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Visual Subspace Clustering Based on Dimension Relevance

Jiazhi Xia[a], Guang Jiang[a], YuHong Zhang[a], Rui Li[a], Wei Chen[b,*]

[a]*School of Information Science and Engineering, Central South University*
[b]*State Key Laboratory of CAD&CG, Zhejiang University*

Abstract

The proposed work aims at visual subspace clustering and addresses two challenges: an efficient visual subspace clustering workflow and an intuitive visual description of subspace structure. Handling the first challenge is to escape the circular dependency between detecting meaningful subspaces and discovering clusters. We propose a dimension relevance measure to indicate the cluster significance in the corresponding subspace. The dynamic dimension relevance guides the subspace exploring in our visual analysis system. To address the second challenge, we propose hyper-graph and the visualization of it to describe the structure of subspaces. Dimension overlapping between subspaces and data overlapping between clusters are clearly shown with our visual design. Experimental results demonstrate that our approach is intuitive, efficient, and robust in visual subspace clustering.

Keywords: `High Dimensional Data`, Subspace Clustering, Interactive Visual Analysis, Dimension Relevance

*Corresponding author
Email address: `chenwei@cad.zju.edu.cn (Wei Chen)` (Wei Chen)