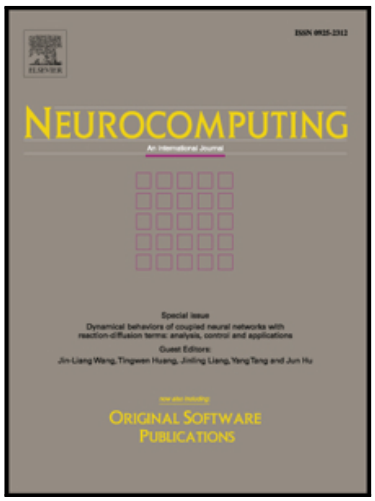

Common Latent Space Identification for Heterogeneous Co-transfer Clustering

Liu Yang, Liping Jing, Bo Liu, Jian Yu

PII: S0925-2312(17)30975-X
DOI: 10.1016/j.neucom.2016.08.148
Reference: NEUCOM 18505

To appear in: *Neurocomputing*

Received date: 30 November 2015
Revised date: 11 June 2016
Accepted date: 21 August 2016

Please cite this article as: Liu Yang, Liping Jing, Bo Liu, Jian Yu, Common Latent Space Identification for Heterogeneous Co-transfer Clustering, *Neurocomputing* (2017), doi: 10.1016/j.neucom.2016.08.148

Common Latent Space Identification for Heterogeneous Co-transfer Clustering

Liu Yang[a,b], Liping Jing[a,*], Bo Liu[a,c], Jian Yu[a]

[a] *Beijing Key Lab of Traffic Data Analysis and Mining, Beijing Jiaotong University, Beijing, China*
[b] *College of Computer and Information Engineering, Tianjin Normal University, Tianjin, China*
[c] *College of Information Science and Technology, Agricultural University of Hebei, Baoding, China*

Abstract

With the rapid development of collection techniques, it is easy to gather various data which come from different domains, such as images, videos, documents, and etc, how to group these heterogeneous data becomes a research issue. Traditional techniques handle these clustering tasks separately, that is one task for one domain, so that they ignore the interactions among domains. In this paper, we present a co-transfer clustering method to deal with these separate tasks together with the aid of co-occurrence data which contain some instances represented in different domains. The proposed method consists of two steps, one is to learn the subspace of different domains which uncovers the latent common topics and respects the intrinsic geometric structure, the next is to simultaneously cluster the instances in all domains via the symmetric nonnegative matrix factorization method. A series of experiments on real-world data sets have shown the performance of the proposed method is better than the state-of-the-art methods.

Keywords: heterogeneous feature spaces, co-transfer clustering, collective matrix factorization, symmetric nonnegative matrix factorization.

*Corresponding author
Email addresses: yangliuhbu@gmail.com (Liu Yang), lpjing@bjtu.edu.cn (Liping Jing), boliu8@bjtu.edu.cn (Bo Liu), jianyu@bjtu.edu.cn (Jian Yu)