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**MULTI-VIEW UNSUPERVISED FEATURE SELECTION WITH ADAPTIVE SIMILARITY AND VIEW WEIGHT**

**Abstract:**

With the advent of multi-view data, multi-view learning has become an important research direction in both machine learning and data mining. Considering the difficulty of obtaining labeled data in many real applications, we focus on the multi-view unsupervised feature selection problem. Traditional approaches all characterize the similarity by fixed and pre-defined graph Laplacian in each view separately and ignore the underlying common structures across different views. In this paper, we propose an algorithm named Multi-view Unsupervised Feature Selection with Adaptive Similarity and View Weight (ASVW) to overcome the above mentioned problems. Specifically, by leveraging the learning mechanism to characterize the common structures adaptively, we formulate the objective function by a common graph Laplacian across different views, together with the sparse ℓ 2,p -norm constraint designed for feature selection. We develop an efficient algorithm to address the non-smooth minimization problem and prove that the algorithm will converge. To validate the effectiveness of ASVW, comparisons are made with some benchmark methods on real-world datasets. We also evaluate our method in the real sports action recognition task. The experimental results demonstrate the effectiveness of our proposed algorithm.