The Johns Hopkins University

Whiting School of Engineering

Department of Electrical and Computer Engineering

Imaging Spectroscopy with a Multi-aperture Camera

Seminar By

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Abstract:

Imaging Spectroscopy (IS) can be used to monitor chromospheres and scatterers in bulk biological tissue. This technique is used in medicine to establish quantitative values of blood volume, tissue oxygen saturation, quantify melanin, and monitor the presence of water by generating maps of the metric of interest; the spatial ability of IS makes it preferable to its fiber optics counterpart.

Different instrumentation and algorithms have been devised for IS; in this talk we will introduce a multi-aperture system able to collect up to 18 identical images at different wavelengths. The apparatus was calibrated with several sets of gel and epoxy phantoms reproducing optical properties of biological tissue. The system was used in two different clinical trials; the first was conducted at the National Rehabilitation Hospital in Washington, DC and was aimed at monitoring the healing process of several types of skin wounds. The second trial is ongoing at the Wilmer Eye Institute in Johns Hopkins, and is directed at monitoring oxygen saturation in the retina of individuals with diabetic retinopathy. Results of both studies will be discussed.

Bio:

Jessica Ramella-Roman's research is in the field of Biomedical Optics, the study of light interacting with biological media. Her main interests are polarized light imaging and modeling, spectroscopic diagnostic of skin lesions and Port-wine stains and optical fiber instrumentation.

Invited by
Dr. Jin Kang

Monday, June 22, 2009
2:00 p.m.
CSEB 320

Refreshments will be served at 1:45 p.m.

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