



JOHNS HOPKINS

BIOMEDICAL ENGINEERING



Monday October 27, 1:00PM, Clark 110
Teleconferenced to Traylor 709
Light lunch will be provided at noon



Multi-spectral Optical Imaging of Skin and Skin-lesions

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Host: Dr. Nitish Thakor

Abstract: In recent years, optical imaging has been of significant interest as a non-invasive medical imaging modality for biomedical and clinical applications. Visible and near-infrared light wavelengths have been used for tissue and organ imaging using surface reflectance, transillumination and transmission based methods. Fluorescence optical imaging has shown great potential in molecular imaging with a spectrum of applications including drug discovery. The Optical Coherent Tomography (OCT) makes use of the coherent properties of light in the tissue medium for three-dimensional reconstruction. In this talk, after briefly reviewing recent methods in fluorescence imaging, spectroscopy, and optical coherent tomography, multi-spectral optical imaging methods will be discussed. Our group has been involved in developing multispectral transillumination based methods for optical imaging of skin-lesions for early detection and characterization of skin-cancers. The optical absorption and scattering properties of different chromophores in the tissue or skin-lesions are used to obtain multispectral measurements through imaging and then reconstructed to estimate distribution of specific chromophores such as melanin and blood (oxy-hemoglobin and de-oxy-hemoglobin). In this talk, a shape-based multi-constrained reconstruction algorithm with Genetic Algorithm based optimization method will be discussed to find the best possible reconstruction solution for estimation of distribution of selected chromophores in the unknown tissue. Applications to analysis of multispectral optical images for characterization of skin-lesions for early detection of skin-cancer melanoma will be presented.

Upcoming seminars:

October 29: Dr. Mark Pettinger

November 3: Dr. Younan Xia, Washington University

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