

## Accepted Manuscript

Structure Preserving Unsupervised Feature Selection

Quanmao Lu, Xuelong Li, Yongsheng Dong

PII: S0925-2312(18)30361-8  
DOI: [10.1016/j.neucom.2018.04.001](https://doi.org/10.1016/j.neucom.2018.04.001)  
Reference: NEUCOM 19440

To appear in: *Neurocomputing*

Received date: 6 December 2017  
Revised date: 5 February 2018  
Accepted date: 2 April 2018

Please cite this article as: Quanmao Lu, Xuelong Li, Yongsheng Dong, Structure Preserving Unsupervised Feature Selection, *Neurocomputing* (2018), doi: [10.1016/j.neucom.2018.04.001](https://doi.org/10.1016/j.neucom.2018.04.001)



This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final 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.

# Structure Preserving Unsupervised Feature Selection

Quanmao Lu<sup>a,b</sup>, Xuelong Li<sup>a,b</sup>, Yongsheng Dong<sup>a,\*</sup>

<sup>a</sup>*Center for OPTical IMagery Analysis and Learning (OPTIMAL), Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, Xi'an 710119, Shaanxi, P. R. China.*

<sup>b</sup>*University of Chinese Academy of Sciences, 19A Yuquanlu, Beijing, 100049, P. R. China.*

---

## Abstract

Spectral analysis was usually used to guide unsupervised feature selection. However, the performances of these methods are not always satisfactory due to that they may generate continuous pseudo labels to approximate the discrete real labels. In this paper, a novel unsupervised feature selection method is proposed based on self-expression model. Unlike existing spectral analysis based methods, we utilize self-expression model to capture the relationships between the features without learning the cluster labels. Specifically, each feature can be reconstructed by using a linear combination of all the features in the original feature space, and a representative feature should give a large weight to reconstruct other features. Besides, a structure preserved constraint is incorporated into our model for keeping the local manifold structure of the data. Then an efficient alternative iterative algorithm is utilized to solve our proposed model with the theoretical analysis on its convergence. The experimental results on different datasets show the effectiveness of our

---

\*Corresponding author

*Email address:* dongyongsheng98@163.com (Yongsheng Dong)

Download English Version:

<https://daneshyari.com/en/article/6863867>

Download Persian Version:

<https://daneshyari.com/article/6863867>

[Daneshyari.com](https://daneshyari.com)