

Multiview Clustering with Self Representation and Structural Constraints

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Abstract: Multi-view clustering, which divides objects into multiple clusters with high intra-cluster and low inter-cluster similarity for all perspectives, is of enormous significance for uncovering the mechanisms of systems. Multi-view data effectively model and characterise the underlying complex systems. Because they only consider the shared characteristics of objects or their correlation, current algorithms are criticised for their subpar performance because they ignore the heterogeneity and structural constraints of different views. A brand-new network-based method called Multi-view Clustering with Self-representation and Structural Constraints (MCSSC), which combines matrix factorization with low-rank representation of various perspectives, is presented to address these issues. In particular, a network is built for each view to reduce heterogeneity from multi-view data, converting the multi-view clustering problem into the multi-layer networks clustering problem. The MCSSC factorises network-related matrices by projecting them into a shared space and simultaneously trains an affinity graph for objects in multiple views with self-representation in order to extract the shared properties of multiple views. The structural constraint is applied to the affinity graph, where the clusters are identified, to aid with clustering. Numerous tests show that MCSSC performs noticeably better than the state-of-the-art in terms of accuracy, indicating the superiority of the suggested method.

Keywords: Multi-view clustering

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