinic and Foundation (United States)

7259 49 **Reconstruction from a flexible number of projections in cone-beam computed tomography via active shape models** [7259-156]
P. B. Noël, J. J. Corso, J. Xu, K. R. Hoffmann, S. Schafer, A. M. Walczak, SUNY at Buffalo (United States)

7259 4A **Prostate contouring in MRI-guided biopsy** [7259-157]
S. Vikal, Queen's Univ. (Canada); S. Haker, C. Tempany, Brigham and Women's Hospital (United States); G. Fichtinger, Queen's Univ. (Canada)

7259 4B **A minimal path searching approach for active shape model (ASM)-based segmentation of the lung** [7259-158]
S. Guo, B. Fei, Emory Univ. (United States)

7259 4C **A fast quantum mechanics based contour extraction algorithm** [7259-159]
T. Lan, Y. Sun, M. Ding, Huazhong Univ. of Science and Technology (China)

7259 4D **Accurate, fast, and robust vessel contour segmentation of CTA using an adaptive self-learning edge model** [7259-160]
S. Grosskopf, Siemens Healthcare Sector (Germany); C. Biermann, Siemens Healthcare Sector (Germany) and Eberhard-Karls-Univ. of Tuebingen (Germany); K. Deng, Wuhan Union Hospital, HUST Tongji Medical School (China); Y. Chen, Shandong Medical Imaging Research Institute (China)

7259 4E **Tumor segmentation of multiecho MR T_2-weighted images with morphological operators** [7259-161]
W. Torres, Fundación Instituto de Ingeniería (Venezuela) and Univ. Central de Venezuela (Venezuela); M. Martín-Landrove, Univ. Central de Venezuela (Venezuela) and Ctr. de Diagnóstico Docente Las Mercedes (Venezuela); M. Paluszny, Univ. Nacional de Colombia (Colombia); G. Figueroa, G. Padilla, Univ. Central de Venezuela (Venezuela)

7259 4F **Morpho-geometrical approach for 3D segmentation of pulmonary vascular tree in multi-slice CT** [7259-162]
C. Fetita, TELECOM SudParis (France); P.-Y. Brillet, Univ. Paris 13, Avicenne Hospital (France); F. Prêteux, TELECOM SudParis (France)

7259 4G **Detection of clusters of microcalcification based on associated differential and morphological filters in full mammogram** [7259-163]
E. C. Silva, Jr., Univ. de São Paulo (Brazil) and Faculty de Technology of São José do Rio Preto (Brazil); H. Schiabel, L. Ventura, Univ. de São Paulo (Brazil)

7259 4H **Automatic quantification of neo-vasculature from Micro-CT** [7259-164]
Y. Mallya, A. K. Narayanan, Philips Electronics India Ltd. (India); L. Zagorchev, Philips Research North America (United States), Dartmouth Medical School (United States), and Dartmouth College (United States)

7259 4I **Automatic brain cropping enhancement using active contours initialized by a PCNN** [7259-165]
M. M. Swathanthira Kumar, J. M. Sullivan, Jr., Worcester Polytechnic Institute (United States)

7259 4J **Sphere extraction in MR images with application to whole-body MRI** [7259-166]
C. Wachinger, S. Baumann, Technische Univ. München (Germany); J. Zeltner, Siemens Medical Solutions (Germany); B. Glocker, N. Navab, Technische Univ. München (Germany)

7259 4K **Ridge-branch-based blood vessel detection algorithm for multimodal retinal images** [7259-167]
Y. Li, Univ. of Miami Miller School of Medicine (United States); N. Hutchings, Univ. of Waterloo (Canada); R. W. Knighton, G. Gregori, Univ. of Miami Miller School of Medicine (United States); B. J. Lujan, Univ. of California, Berkeley (United States); J. G. Flanagan, Univ. of Waterloo (Canada) and Univ. of Toronto (Canada)

7259 4L **A multi-modality segmentation framework: application to fully automatic heart segmentation** [7259-168]
C. Meyer, O. Ecabert, J. Peters, R. Kneser, Philips Research Europe (Germany); R. Manzke, R. C. Chan, Philips Research North America (United States); J. Weese, Philips Research Europe (Germany)

7259 4M **Automated determination of spinal centerline in CT and MR images** [7259-169]
D. Štern, T. Vrtovec, F. Pernuš, B. Likar, Univ. of Ljubljani (Slovenia)

7259 4N **A statistical approach to contour extraction based on quantum mechanics** [7259-170]
Y. Sun, T. Lan, X. Fu, M. Ding, Huazhong Univ. of Science and Technology (China)

7259 4O **Segmentation of 2D gel electrophoresis spots using a Markov random field** [7259-171]
C. S. Hoeflich, J. J. Corso, Univ. at Buffalo (United States)

7259 4P **Automatic anatomy recognition via multi-object-oriented active shape models** [7259-172]
X. Chen, J. K. Udupa, X. Zheng, Univ. of Pennsylvania (United States); A. Alavi, D. A. Torigian, Hospital of the Univ. of Pennsylvania (United States)

7259 4Q **Dependent component analysis based approach to robust demarcation of skin tumors** [7259-173]
I. Kopriva, A. Peršin, Ruđer Bošković Institute (Croatia); N. Puizina-Ivić, L. Mirić, Clinical Hospital and School of Medicine (Croatia)

7259 4S **Robust segmentation using non-parametric snakes with multiple cues for applications in radiation oncology** [7259-175]
J. Kalpathy-Cramer, Oregon Health & Science Univ. (United States); U. Ozertem, Yahoo! Inc. (United States); W. Hersh, M. Fuss, Oregon Health & Science Univ. (United States); D. Erdogmus, Northeastern Univ. (United States)

7259 4T **A machine learning approach to extract spinal column centerline from three-dimensional CT data** [7259-176]
C. Wang, Y. Li, W. Ito, K. Shimura, FUJIFILM Corp. (Japan); K. Abe, Nihon Univ. (Japan)

7259 4U **Affinity functions: recognizing essential parameters in fuzzy connectedness based image segmentation** [7259-177]
K. C. Ciesielski, West Virginia Univ. (United States) and Univ. of Pennsylvania (United States); J. K. Udupa, Univ. of Pennsylvania (United States)

7259 4V **Image segmentation using joint spatial-intensity-shape features: application to CT lung nodule segmentation** [7259-178]
X. Ye, M. Siddique, A. Douiri, G. Beddoe, G. Slabaugh, Medicsight PLC (United Kingdom)

7259 4W **Validation tools for image segmentation** [7259-179]
D. Padfield, J. Ross, GE Global Research (United States)

7259 4X **Segmentation of mosaicism in cervicographic images using support vector machines** [7259-180]
Z. Xue, L. R. Long, S. Antani, National Library of Medicine, NIH (United States); J. Jeronimo, Program for Appropriate Technology in Healthcare (United States); G. R. Thoma, National Library of Medicine, NIH (United States)

POSTERS: SHAPE AND TEXTURE

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Introduction

The 2009 SPIE Medical Imaging conference was held at "a magical place": Disney's Coronado Springs Resort in Florida. The symposium ran February 7–12, with the Image Processing conference spanning February 8–10. Despite the temptations of the Disney parks and the glorious Florida weather, the quality of the conference program lured the attendees indoors. A total of 274 abstracts were submitted to the Image Processing conference, a small increase over last year. Based on the reviews of our program committee, we selected 59 abstracts for oral presentation and 127 for poster presentation. This puts the acceptance rate this year at 68%.

The conference program contained several special highlights. Sunday evening saw the traditional workshop. This year's topic was "Image Processing Challenges in Small Animal Imaging." The workshop organization was in the hands of Dr. Boudewijn Lelieveldt of Leiden University Medical Center (The Netherlands). Together with Drs. David Wilson of Case Western Reserve University and Baowei Fei of Emory University School of Medicine, Dr. Lelieveldt facilitated a broad and informative workshop on the many image processing tasks required for small animal imaging and the corresponding specific difficulties in comparison to human imaging.

The Monday program ended with the poster session. The spacious poster hall offered ample opportunity for discussion of results with the authors, all while enjoying a drink and empanadas. A tie was presented to the two Cum Laude Student Poster Award winners. Their two papers, as well as the Honorable Mention award papers, are marked in these proceedings. The Michael B. Merickel Best Student Paper Award went to an author from the Image Processing conference: Robert J. Toth of Rutgers University.

Tuesday saw the excellent keynote speech by Dr. Peter Basser of the National Institute of Child Health and Human Development, NIH. His presentation, entitled "Frontiers in Diffusion Imaging," covered the topic of diffusion imaging from the basic principles of imaging to the most recent advances and future expectations in the field.

Before concluding, we would like to express our gratitude to the people we have relied on to put together the Image Processing 2009 conference. We are grateful to our program committee members, who reviewed the submissions, chaired the sessions, judged the posters, and advise us on how to improve and innovate for future conferences. We would also like to thank the staff at SPIE for their efforts throughout the year in organizing the Medical Imaging symposium.

Josien P. W. Pluim
Benoit M. Dawant

In Memoriam

Robert F. Wagner

1938–2008

A founding scientist and prolific contributor to modern medical imaging science and SPIE

Robert F. "Bob" Wagner was a tremendous innovator in the field of medical imaging and image assessment methodologies. He was a key figure in the creation of the SPIE Medical Imaging symposium. An SPIE Fellow since 1988, Bob was active on the program committee of the Physics of Medical Imaging conference at the Medical Imaging symposium, and author of numerous technical papers published by SPIE.

"The medical imaging community has lost one of its founding fathers and most highly regarded members," said Kyle Myers, director of the Division of Imaging and Applied Mathematics at the Center for Devices and Radiological Health (CDRH), U.S. Food and Drug Administration (FDA). "Bob's career was dedicated to the development of consensus measurement methods for the assessment of medical imaging systems, quantitative medical imaging and tissue characterization, and computer-aided diagnosis. He earned an international reputation in these areas and applied his expertise to a wide range of regulatory issues central to the FDA's mission. He enlightened the scientific community within the agency as well as the international scientific community through the many invited presentations and tutorials he gave in and outside of the FDA, his numerous publications, his many professional society activities, and his assistance in regulatory decision making."

At this 2009 Medical Imaging symposium, a joint keynote session hosted by the CAD and Image Perception conferences honored Bob's many contributions from the early 1970s to the present through a series of presentations by some of his closest collaborators.

David Brown (CDRH/FDA) recalled Bob's early years in the field, relating that after graduate and post-graduate work on the physics of nuclear interactions with radiation, Bob was hired by the Bureau of Radiological Health [a precursor to CDRH] to assess the dose reduction potential of radiographic intensifying screens made with phosphors developed in the color TV industry. Within three months he published a review of the relevant imaging literature from the medical, defense, consumer, and scientific communities, together with a charter for a laboratory program. Soon after, Bob introduced digital noise analysis to radiography, and showed that the new technology offered a 1.6- to 2.5-fold exposure reduction without compromising imaging performance. He then launched a program of inter-laboratory comparison of measurements on radiographic film samples that were circulated among fifteen commercial, government, and academic laboratories worldwide. In the process he became the prime mover for work toward consensus methodology for quantitative imaging performance measurements.

Mike Insana (Univ. of Illinois at Urbana-Champaign) shared memories of his years as Bob's post-doctoral student, working with Bob on the statistical characterization of ultrasound images. He described Bob as an exemplary mentor who shared his passion and joy for science.

Myers agreed, "Bob's greatest legacy may be the many young scientists he nurtured, who either worked directly under his tutelage at the FDA or otherwise benefitted from his unfailing patience and unselfish ease of availability."

Harry Barrett (Univ. of Arizona) began his presentation by relating noise-equivalent quanta (NEQ)—a concept central to Bob's unified approach to objective image performance assessment—to historical information-theoretic methods for evaluation of imaging systems. Barrett went on to describe the many ways in which NEQ was extended to address problems beyond the simple signal-known-exactly, background-known-exactly (SEK/BKE) task.

Ken Hanson (Los Alamos National Lab.) described his years of collaboration with Bob. He said they worked together, first in the area of noise characterization of radiographic and CT images and later on the evaluation of images confounded by artifacts. In this latter work, Bob and Ken pioneered the application of a decision theoretic approach to the assessment of image reconstruction algorithms, demonstrating that the common mean-square-error metric did not predict visual task performance as measured by detectability.

Bob's contemporary work, as described by Myers, "involved the consideration of the random effects associated with multiple readers of medical images and the logical extension of this work to the problem of the evaluation of multiple competing classifiers in statistical pattern recognition. Bob tackled problems of increasing complexity over the course of his career, relying throughout on the application of a unified, decision theoretic framework. In the process he brought about consensus on the importance of a task-based approach to the objective assessment of imaging systems."

During more than forty years of professional life, Bob Wagner made numerous contributions to the field of medical imaging that significantly impacted academia, industry, and the FDA. His brilliant mind, incredible intuition, passion for science, sense of humor, charm, and warm friendship will be greatly missed.