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**Reviewer Invitation for KNOSYS-D-16-01832R2**

1 message

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**Jie Lu** <eesserver@eesmail.elsevier.com>

Mon, Oct 2, 2017 at 10:03 PM

Reply-To: Jie Lu &lt;jie.lu@uts.edu.au&gt;

To: Debanjan.Mahata@infosys.com, debanjanmahata85@gmail.com

Ms. Ref. No.: KNOSYS-D-16-01832R2

Title: Sparse Tensor Neighbor Embedding based Pan-sharpening via N-way Block Pursuit Knowledge-Based Systems

Dear Debanjan,

This paper has recently been submitted to Knowledge-Based Systems and I would be most grateful if you could find the time to review it.

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I look forward to hearing from you in the near future.

Yours sincerely,

Jie Lu, PhD  
Editor in Chief  
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**ABSTRACT:**

Most of available pansharpening methods use vector or matrix based detail injection to enhance the resolution of MultiSpectral (MS) images, which may result in unavoidable spectral and spatial distortions. In order to reduce the distortions in the fused images, in this paper we explore the intrinsic tensor structure and local sparsity of MS images, to develop a novel Sparse Tensor Neighbor Embedding (STNE) based pan-sharpening method. First MS images are formulated as some spectral tensors, and each tensor and its nearest neighbor tensors are assumed to lie in a low-dimensional manifold. Then the tensor is sparsely coded under its neighbor tensors, and a joint sparse coding assumption is cast on bands to develop an N-way Block Pursuit algorithm for solving sparse tensor coefficients. Finally high resolution MS tensor can be obtained by weighting Panchromatic image with the sparse tensor coefficients. Tensors are higher order generalizations of vectors and matrices, and taking advantage of high-order structure of multi-dimensional data can help us understand them. The proposed method first combines a sparse tensor with neighbor embedding, to construct a new high-dimensional sparse tensor embedding for efficient pansharpening. Because tensor formulation can exploit the structural correlations in high-dimensional MS data, the proposed method can well preserve spectral correlation among different bands simultaneously and capture the underlying high-order statistical properties of MS image. Some experiments are taken on several real QuickBird and GeoEye datasets, and experimental results show that STNE is superior to its counterparts in reducing spectral and spatial distortions.

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