Call for Papers

IEEE Journal of Selected Topics in Signal Processing
Special issue on Advances in Hyperspectral Data Processing and Analysis

Optical sensing has come a long way from gray-scale to multispectral to hyperspectral images. The advances in imaging hardware over recent decades have enabled availability of high spatial, spectral and temporal resolution imagery for a variety of applications. Hyperspectral imagery, also called imaging spectroscopy, consists in acquiring images of a given area using a large number (typically a few hundreds) of narrow and contiguous spectral bands, covering a wide range of the electromagnetic spectrum from the visible to the infrared domain. These advances have created unique challenges for researchers in the remote sensing community working on algorithms for representation, exploitation and analysis of such data. At the same time, availability of hyperspectral imaging capabilities for a wide variety of applications has grown substantially in the past decade owing primarily to lower hardware costs of imaging systems operating in the visible, very near-infrared and short-wave infrared regions of the electromagnetic spectrum.

The emergence of such imagery has, however, created a unique need for fundamental theory and algorithms research to exploit the rich spectral-spatial-temporal data provided by such imaging sensors. We invite authors to submit articles representing the cutting edge in signal and image processing topics related to hyperspectral analysis, including (but not limited to):

1. Advances in classification techniques, including feature extraction and dimensionality reduction (linear/nonlinear, parametric/non-parametric, supervised / unsupervised / semi-supervised), Bayesian and statistical signal processing, graph theoretic signal representations, manifold learning, kernel methods, etc.
2. Advances in spectral unmixing (linear/nonlinear, supervised, unsupervised, and semi-supervised)
3. Convex and non-convex optimization, sparsity and ℓ_p norm minimization (including block-sparsity, multiple-measurement models, sparse regression, dictionary learning, image inpainting, etc.)
4. Target and Anomaly Detection (under challenging operational scenario, such as sub-pixel detection)
5. Contextual information based image processing (including Markov random fields, discriminative markov random fields etc.)
6. Data compression for hyperspectral imaging
7. Compressive sensing for hyperspectral imaging (optical and signal processing considerations).

Prospective authors should visit `http://www.signalprocessingsociety.org/publications/periodicals/jstsp/` for information on paper submission. Manuscripts should be submitted at `http://mc.manuscriptcentral.com/jstsp-ieee`

Important Dates:

1. Manuscript submission due: September 1, 2014
2. First review completed: November 15, 2014
3. Revised manuscript due: December 31, 2014
4. Second review completed: February 15, 2015
5. Final manuscript due: April 1, 2015
6. Publication date: September 2015

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