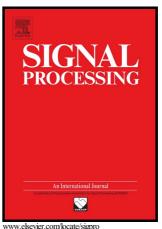
Author's Accepted Manuscript

Structure Total Variation-Regularized Tensor Nuclear Minimization Weighted Norm For Hyperspectral Image Mixed Denoising

Zhaojun Wu, Qiang Wang, Jing Jin, Yi Shen



PII: S0165-1684(16)30182-7

DOI: http://dx.doi.org/10.1016/j.sigpro.2016.07.031

SIGPRO6223 Reference:

To appear in: Signal Processing

Received date: 18 March 2016 Revised date: 23 July 2016 Accepted date: 27 July 2016

Cite this article as: Zhaojun Wu, Qiang Wang, Jing Jin and Yi Shen, Structure Tensor Total Variation-Regularized Weighted Nuclear Norm Minimization For Hyperspectral Denoising, Signal **Image** Mixed **Processing** http://dx.doi.org/10.1016/j.sigpro.2016.07.031

This is a PDF file of an unedited manuscript that has been accepted fo publication. As a service to our customers we are providing this early version o the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

ACCEPTED MANUSCRIPT

Structure Tensor Total Variation-Regularized Weighted Nuclear Norm Minimization For Hyperspectral Image Mixed Denoising

Zhaojun Wu^a, Qiang Wang^a, Jing Jin^{a,*}, Yi Shen^a

^aDepartment of Control Science and Engineering, Harbin Institute of Technology, Harbin 150001, PR China

Abstract

Several band-by-band TV-regularized low rank based models have been proposed for Hyperspectral image (HSI) mixed denoising, which can exploit the spectral and spatial information simultaneously. However, these methods may lead to large fluctuations due to the noise and also create oil painting effects. Moreover, they only exploit the spatial information in a separated manner, which may negatively affect the performance of removing the noise with obvious structure, e.g., the deadline noise. To cope with the above problems, a novel Structure tensor Total Variation (STV)-regularized Weighted Nuclear Norm Minimization (STWNNM) model is proposed. To obtain the desired performance, three issues are included. First, the Weighted Nuclear Norm Minimization (WNNM) is adopted to utilize the spectral information by shrinking different eigenvalues with different weights. Second, the structure tensor is used to exploit the global spatial structure information within all bands simultaneously. Third, a convolution kernel is incorporated to obtain more local structure information from neighborhood pixels. Then, two different optimization strategies are proposed to solve the derived optimization problem. Both simulated and real data experiments illustrate the higher performance of the proposed STWNNM for HSI mixed denoising, by comparing with other state-of-the-art

Email address: jinjinghit@hit.edu.cn (Jing Jin)

^{*}Corresponding author

Download English Version:

https://daneshyari.com/en/article/6958051

Download Persian Version:

https://daneshyari.com/article/6958051

<u>Daneshyari.com</u>