香港浸會大學
HONG KONG BAPTIST UNIVERSITY

Department of Mathematics

Centre for Mathematical Imaging and Vision

Distinguished Lecture Series

Mathematics in Hyperspectral Image Processing

Professor Robert J. Plemmons

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Wake Forest University
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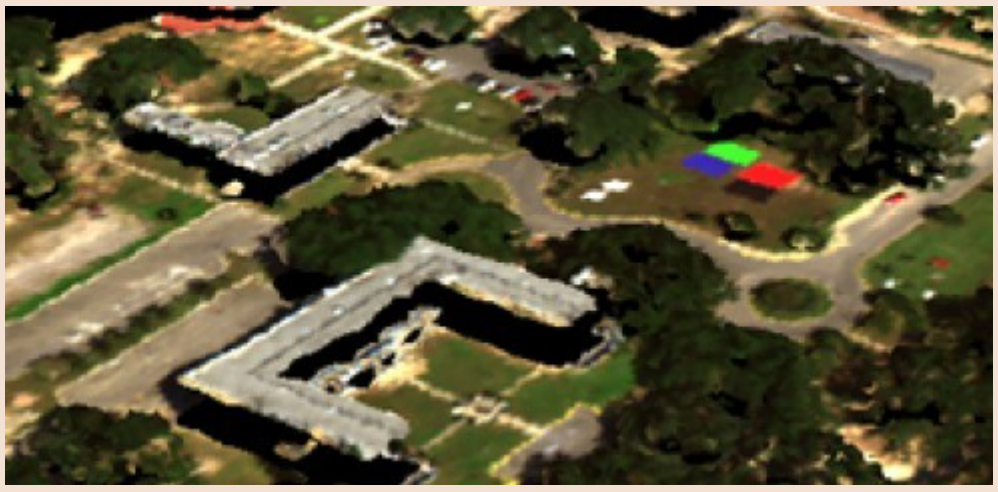
Date: 10 February 2017 (Friday)

Time: 4:30 pm - 5:30 pm (Preceded by Reception at 4:00 pm)

Venue: SCT909 Science Tower, Ho Sin Hang Campus,
Hong Kong Baptist University

Abstract

Hyperspectral, Light Detection and Ranging (LiDAR), and Polarimetric imaging are the pervasive optical imaging modalities in remote sensing. Here, we primarily consider hyperspectral imaging (**HSI**) which also has extensive applications in the life sciences and medicine. A hyperspectral image provides the fraction of light from pixels at many different wavelengths across the electromagnetic, usually between 100 and 1200, leading to 3D dataset carrying significantly more information than a color (RGB) image. A HSI data cube provides a unique spectral signature for each pixel, information that can be used to identify and discriminate materials, and thus analyze scenes and objects. The figure below is an example of HSI fused with LiDAR range data, including test targets, from our work.



Here, we provide an overview of our recent work on mathematical algorithms for HSI processing, including: deblurring images taken through atmospheric turbulence, the use of nonnegative matrix factorization and convolutional neural networks for material unmixing and feature classification, and random projections for HSI compression and data transmission. The work is funded by the Air Force and the National Geospatial Agency. Several U.S. co-authors who are involved with this research will be referenced. We also point out joint work with Raymond Chan at CUHK, Michael Ng at HKBU, and their students.

✦✦✦ All are welcome ✦✦✦

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