Accepted Manuscript

Multi-View Intact Space Clustering

Ling Huang, Hong-Yang Chao, Chang-Dong Wang

PII: S0031-3203(18)30342-X
DOI: https://doi.org/10.1016/j.patcog.2018.09.016
Reference: PR 6666

To appear in: *Pattern Recognition*

Received date: 28 October 2017
Revised date: 2 August 2018
Accepted date: 29 September 2018

Please cite this article as: Ling Huang, Hong-Yang Chao, Chang-Dong Wang, Multi-View Intact Space Clustering, *Pattern Recognition* (2018), doi: https://doi.org/10.1016/j.patcog.2018.09.016

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.

ACCEPTED MANUSCRIPT

Multi-View Intact Space Clustering

Ling Huang, Hong-Yang Chao, Chang-Dong Wang*

School of Data and Computer Science, Sun Yat-sen University, Guangzhou, P. R. China.
Guangdong Province Key Laboratory of Computational Science.

Abstract

Multi-view clustering is a hot research topic due to the urgent need for analyzing a vast amount of heterogeneous data. Although many multi-view clustering methods have been developed, yet they mostly neglect the view-insufficiency issue. That is, most of the existing multi-view clustering methods assume that each individual view is sufficient for discovering the cluster structure, which is however not guaranteed in real applications. In this paper, we propose a novel multi-view clustering method termed multi-view intact space clustering (MVIC), which is able to simultaneously recover the latent intact space from multiple insufficient views and discover the cluster structure from the intact space. For each view, a view generation function is designed to map the latent intact space representation into the view representation. With the view representation given, the latent intact space can be restored by mapping back from each individual view representation. Then matrix factorization is used to obtain the cluster structure in intact space by factorizing the latent intact space representation into the cluster centroids and the cluster assignments. Therefore, the proposed model is composed of two components, namely the reconstruction error of the latent intact space and the distortion error of data clustering in intact space. An alternating iterative method is designed to solve the optimization of the model, in which the latent intact space and the cluster structure are updated in an interplay manner. Experimental results conducted on a wide-range of multi-view datasets have confirmed the superiority of our method over state-of-the-art

*Corresponding author. Tel.: 86-20-84110175
Email addresses: huanglinghl@hotmail.com (Ling Huang), isschhy@mail.sysu.edu.cn (Hong-Yang Chao), changdongwang@hotmail.com (Chang-Dong Wang)

Download English Version:

https://daneshyari.com/en/article/11030071

Download Persian Version:

https://daneshyari.com/article/11030071

Daneshyari.com