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Fred S. Azar

Xavier Intes

Editors

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Contents

v	<i>Authors</i>
vii	<i>Conference Committee</i>
ix	<i>Introduction</i>

SESSION 1 INSTRUMENTS AND ALGORITHMS

10057 03	Optical skin assessment based on spectral reflectance estimation and Monte Carlo simulation [10057-2]
10057 04	Fiber based fast sparse sampling x-ray luminescence computed tomography [10057-3]
10057 05	Investigation of burn effect on skin using simultaneous Raman-Brillouin spectroscopy, and fluorescence microspectroscopy [10057-4]

SESSION 2 MICROSCOPY AND ENDOSCOPY

10057 06	Combined optical coherence tomography and hyper-spectral imaging [10057-5]
10057 07	Multimodal fluorescence and photoacoustic microscopy in the frequency domain [10057-6]
10057 09	Spectral band optimization for multispectral fluorescence imaging [10057-8]

SESSION 3 CLINICAL APPLICATIONS

10057 0D	Real-time fluorescence target/background (T/B) ratio calculation in multimodal endoscopy for detecting GI tract cancer [10057-12]
10057 0F	Novel hybrid technology for early diagnostics of sepsis [10057-15]

SESSION 4 HYBRID AND PRECLINICAL IMAGING

10057 0H	Combined multispectral spatial frequency domain imaging and computed tomography system for intraoperative breast tumor margin assessment [10057-17]
10057 0I	Multimodal non-contact photoacoustic imaging and optical coherence tomography using all optical detection [10057-18]
10057 0K	New contrasts for x-ray imaging and synergy with optical imaging (Invited Paper) [10057-16]

POSTER SESSION

- 10057 OL **Profiling wrist pulse from skin surface by Advanced Vibrometer Interferometer Device**
[10057-21]
- 10057 OM **A single pixel camera video ophthalmoscope** [10057-22]
- 10057 OP **Application of kernel method in fluorescence molecular tomography** [10057-25]
- 10057 OS **Multi-modality image registration for effective thermographic fever screening** [10057-28]

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.

Artal, P., 0M	Rizzo, E. J., 0H
Attendu, Xavier, 06	Rubins, Uldis, 0F
Baikejiang, Rehemam, 0P	Saknite, Inga, 0F
Ballmann, Charles, 05	Seibel, Eric J., 0D
Bauer, Jacob R., 03	Spigulis, Janis, 0F
Bauer-Marschallinger, Johannes, 0I	Strupler, Mathias, 06
Berer, Thomas, 07, 0I	Tajahuerce, E., 0M
Bohndiek, Sarah E., 09	Traverso, Andrew, 05
Boudoux, Caroline, 06	Troyanova-Wood, Maria, 05
Buchegger, Bianca, 07	Verdaasdonk, Rudolf, 03
Casamento, Jon, 0S	Volceka, Karina, 0F
Coker, Zachary, 05	Wang, Ge, 0K
Dwith, C. Y. N., 0S	Wang, Quanzeng, 0S
Gambin, A., 0M	Wang, Thomas D., 0D
Ghassemi, Pejman, 0S	Waterhouse, Dale J., 09
Godbout, Nicolas, 06	Wells, W. A., 0H
Gong, Yuanzheng, 0D	Yakovlev, Vladislav, 05
Grabovskis, Andris, 0F	Zhang, Wei, 04
Guay-Lord, Robin, 06	Zhao, Yue, 0P
Hardeberg, Jon Y., 03	
Hsu, Yu-Hsiang, 0L	
Ibey, Bennett L., 05	
Irls, E., 0M	
Jacak, Jaroslaw, 07	
Jiang, Yang, 0D	
Kanick, S. C., 0H	
Kazune, Sigita, 0F	
Klar, Thomas A., 07	
Krishnaswamy, V., 0H	
Kviesis-Kipge, Edgars, 0F	
Lancis, J., 0M	
Langer, Gregor, 07	
Lee, Chih-Kung, 0L	
Lee, Hao-Xiang, 0L	
Lee, Shu-Sheng, 0L	
Leiss-Holzinger, Elisabeth, 0I	
Li, Changqing, 04, 0P	
Lochocki, B., 0M	
Lun, Michael, 04	
Luthman, A. Siri, 09	
Manzanera, S., 0M	
Marcinkevics, Zbignevs, 0F	
McClatchy, D. M. III, 0H	
Meng, Zhaokai, 05	
Paulsen, K. D., 0H	
Petrov, Georgi, 05	
Pfefer, Joshua, 0S	
Pfeffer, Karoline, 07	
Pogue, B. W., 0H	

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Introduction

Optical techniques offer the potential to contribute greatly to the expansion of clinical multimodality techniques. Their ability to image structural, functional, and molecular information at different spatial and temporal scales makes them very attractive to the biomedical community. There is critical need for new instrumental approaches and computational techniques to provide rapid, accurate and cost-effective means for acquisition, quantification and characterization of multimodal data. Multimodality approach can be understood as the combination of multiple optical techniques in an instrument and/or fusion of an optical technique with other well-established imaging modalities such as CT, MRI, US, or PET. These instrumental and computational methods will enable faster acceptance of novel imaging modalities into viable clinical and/or pre-clinical systems. The applications are diverse and range from imaging at the cellular level to the whole body while incorporating molecular, functional and anatomical information.

The conference objectives are to provide a forum:

- to review and share recent developments in novel multimodal imaging techniques,
- to report development of novel computational methods, and
- to bring together the optical imaging and image analysis communities.

Topics include, but are not limited to:

- Multimodal imaging integrating structural, molecular and functional information
- Multimodal microscopic imaging
- 2D, 3D, 4D tomographic and / or multi-spectral imaging
- Imaging analysis and/or image processing techniques applied to optical imaging (e.g. visualization, segmentation, registration)
- Multimodal imaging instrumentation and system design
- Detection and diagnostic analysis techniques which may provide better quantitative and/or diagnostic insight into clinical and pre-clinical imaging (e.g. methods for quantitative measurements, computer-assisted diagnosis)
- Imaging analysis and/or image processing techniques used to combine optical imaging with other imaging modalities (e.g. MR, x-ray, PET)
- Image analysis, computational methods and reconstruction approaches which may help bring optical imaging into the clinic (visual rendering of complex data set, novel algorithms for assisted optical reconstruction)

- Clinical evaluation of these new technologies (physiological and functional interpretation of image data, visual perception and observer performances, validation of quantitative assessment of optical signatures in-vivo).

Fred S. Azar
Xavier Intes