

Medical Imaging 2014

Computer-Aided Diagnosis

Stephen Aylward
Lubomir M. Hadjiiski
Editors

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L. Lu, J. Yao, E. Turkbey, R. M. Summers, National Institutes of Health (United States)

- 9035 29 **Surgical retained foreign object (RFO) prevention by computer aided detection (CAD)** [9035-82]
T. C. Marentis, L. Hadjiyiiski, A. R. Chaudhury, L. Rondon, N. Chronis, H.-P. Chan, Univ. of Michigan (United States)
- 9035 2A **Quantitative characterization of brain β -amyloid using a joint PiB/FDG PET image histogram** [9035-83]
J. J. Camp, D. P. Hanson, D. R. Holmes III, B. J. Kemp, M. L. Senjem, M. E. Murray, D. W. Dickson, J. E. Parisi, R. C. Petersen, V. J. Lowe, R. A. Robb, Mayo Clinic (United States)
- 9035 2B **Texture descriptors to distinguish radiation necrosis from recurrent brain tumors on multi-parametric MRI** [9035-84]
P. Tiwari, P. Prasanna, Case Western Reserve Univ. (United States); L. Rogers, L. Wolansky, C. Badve, A. Sloan, M. Cohen, Univ. Hospitals (United States); A. Madabhushi, Case Western Reserve Univ. (United States)

POSTER SESSION: LUNG, CHEST, AND ABDOMEN

- 9035 2C **Efficient 3D texture feature extraction from CT images for computer-aided diagnosis of pulmonary nodules** [9035-85]
F. Han, Stony Brook Univ. (China) and Northeastern Univ. (China); H. Wang, B. Song, Stony Brook Univ. (United States); G. Zhang, H. Lu, Fourth Military Medical Univ. (China); W. Moore, Z. Liang, Stony Brook Univ. (United States); H. Zhao, Northeastern Univ. (China)
- 9035 2D **A novel computer-aided detection system for pulmonary nodule identification in CT images** [9035-86]
H. Han, Stony Brook Univ. (United States); L. Li, College of Staten Island (United States); H. Wang, H. Zhang, W. Moore, Z. Liang, Stony Brook Univ. (United States)
- 9035 2E **Comparison of biophysical factors influencing on emphysema quantification with low-dose CT** [9035-87]
C. H. Heo, Seoul National Univ. (Korea, Republic of); J. H. Kim, Seoul National Univ. (Korea, Republic of) and Seoul National Univ. Hospital (Korea, Republic of)
- 9035 2F **Microstructure analysis of the secondary pulmonary lobules by 3D synchrotron radiation CT** [9035-88]
Y. Fukuoka, Y. Kawata, N. Niki, Univ. of Tokushima (Japan); K. Umetani, Japan Synchrotron Radiation Research Institute (Japan); Y. Nakano, Shiga Univ. of Medical Science (Japan); H. Ohmatsu, National Cancer Ctr. Hospital East (Japan); N. Moriyama, Tokyo Midtown Medical Ctr. (Japan); H. Itoh, Univ. of Fukui (Japan)
- 9035 2G **Wavelet based rotation invariant texture feature for lung tissue classification and retrieval** [9035-89]
J. K. Dash, S. Mukhopadhyay, R. Das Gupta, Indian Institute of Technology Kharagpur (India); M. K. Garg, N. Prabhakar, N. Khandelwal, Postgraduate Institute of Medical Education & Research (India)
- 9035 2H **Effect of image variation on computer-aided detection systems** [9035-90]
S. P. Rabbani, KTH Royal Institute of Technology (Sweden); P. Maduskar, R. H. H. M. Philipsen, L. Hogeweg, B. van Ginneken, Radboud Univ. Nijmegen Medical Ctr. (Netherlands)

- 9035 2I **3D mapping of airway wall thickening in asthma with MSCT: a level set approach** [9035-91]
C. Fefita, Télécom SudParis, Institut Mines-Telecom (France) and MAP5, CNRS (France);
P. Brillet, Univ. Paris 13 (France); R. Hartley, Glenfield Hospital, Univ. of Leicester (United
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- 9035 2J **3D intrathoracic region definition and its application to PET-CT analysis** [9035-92]
R. Cheirsilp, R. Bascom, T. W. Allen, W. E. Higgins, The Pennsylvania State Univ. (United
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- 9035 2K **Lung texture classification using bag of visual words** [9035-93]
M. Asherov, I. Diamant, H. Greenspan, Tel-Aviv Univ. (Israel)
- 9035 2L **Automated segmentation of murine lung tumors in x-ray micro-CT images** [9035-94]
J. K. Y. Swee, Imperial College London (United Kingdom); C. Sheridan, E. de Bruin,
J. Downward, F. Lassailly, Cancer Research UK (United Kingdom); L. Pizarro, Univ. College
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- 9035 2M **Longitudinal follow-up study of smoking-induced emphysema progression in low-dose CT
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H. Suzuki, M. Matsuihiro, Y. Kawata, N. Niki, Univ. of Tokushima (Japan); Y. Nakano, Shiga
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M. Kusumoto, T. Tsuchida, National Cancer Ctr. Hospital (Japan); K. Eguchi, Teikyo Univ.
School of Medicine (Japan); K. Kaneko, Tokyo Health Service Association (Japan);
N. Moriyama, Tokyo Midtown Medical Ctr. (Japan)
- 9035 2N **Potential usefulness of a topic model-based categorization of lung cancers as quantitative
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Y. Kawata, N. Niki, Univ. of Tokushima (Japan); H. Ohmatsu, K. Aokage, National Cancer
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M. Satake, National Cancer Ctr. Hospital East (Japan); K. Eguchi, Teikyo Univ. School of
Medicine (Japan); M. Kaneko, Tokyo Health Service Association (Japan); N. Moriyama,
Tokyo Midtown Medical Ctr. (Japan)
- 9035 2O **Computerized organ localization in abdominal CT volume with context-driven generalized
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J. Liu, Q. Li, Shanghai Advanced Research Institute (China)
- 9035 2P **Segmentation of urinary bladder in CT urography (CTU) using CLASS with enhanced
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- 9035 2Q **Level-set based free fluid segmentation with improved initialization using region growing in
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D. H. Kim, KAIST (Korea, Republic of); K. N. Plataniotis, Univ. of Toronto (Canada); Y. M. Ro,
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- 9035 2R **Performance of an automated renal segmentation algorithm based on morphological erosion and connectivity** [9035-100]
B. Abiri, B. Park, H. Chandarana, A. Mikheev, New York Univ. School of Medicine (United States); V. S. Lee, Univ. of Utah Health Systems (United States); H. Rusinek, New York Univ. School of Medicine (United States)
- 9035 2S **COMPASS-based ureter segmentation in CT urography (CTU)** [9035-101]
D. Zick, L. Hadjiyiyski, H.-P. Chan, R. H. Cohan, E. M. Caoili, C. Zhou, J. Wei, Univ. of Michigan (United States)
- 9035 2T **Ultrasound based computer-aided-diagnosis of kidneys for pediatric hydronephrosis** [9035-102]
J. J. Cerrolaza, C. A. Peters, A. D. Martin, E. Myers, Children's National Medical Ctr. (United States); N. Safdar, M. G. Linguraru, Children's National Medical Ctr. (United States) and George Washington Univ. (United States)
- 9035 2U **Automated abdominal lymph node segmentation based on RST analysis and SVM** [9035-103]
Y. Nimura, Y. Hayashi, Nagoya Univ. (Japan); T. Kitasaka, Aichi Institute of Technology (Japan); K. Furukawa, Nagoya Univ. (Japan); K. Misawa, Aichi Cancer Ctr. Hospital (Japan); K. Mori, Nagoya Univ. (Japan)
- 9035 2V **A universal approach for automatic organ segmentations on 3D CT images based on organ localization and 3D GrabCut** [9035-104]
X. Zhou, T. Ito, Gifu Univ. (Japan); X. Zhou, Nagoya Bunri Univ. (Japan); H. Chen, T. Hara, R. Yokoyama, Gifu Univ. (Japan); M. Kanematsu, Gifu Univ. Hospital (Japan); H. Hoshi, H. Fujita, Gifu Univ. (Japan)

POSTER SESSION: PROSTATE AND COLON

- 9035 2W **A novel colonic polyp volume segmentation method for computer tomographic colonography** [9035-105]
H. Wang, Stony Brook Univ. (United States) and Beihang Univ. (United States); L. C. Li, College of Staten Island (United States); H. Han, B. Song, H. Peng, Stony Brook Univ. (United States); Y. Wang, L. Wang, BeiHang Univ. (China); Z. Liang, Stony Brook Univ. (United States)
- 9035 2X **Progressive region-based colon extraction for computer-aided detection and quantitative imaging in cathartic and non-cathartic CT colonography** [9035-106]
J. J. Näppi, Y. Ryu, H. Yoshida, Massachusetts General Hospital (United States) and Harvard Medical School (United States)
- 9035 2Y **GISentinel: a software platform for automatic ulcer detection on capsule endoscopy videos** [9035-107]
S. Yi, H. Jiao, F. Meng, Xyken, LLC (United States); J. A. Leighton, P. Shabana, L. Rentz, Mayo Clinic (United States)

POSTER SESSION: VESSELS, HEART, AND EYE

- 9035 2Z **Retinal image quality assessment using generic features** [9035-108]
M. Fasih, J. M. P. Langlois, Ecole Polytechnique de Montréal (Canada); H. Ben Tahar, DIAGNOS Inc. (Canada); F. Cheriet, Ecole Polytechnique de Montréal (Canada)
- 9035 30 **A boosted optimal linear learner for retinal vessel segmentation** [9035-110]
E. Poletti, E. Grisan, Univ. degli Studi di Padova (Italy)
- 9035 31 **Glaucoma detection based on local binary patterns in fundus photographs** [9035-111]
M. Alsheh Ali, T. Hurtut, Univ. Paris Descartes (France) and École Polytechnique de Montréal (Canada); T. Faucon, DIAGNOS inc. (Canada); F. Cheriet, Ecole Polytechnique de Montréal (Canada)
- 9035 32 **Automatic multiresolution age-related macular degeneration detection from fundus images** [9035-112]
M. Garnier, T. Hurtut, Univ. Paris Descartes (France) and École Polytechnique de Montréal (Canada); H. Ben Tahar, DIAGNOS inc. (Canada); F. Cheriet, Ecole Polytechnique de Montréal (Canada)
- 9035 33 **Preliminary study on differentiation between glaucomatous and non-glaucomatous eyes on stereo fundus images using cup gradient models** [9035-114]
C. Muramatsu, Gifu Univ. (Japan); Y. Hatanaka, Univ. of Shiga Prefecture (Japan); K. Ishida, A. Sawada, T. Yamamoto, H. Fujita, Gifu Univ. (Japan)
- 9035 35 **From medical imaging to computer simulation of fractional flow reserve in four coronary artery trees** [9035-116]
S. Melchionna, S. Fortini, CNR, Istituto per i Processi Chimico-Fisici (Italy); M. Bernaschi, M. Bisson, CNR, Istituto per le Applicazioni del Calcolo (Italy); N. Kang, H.-E. Lee, Samsung Advanced Institute of Technology (Korea, Republic of)
- 9035 36 **Learning-based automatic detection of severe coronary stenoses in CT angiographies** [9035-117]
I. Melki, Univ. Paris-Est Marne-la-Vallée (France) and GE Healthcare (France); C. Cardon, N. Gogin, GE Healthcare (France); H. Talbot, L. Najman, Univ. Paris-Est Marne-la-Vallée (France)
- 9035 37 **Time-resolved volumetric MRI blood flow: a Doppler ultrasound perspective** [9035-118]
R. van Pelt, Technische Univ. Eindhoven (Netherlands); J. Oliván Bescós, Philips Healthcare (Netherlands); E. Nagel, King's College London (United Kingdom); A. Vilanova, Technische Univ. Eindhoven (Netherlands)

POSTER SESSION: MUSCULOSKELETAL AND MISCELLANEOUS

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- 9035 39 **Wide association study of radiological features that predict future knee OA pain: data from the OAI** [9035-121]
J. I. Galván-Tejada, J. M. Celaya-Padilla, A. Martínez-Torteya, J. Rodríguez-Rojas, V. Treviño, J. G. Tamez-Peña, Tecnológico de Monterrey (Mexico)
- 9035 3A **Vertebral degenerative disc disease severity evaluation using random forest classification** [9035-122]
H. E. Muñoz, J. Yao, National Institutes of Health (United States); J. E. Burns, Y. Pham, Univ. of California, Irvine (United States); J. Stieger, R. M. Summers, National Institutes of Health (United States)
- 9035 3B **Registration and color calibration for dermoscopy images in time-course analysis** [9035-123]
D. Furusho, H. Iyatomi, Hosei Univ. (Japan)
- 9035 3C **Towards quantitative assessment of calciphylaxis** [9035-124]
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J. Vogel, A. Dului, Technische Univ. München (Germany); Y. Oyamada, Technische Univ. München (Japan) and Waseda Univ. (Japan); J. Gardiazabal, Technische Univ. München (Germany); T. Lasser, Technische Univ. München (Germany) and Helmholtz Zentrum München GmbH (Germany); M. Ziai, R. Hein, N. Navab, Technische Univ. München (Germany)
- 9035 3E **Evaluation of a computer-aided skin cancer diagnosis system for conventional digital photography with manual segmentation** [9035-126]
A. Huang, National Central Univ. (Taiwan); W.-Y. Chang, Kaohsiung Medical Univ. (Taiwan) and E-Da Hospital, I-Shou Univ. (Taiwan); C.-H. Hsieh, H.-I. Liu, National Central Univ. (Taiwan); G. S. Chen, Kaohsiung Medical Univ. (Taiwan)
- 9035 3F **Computer aided diagnosis of diabetic peripheral neuropathy** [9035-127]
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- 9035 3G **An automatic early stage alveolar-bone-resorption evaluation method on digital dental panoramic radiographs** [9035-128]
M. Zhang, Gifu Univ. (Japan); A. Katsumata, Asahi Univ. (Japan); C. Muramatsu, T. Hara, Gifu Univ. (Japan); H. Suzuki, Asahi Univ. (Japan); H. Fujita, Gifu Univ. (Japan)
- 9035 3H **A method for automatic liver segmentation from multi-phase contrast-enhanced CT images** [9035-129]
R. Yuan, M. Luo, S. Wang, Huazhong Univ. of Science and Technology (China); L. Wang, Huazhong Univ. of Science and Technology (China) and Raycan Technology Co., Ltd. (China); Q. Xie, Huazhong Univ. of Science and Technology (China)
- 9035 3I **Classification of weak specular reflections in laparoscopic images** [9035-130]
B. Chakraborty, J. M. Marcinczak, R.-R. Grigat, Technische Univ. Hamburg-Harburg (Germany)

- 9035 3J **Active shape models incorporating isolated landmarks for medical image annotation** [9035-131]
T. Norajitra, H.-P. Meinzer, B. Stieltjes, K. H. Maier-Hein, Deutsches Krebsforschungszentrum (Germany)
- 9035 3K **Texture feature based liver lesion classification** [9035-132]
Y. Doron, N. Mayer-Wolf, I. Diamant, H. Greenspan, Tel-Aviv Univ. (Israel)
- 9035 3L **Automatic seed selection for segmentation of liver cirrhosis in laparoscopic sequences** [9035-133]
R. Sinha, J. M. Marcinczak, R.-R. Grigat, Technische Univ. Hamburg-Harburg (Germany)
- 9035 3M **Infective endocarditis detection through SPECT/CT images digital processing** [9035-134]
A. Moreno, R. Valdés, L. Jiménez, Univ. Autónoma Metropolitana (Mexico); E. Vallejo, ABC Medical Ctr. Santa Fe (Mexico); S. Hernández, G. Soto, Instituto Nacional de Cardiología - Ignacio Chávez (Mexico)
- 9035 3N **A preliminary study for fully automated quantification of psoriasis severity using image mapping** [9035-136]
K. Mukai, H. Iyatomi, Hosei Univ. (Japan)

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Head, Neck, and Novel Methods

Marius George Linguraru, Children's National Medical Center
(United States)
Eva M. van Rikxoort, Radboud University Nijmegen Medical Center
(Netherlands)

Prostate and Colon I

Janne J. Näppi, Massachusetts General Hospital (United States) and
Harvard Medical School (United States)
Maryellen L. Giger, The University of Chicago (United States)

Vessels, Heart, and Eye I

Bram van Ginneken, Radboud University Nijmegen Medical Center
(Netherlands)
Thomas M. Deserno, RWTH Aachen (Germany)

Keynote: Joint Session with Conferences 9035 and 9039

Heinz U. Lemke, Computer Assisted Radiology and Surgery
(Germany)

Lung, Chest, and Abdomen I

Nicholas A. Petrick, U.S. Food and Drug Administration (United States)
Jong Hyo Kim, Seoul National University College of Medicine
(Korea, Republic of)

Vessels, Heart, and Eye II

Marleen de Bruijne, Erasmus MC (Netherlands) and University of
Copenhagen (Denmark)

Clarisa I. Sánchez, Radboud University Nijmegen Medical Center
(Netherlands)

Breast I

Joseph Y. Lo, Duke University Medical Center (United States)

Georgia D. Tourassi, Oak Ridge National Laboratory (United States)

Prostate and Colon II

Ronald M. Summers, National Institutes of Health (United States)

Musculoskeletal and Miscellaneous

Axel Wismüller, University of Rochester Medical Center
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Michael F. McNitt-Gray, University of California, Los Angeles
(United States)

Breast II

Horst Karl Hahn, Fraunhofer MEVIS (Germany)

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Lung, Chest, and Abdomen II

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(United States)

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Awards



Robert F. Wagner Award

Robert F. Wagner was an active scientist in the SPIE Medical Imaging meeting, starting with the first meeting in 1972 and continuing throughout his career. He ensured that the BRH, and subsequently the CDRH, was a sponsor for the early and subsequent Medical Imaging meetings, helping to launch and ensure the historical success of the meeting. The Robert F. Wagner All-Conference Best Student Paper Award (established 2014) is acknowledgment of his many important contributions to the Medical Imaging meeting and his many important advances to the field of medical imaging.

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2014 Recipients:

First Place: **MRI signal and texture features for the prediction of MCI to Alzheimer's disease progression** (9035-78)

A. Martínez-Torteya, J. A. Rodríguez-Rojas, J. M. Celaya-Padilla, J. I. Galván-Tejada, V. M. Treviño-Alvarado, Sr., J. G. Tamez-Peña, Tecnológico de Monterrey (Mexico)

Second Place: **Distinguishing benign confounding treatment changes from residual prostate cancer on MRI following laser ablation** (9036-49)

G. Litjens, H. Huisman, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); R. Elliot, Case Western Reserve Univ. (United States); N. Shih, M. Feldman, Univ. of Pennsylvania (United States); S. Viswnath, Case Western Reserve Univ. (United States); J. Futterer, J. Bomers, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); A. Madabhushi, Case Western Reserve Univ. (United States)

