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Multimodal Biomedical Imaging XI

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Editors

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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).

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