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**Biomedical Applications in
Molecular, Structural, and
Functional Imaging**

**Andrzej Krol
Barjor Gimi**
Editors

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Contents

ix	<i>Authors</i>
xiii	<i>Conference Committee</i>
xv	<i>Introduction</i>
xvii	<i>2017 Medical Imaging Award Recipients</i>

OPTICAL

10137 02	Evaluation of the anti-neoplastic effect of sorafenib on liver cancer through bioluminescence tomography [10137-1]
10137 04	X-ray luminescence computed tomography: a sensitivity study [10137-3]
10137 05	A radiative transfer equation-based image-reconstruction method incorporating boundary conditions for diffuse optical imaging [10137-4]
10137 06	Image deblurring using a joint entropy prior in x-ray luminescence computed tomography [10137-5]

PULMONARY

10137 07	An image processing framework for automated analysis of swimming behavior in tadpoles with vestibular alterations [10137-6]
10137 08	Automated boundary segmentation and wound analysis for longitudinal corneal OCT images [10137-7]
10137 09	Characterizing the lung tissue mechanical properties using a micromechanical model of alveolar sac [10137-8]
10137 0A	Registration pipeline for pulmonary free-breathing ¹H MRI ventilation measurements [10137-9]
10137 0B	Development of a semi-automated combined PET and CT lung lesion segmentation framework [10137-10]
10137 0C	Algorithmic evaluation of lower jawbone segmentations [10137-11]

BONE, SKELETAL IMAGING, AND BIOMECHANICS

- 10137 OE **Atlas-based automatic measurements of the morphology of the tibiofemoral joint**
[10137-13]
- 10137 OF **A device for real-time live-cell microscopy during dynamic dual-modal
mechanostimulation** [10137-14]
- 10137 OG **A FSI-based structural approach for micromechanical characterization of adipose tissue**
[10137-15]
- 10137 OH **Anatomical based registration of multi-sector x-ray images for panorama reconstruction**
[10137-16]

FLUID AND CARDIOVASCULAR

- 10137 OI **Use of patient specific 3D printed neurovascular phantoms to evaluate the clinical utility of
a high resolution x-ray imager** [10137-17]
- 10137 OJ **Blood flow measurement using digital subtraction angiography for assessing hemodialysis
access function** [10137-18]
- 10137 OK **Cerebral vessels segmentation for light-sheet microscopy image using convolutional
neural networks** [10137-19]
- 10137 OL **Real-time myocardium segmentation for the assessment of cardiac function variation**
[10137-20]
- 10137 OM **Extracellular matrix directions estimation of the heart on micro-focus x-ray CT volumes**
[10137-21]

NEUROLOGICAL IMAGING I

- 10137 ON **Identifying cognitive impairment in type 2 diabetes with functional connectivity: a
multivariate pattern analysis of resting state fMRI data** [10137-22]
- 10137 OO **Brain structure in sagittal craniosynostosis** [10137-23]
- 10137 OP **A multivariate pattern analysis study of the HIV-related white matter anatomical structural
connections alterations** [10137-24]
- 10137 OQ **Decreased triple network connectivity in patients with post-traumatic stress disorder**
[10137-25]
- 10137 OR **CIVILITY: cloud based interactive visualization of tractography brain connectome**
[10137-26]
- 10137 OS **Ex vivo tissue imaging of human glioblastoma using a small bore 7T MRI and correlation
with digital pathology and proteomics profiling** [10137-27]

INNOVATIONS IN IMAGE PROCESSING I

- 10137 0T **A fast image registration approach of neural activities in light-sheet fluorescence microscopy images** [10137-28]
- 10137 0U **Phenotypic feature quantification of patient derived 3D cancer spheroids in fluorescence microscopy image** [10137-29]
- 10137 0V **Disease quantification on PET/CT images without object delineation** [10137-30]
- 10137 0W **An automatic cells detection and segmentation** [10137-31]
- 10137 0X **Partial volume morphology: eliminating precision loss in binary morphology** [10137-32]
- 10137 0Y **Multi-frame super resolution robust to local and global motion** [10137-33]

MACHINE LEARNING

- 10137 0Z **Boosted learned kernels for data-driven vesselness measure** [10137-35]
- 10137 10 **Deep learning for brain tumor classification** [10137-36]
- 10137 11 **Robust hepatic vessel segmentation using multi deep convolution network** [10137-37]
- 10137 12 **Automated diagnosis of Alzheimer's disease with multi-atlas based whole brain segmentations** [10137-38]
- 10137 13 **Towards an affordable deep learning system: automated intervertebral disc detection in x-ray images** [10137-39]

NOVEL IMAGING METHODS

- 10137 14 **Implementation of material decomposition using an EMCCD and CMOS-based micro-CT system** [10137-40]
- 10137 15 **Ultrahigh resolution and brilliance laser wakefield accelerator betatron x-ray source for rapid *in vivo* tomographic microvasculature imaging in small animal models** [10137-41]
- 10137 17 **A simulation study of spectral Čerenkov luminescence imaging for tumour margin estimation** [10137-86]
- 10137 18 **Bipolar current injection methods for electrical impedance tomography: a comparative study** [10137-89]

NEUROLOGICAL IMAGING II

- 10137 1A **Learning discriminative functional network features of schizophrenia** [10137-95]

- 10137 1B **Using large-scale Granger causality to study changes in brain network properties in the Clinically Isolated Syndrome (CIS) stage of multiple sclerosis** [10137-52]
- 10137 1C **Investigating changes in resting-state connectivity from functional MRI data in patients with HIV associated neurocognitive disorder using MCA and machine learning** [10137-53]
- 10137 1D **Automatic falx cerebri and tentorium cerebelli segmentation from magnetic resonance images** [10137-70]
- 10137 1E **Diffusion tractography and graph theory analysis reveal the disrupted rich-club organization of white matter structural networks in early Tourette Syndrome children** [10137-54]

INNOVATIONS IN IMAGE PROCESSING II

- 10137 1F **Efficient multi-atlas registration using an intermediate template image** [10137-76]
- 10137 1G **Test suite for image-based motion estimation of the brain and tongue** [10137-47]
- 10137 1H **Longitudinal analysis of mouse SDOCT volumes** [10137-48]
- 10137 1I **A fully-automated multiscale kernel graph cuts based particle localization scheme for temporal focusing two-photon microscopy** [10137-49]
- 10137 1J **Inter-session repeatability of retinal layer thickness in optical coherence tomography** [10137-50]

POSTERS: OPTICAL

- 10137 1K **Spatially varying regularization based on retrieved support in diffuse optical tomography** [10137-55]
- 10137 1L **Low-intensity calibration source for optical imaging systems** [10137-56]
- 10137 1M **Improving graph-based OCT segmentation for severe pathology in retinitis pigmentosa patients** [10137-57]
- 10137 1O **Simulation of photoacoustic tomography (PAT) system in COMSOL and comparison of two popular reconstruction techniques** [10137-59]

POSTERS: PULMONARY

- 10137 1P **Automatic segmentation of vessels in in-vivo ultrasound scans** [10137-60]
- 10137 1Q **Computerized method to compensate for breathing body motion in dynamic chest radiographs** [10137-61]

10137 1R **Time-series analysis of lung texture on bone-suppressed dynamic chest radiograph for the evaluation of pulmonary function: a preliminary study** [10137-62]

10137 1S **Extraction of membrane structure in eyeball from MR volumes** [10137-63]

POSTERS: BIOMECHANICS

10137 1T **Robust segmentation of trabecular bone for *in vivo* CT imaging using anisotropic diffusion and multi-scale morphological reconstruction** [10137-64]

10137 1U **Direct biomechanical modeling of trabecular bone using a nonlinear manifold-based volumetric representation** [10137-65]

POSTERS: FLUID AND CARDIOVASCULAR

10137 1V **Subject-specific left ventricular dysfunction modeling using composite material mechanics approach** [10137-66]

10137 1W **Nonrigid 2D registration of fluoroscopic coronary artery image sequence with propagated deformation field** [10137-67]

10137 1X **Current source enhancements in Electrical Impedance Spectroscopy (EIS) to cancel unwanted capacitive effects** [10137-68]

POSTERS: NEUROLOGICAL IMAGING

10137 1Y **¹H magnetic resonance spectroscopy metabolite profiles of neonatal rat hippocampus and brainstem regions following early postnatal exposure to intermittent hypoxia** [10137-51]

10137 1Z **Quantitative analysis of structural variations in corpus callosum in adults with multiple system atrophy (MSA)** [10137-71]

POSTERS: INNOVATIONS IN IMAGE PROCESSING

10137 20 **Correlation of BAT activity with thyroid metabolic activity in patients with fibromyalgia** [10137-46]

10137 21 **A feasibility study on estimation of tissue mixture contributions in 3D arterial spin labeling sequence** [10137-72]

10137 23 **Interactive iterative relative fuzzy connectedness lung segmentation on thoracic 4D dynamic MR images** [10137-74]

10137 24 **Noise reduction in OCT skin images** [10137-75]

- 10137 25 **A spatially-variant deconvolution method based on total variation for optical coherence tomography images** [10137-77]
- 10137 26 **Semi-automatic segmentation of the placenta into fetal and maternal compartments using intravoxel incoherent motion MRI** [10137-78]
- 10137 27 **FADTTster: accelerating hypothesis testing with functional analysis of diffusion tensor tract statistics** [10137-79]
- 10137 28 **Monitoring of VX2 tumor growth in rabbit liver using T2-weighted and dynamic contrast-enhanced magnetic resonance imaging at 1.5T** [10137-80]
- 10137 29 **Evaluation of a pulmonary strain model by registration of dynamic CT scans** [10137-81]
- 10137 2A **A numerical framework for studying the biomechanical behavior of abdominal aortic aneurysm** [10137-82]
- 10137 2B **An intelligent despeckling method for swept source optical coherence tomography images of skin** [10137-34]

POSTERS: MACHINE LEARNING

- 10137 2C **An automated image processing method for classification of diabetic retinopathy stages from conjunctival microvasculature images** [10137-83]
- 10137 2D **Machine learning for cardiac ultrasound time series data** [10137-84]
- 10137 2E **Early classification of Alzheimer's disease using hippocampal texture from structural MRI** [10137-85]

POSTERS: NOVEL IMAGING METHODS

- 10137 2G **Deep learning based classification for head and neck cancer detection with hyperspectral imaging in an animal model** [10137-88]
- 10137 2H **Diagnostic index: an open-source tool to classify TMJ OA condyles** [10137-90]
- 10137 2I **Undersampling strategies for compressed sensing accelerated MR spectroscopic imaging** [10137-91]
- 10137 2J **Federating heterogeneous datasets to enhance data sharing and experiment reproducibility** [10137-92]
- 10137 2K **Exploring the use of optical flow for the study of functional NIRS signals** [10137-93]

Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Abd. Rahni, Ashrani Aizzuddin, 0B
Abidin, Anas Z., 1B, 1C
Adabi, Saba, 24, 25, 2B
Akita, Toshiaki, 0M
Alex, Anitha, 18
Almasganj, Mohammad, 25
An, Ningyu, 2E
Andescavage, Nickie, 26
Antony, Bhavna J., 1H
Arendt Jensen, Jørgen, 1P
Arridge, Simon R., 17
Bach, Thomas, 1X
Bai, ErWei, 1U
Bashivan, Pouya, 1A
Bates, Nathan, 1J
Beach, R. J., 0F
Bednarek, Daniel R., 0I, 14
Benavides, Erika, 2H
Ben-Zikri, Yehuda Kfir, 0H
Bertozzi, Andrea L., 2D
Bhattacharya, Debanjali, 1Z
Bikkamane Jayadev, Nutandev, 2I
Bittner, Ava K., 1M
Blair, Norman P., 2C
Blitz, Ari M., 1F
Brehler, M., 0E
Brehm, Anthony, 29
Brink-Kjaer, Andreas, 1P
Brioschi, M. L., 20
Brown, Matthew, 1A
Buchholz, James H. J., 07
Budin, Francois, 2H
Buist, Richard, 0S
Bullen, Jennifer, 0J
Butman, John A., 1D
C., Sowmiya, 1O
Cabrera DeBuc, D., 1J
Calvert, Nick, 17
Campbell, Robert M., 23
Capaldi, Dante P. I., 0A
Capraro, Anthony, 23
Carass, Aaron, 1D, 1F, 1H, 1M
Cecchi, Guillermo, 1A
Cevidanes, Lucia, 2H, 2J
Chang, Chiung-Yun, 28
Chang, Hyuk-Jae, 1W
Chang, John C., 2I
Chatwin, Chris, 1X
Chau, Felix, 2C
Chaudhary, Vipin, 13
Chen, Amy, 2G
Chen, Cheng, 1T, 1U
Chen, Haoyu, 08
Chen, Po-Chou, 28
Chen, Xi, 1Y
Chen, Xiaojun, 0C
Chen, Xinjian, 08
Chen, Yen-Wei, 11
Chen, Zhuo Georgia, 2G
Chi, Chongwei, 02
Chitiboi, Teodora, 0L
Chitturi, Sathya R., 2D
Chmiel, T., 0F
Cho, Sanghoon, 1K
Cho, Seunryong, 1K
Chockanathan, Udaysankar, 1B
Cody-Hazlett, Heather, 0O
Conforto, Silvia, 2B
Costa, A. P. C., 20
Cui, Xingwei, 0N, 0P
Darnall, Robert A., 1Y
Daveluy, Steven, 24, 25
Dewey, Blake E., 1F
Di Cesare, Robert, 0A
Ding, Yanhui, 2E
Dixon, S. J., 0F
Dong, Di, 0K, 0N
Dong, Enqing, 0P
Dou, Xuejiao, 2E
DSouza, Adora M., 1B, 1C
Du, Yang, 02
Dursun, Serdar, 1A
Dutta, Joyita, 06
Egger, Jan, 0C
El Fakhri, Georges, 06
Fabbri, Daniel, 10
Fatemizadeh, Emad, 24, 25
Fatouraee, Nasser, 0G
Fattori, Liana, 2J
Fei, Baowei, 2G
Fenster, Aaron, 0A
Fernandez Rojas, Raul, 2K
Fitzpatrick, Danielle, 0V
Foruzan, Amir Hossein, 11
Fourmaux, Sylvain, 15
Frahm, Jens, 0L
Fritzsich, Bernd, 07
Gall, Markus, 0C

Gheiratmand, Mina, 1A
 Gilmore, John, 0O
 Gimi, Barjor, 1Y
 Gimple-Smith, Rachel, 0O
 Glaister, Jeffrey, 1D
 Gomes, Liliane, 2H
 Gomez, Arnold D., 1G
 Greiner, Russell, 1A
 Grisan, E., 0Z
 Guo, Fumin, 0A
 Haddad, Seyed Mohammad Hassan, 0G, 1V
 Hahn, Horst K., 0L
 Han, Ligong, 0W
 Han, Xian-Hua, 1I
 He, Huiguang, 1E
 Helguera, Maria, 2A
 Helo, Yusef, 17
 Hennemuth, Anja, 0L
 Hernandez-Juarez, Jesus, 2K
 Hochegger, Kerstin, 0C
 Holdsworth, David W., 0F, 1L
 Hong, Youngtaek, 1W
 Hsiao, Chia-Chi, 28
 Hu, Chaoen, 0K, 0T
 Hu, Houchun Harry, 2I
 Huang, Haifan, 08
 Huang, Xia, 1I
 Huang, Xu, 2K
 Huellebrand, Markus, 0L
 Hui, Hui, 0K, 0T
 Inglese, Matilde, 1B
 Ionita, Ciprian N., 0I, 14
 Iwamoto, Yutaro, 1I
 Iyer, Geoffrey, 2D
 Jalalahmadi, Golnaz, 2A
 Jao, Jo-Chi, 28
 Jha, Abhinav K., 05
 Ji, Zhengping, 0Y
 Jin, Dakai, 1T, 1U
 Kang, Mi-Sun, 0U
 Karami, Elham, 09, 1V
 Khansari, Mazyar M., 2C
 Kieffer, Jean-Claude, 15
 Kim, Byung-Jin, 1H
 Kim, Myoung-Hee, 0U
 Kim, Sunghyung, 0O
 Kin, Taichi, 1S
 Kitasaka, Takayuki, 0M
 Kitrungrotsakul, Titinunt, 1I
 Kodibagkar, Vikram D., 2I
 Koirala, Nischal, 0J
 Krol, Andrzej, 15
 Landman, Bennett A., 10
 Lang, Andrew, 1H, 1M
 Le, T. Hoang Ngan, 0W
 Lee, Soochahn, 1W
 Lee, Ting-Yim, 09
 Levy, Steven M., 1T
 Li, Baojuan, 0Q, 2I
 Li, Changqing, 04
 Li, Chunqiang, 1I
 Li, Hongjun, 0P
 Li, Liang, 0Q
 Li, Nuoyu, 2D
 Li, Quanzheng, 06
 Li, Ruili, 0P
 Liang, Qian, 02
 Liang, Zhengrong, 2I, 29
 Limperopoulos, Catherine, 26
 Lin, Lanfen, 1I
 Linte, Cristian A., 0H, 2A
 Liu, Xia, 0K
 Liu, Yang, 0Q, 2I
 Liu, Yong, 2E
 Liu, Yue, 1E
 Liu, Zhenyu, 0N, 0P
 Llerena, Rafael, 2D
 Lopes-Calças, Ana, 0S
 Lorusso, D., 0F
 Lu, Guolan, 2G
 Lu, Hongbing, 0Q, 2I
 Lu, Jia, 1U
 Lun, Michael C., 04
 Luo, Yuan, 12
 M., Ramasubba Reddy, 18
 Ma, Ling, 2G
 Mac, Ka-Wai, 28
 Machado, J. E. M. M., 20
 Magyar, Thalia, 0S
 Maia, J. M., 20
 Martin, Melanie, 0S
 Matsuda, Hiroaki, 1Q, 1R
 Matsuda, Kant M., 0S
 McDonough, Joseph M., 23
 McLennan, Gordon, 0J
 Mehregan, Darius, 24, 2B
 Mendez, Stacy, 0H
 Meng, Hui, 0T
 Mertzaniidou, Thomy, 17
 Moghadas, Hadi, 09
 Mohebbikarkhoran, Hamed, 2B
 Mokri, Siti Salasiah, 0B
 Mori, Kensaku, 0M, 1S
 Moshavegh, Ramin, 1P
 Moustapha, Mahmoud, 0O
 Muller, Susan, 2G
 Muniz, Luciana, 2J
 Nasirivanaki, Mohammadreza, 24, 25, 2B
 Nemani, Krishnamurthy V., 1Y
 Nikolov, H. N., 0F
 Noel, Jean, 27
 O'Neill, William, 2C
 O'Brien-Moran, Zoe, 0S
 Oda, Hirohisa, 0M
 Oda, Masahiro, 0M, 1S
 Odhner, Dewey, 0V, 23
 Oechtering, Thekla, 0L
 Ou, Keng-Liang, 2K
 Ovsiannikov, Ilia, 0Y
 Owens, William, 13

Pan, Lingjiao, 08
 Paniagua, Beatriz, 0O, 2H, 2J
 Park, Taewoo, 1W
 Parraga, Grace, 0A
 Pascal, Laura, 2H
 Patel, Kamlesh, 0O
 Paul, Justin S., 10
 Peng, Yun, 1E
 Penn, Richard, 2C
 Pham, Dzung L., 1D
 Pieper, Steve, 2H
 Piven, Joseph, 0O
 Plassard, Andrew J., 10
 Podgorsak, Alexander R., 14
 Polosecki, Pablo, 1A
 Pomeroy, Marc, 29
 Prieto, Juan C., 0R, 27, 2H, 2J
 Prince, Jerry L., 1D, 1F, 1G, 1H, 1M
 Pu, Huangsheng, 21
 Puechmaïlle, Danaële, 0R
 Qian, Wei, 1I
 Rahmim, Arman, 05
 Ramsay, J., 0E
 Ramsey, Jordan, 1G
 Reinbacher, Knut, 0C
 Rhee, Seon-Min, 0U
 Rish, Irina, 1A
 Rossi, Farli, 0B
 Rudin, Stephen, 0I, 14
 Ruellas, Antonio Carlos O., 2H, 2J
 Rumple, Ashley, 0O
 Russ, M., 0I
 Sa, Ruhana, 13
 Sabir, Sohail, 1K
 Sabzalinejad, Masoomeh, 09
 Sabzalinejad, Masoomeh, 0G
 Sadeghi, Hamid, 25
 Saha, Punam K., 1T, 1U
 Saini, Jitender, 1Z
 Samani, Abbas, 09, 0G, 1V
 Sanada, Shigeru, 1Q, 1R
 Savvides, Marios, 0W
 Schmalstieg, Dieter, 0C
 Schuster, Stephen J., 0V
 Schwenzler-Zimmerer, Katja, 0C
 Seify, Behzad, 09
 Seo, Ji-Hyun, 0U
 Setlur Nagesh, S. V., 0I, 14
 Setser, Randolph M., 0J
 Seyfi, Behzad, 0G
 Shahidi, Mahnaz, 2C
 Shi, Fei, 08
 Shi, Lilong, 0Y
 Shin, Seung Yeon, 1W
 Shyr, W., 0E
 Sieren, Malte, 0L
 Siewerdsen, J. H., 0E
 Sims, S. M., 0F
 Sinha, Neelam, 1Z
 Sirieix, Chrystelle M., 1Y
 Skolnick, Gary, 0O
 Somfai, Gabor Mark, 1J
 Stoyanov, Danail, 17
 Styner, Martin, 0O, 0R, 27, 2H, 2J
 Su, Chang, 06
 Sun, Wenqing, 1I
 Tamimi-Sarnikowski, Philip, 1P
 Tanaka, Rie, 1Q, 1R
 Tang, Xiaoying, 12
 Tang, Zhenchao, 0N, 0P
 Thawait, G., 0E
 Thittai, Arun K., 1O
 Tian, Jie, 02, 0K, 0N, 0P, 0T
 Tian, Jing, 1J
 Tong, Yubing, 0V, 23
 Torigian, Drew A., 0V, 23
 Tuch, David S., 17
 Turani, Zahra, 24
 Udupa, Jayaram K., 0V, 23
 Vidya Shankar, Rohini, 2I
 Vimort, Jean Baptiste, 2H
 Wallner, Jürgen, 0C
 Wang, Dongsheng, 2G
 Wang, Fei, 08
 Wang, Pan, 2E
 Wang, Shengpei, 1E
 Wang, Shuo, 0K
 Wang, Xu, 2G
 Warner, Joshua D., 0X
 Wen, Hongwei, 1E
 Wiegand, Raymond, 13
 Winchell, Nicole, 0V
 Wismüller, Axel, 1B, 1C
 Wong, Dean F., 05
 Wu, Caiyun, 0V, 23
 Wu, Yu-Chiuan, 28
 Xiang, Liangzhong, 1X
 Xiao, Chuan, 1I
 Xu, Qiuyun, 25
 Xu, Xiaochuan, 2D
 Yang, Xin, 0K, 0T
 Yao, Hongxiang, 2E
 Yatabe, Marilia S., 2H, 2J
 Ye, Jinzuo, 02
 Yen, Jesse T., 2D
 Ying, Howard S., 1M
 You, Wonsang, 26
 Yuan, Baichuan, 2D
 Yun, Il Dong, 1W
 Zack, Donald J., 1H
 Zang, Yali, 0N
 Zarafshani, Ali, 1X
 Zarei, Kasra, 07
 Zbijewski, W., 0E
 Zhan, Ruohan, 2D
 Zhang, Hui, 06
 Zhang, Jishui, 1E
 Zhang, Qiang, 0Y
 Zhang, Wei, 04
 Zhang, Xi, 0Q, 21

Zhang, Xi, 2E
Zhang, Xiaoliu, 1T, 1U
Zhang, Yongxin, 2E
Zhao, Kun, 2E
Zhao, Yue, 23
Zheng, Bin, 1X
Zheng, Kangkeng, 08
Zhou, Bo, 2E
Zhu, Weifang, 08
Zhu, Yansong, 05
Zoehrer, Fabian, 0L
Zun, Zungho, 26

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- 1 Optical
Baohong Yuan, The University of Texas at Arlington (United States)
- 2 Pulmonary
Andrzej Krol, SUNY Upstate Medical University (United States)
Nicholas J. Tustison, University of Virginia (United States)
- 3 Keynote
Andrzej Krol, SUNY Upstate Medical University (United States)
Barjor Gimi, Dartmouth Hitchcock Medical Center (United States)
- 4 Bone, Skeletal Imaging, and Biomechanics
Axel Wismüller, University of Rochester Medical Center (United States)
Andrzej Krol, SUNY Upstate Medical University (United States)

- 5 Fluid and Cardiovascular
Andrzej Krol, SUNY Upstate Medical University (United States)
- 6 Neurological Imaging I
Axel Wismüller, University of Rochester Medical Center (United States)
- 7 Innovations in Image Processing I
Armando Manduca, Mayo Clinic (United States)
Vikram D. Kodibagkar, Arizona State University (United States)
- 8 Machine Learning
Axel Wismüller, University of Rochester Medical Center (United States)
- 9 Novel Imaging Methods
Andrzej Krol, SUNY Upstate Medical University (United States)
Vikram D. Kodibagkar, Arizona State University (United States)
- 10 Neurological Imaging II
Axel Wismüller, University of Rochester Medical Center (United States)
Andrzej Krol, SUNY Upstate Medical University (United States)
- 11 Innovations in Image Processing II
Armando Manduca, Mayo Clinic (United States)

Introduction

The 2017 SPIE Biomedical Applications in Molecular, Structural, and Functional Imaging Conference was held on 12-14 February 2017 at the Renaissance Orlando at SeaWorld, Orlando, Florida, United States. We maintained the high participation we saw last year, both in the number of abstracts submitted and in the conference attendees as well. Chairs Barjor Gimi and Andrzej Krol welcomed Professor Bruce Rosen, Harvard Medical School, (United States) who delivered an outstanding, insightful keynote address. The presentation provided in-depth review on recent advances in neuroimaging encompassing modern functional MRI (fMRI), ultra-high resolution MRI, positron emission tomography (PET), and other methods that are applied as individual techniques or as multimodal hybrid approaches and are elucidating the connections between human the brain and behavior.

The diverse sessions included Keynote, Bone, Skeletal Imaging and Biomechanics, Fluid and Cardiovascular, Innovations in Image Processing, Machine Learning, Neurological Imaging Methods, Optical, and Pulmonary.

We are grateful to the session chairs: Vikram Kodibagkar, Armando Manduca, Axel Wismüller, and Baohong Yuan.

Robert Darnall, Geisel School of Medicine, Dartmouth Hitchcock Medical Ctr. (United States) was awarded the conference fee waiver for an outstanding paper entitled "1H magnetic resonance spectroscopy metabolite profiles of neonatal rat hippocampus and brainstem regions following early postnatal exposure to intermittent hypoxia."

The poster session comprised vibrant discussions. A panel of judges selected "*Anatomic optical coherence tomography for dynamic imaging of the upper airway*" by Ruofei Bu et al., The Univ. of North Carolina at Chapel Hill (United States) for the Cum Laude award. The following posters were selected as Honorable Mentions: "Computerized method to compensate a breathing body motion in dynamic chest radiographs" by Hirokai Matsuda et al., Kanazawa Univ. (Japan), and "Undersampling strategies for compressed sensing accelerated magnetic resonance spectroscopic imaging" by Rohini Vidya Shankar et al., Arizona State Univ. (United States).

**Barjor Gimi
Andrzej Krol**

2017 Medical Imaging Award Recipients

Robert F. Wagner Best Student Paper 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.



This award is co-sponsored by:



The Medical Image Perception Society

SPIE.

2017 Recipients:

First Place: **Direct measurement of Lubberts effect in CsI:Tl scintillators using single x-ray photon imaging** (10132-8)

A. Howansky, A. R. Lubinsky, Stony Brook Univ. (United States); S. K. Ghose, Brookhaven National Lab. (United States); K. Suzuki, Hamamatsu Photonics K.K. (Japan); W. Zhao, Stony Brook Univ. (United States)

Second Place: **Evaluation of a high-resolution patient-specific model of the electrically stimulated cochlea** (10135-21)

Ahmet Cakir, Vanderbilt Univ. (United States); Robert T. Dwyer, Vanderbilt Univ. Medical Ctr. (United States); Jack H. Noble, Vanderbilt Univ. (United States)

