Supplementary Material: Effective and Adaptive Multi-metric Refined Similarity Graph Fusion for Multi-view Clustering

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1 Similarity Visualization

We draw the affinity matrices using refined similarity and no-refined similarity in Table 1.

2 Convergence Analysis

To verify the convergence of our method, we calculate the relative residual value $(\frac{\|\boldsymbol{S}_{t+1}-\boldsymbol{S}_t\|}{\|\boldsymbol{S}_t\|}+\frac{\|\boldsymbol{U}_{t+1}-\boldsymbol{U}_t\|}{\|\boldsymbol{U}_t\|})$ among 20 iterations, as shown in Fig. 1. The algorithm reaches the convergence status within 5 iterations on all datasets.

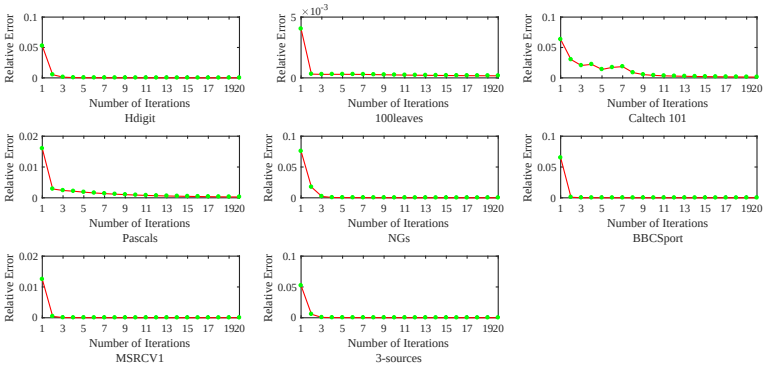
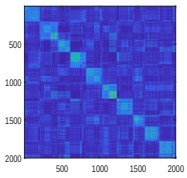
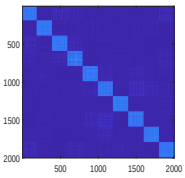
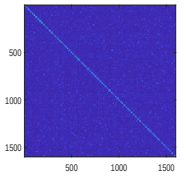
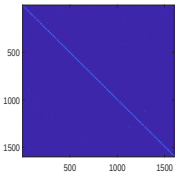
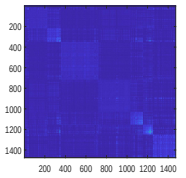
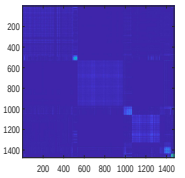
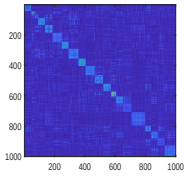
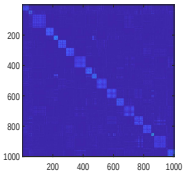
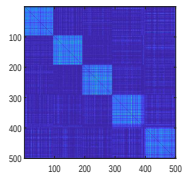
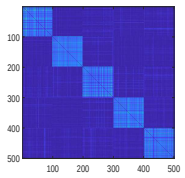
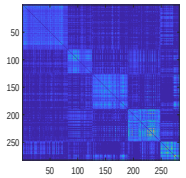
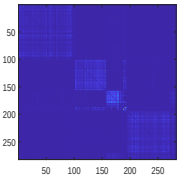
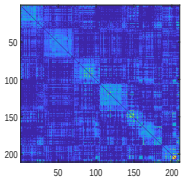
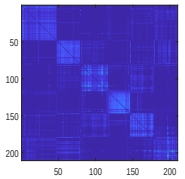
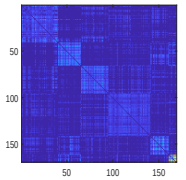
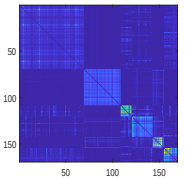


Fig. 1: Relative residual value with the respect to the number of iterations in eight benchmark data sets.

3 Parameter Sensitivity Analysis

In our method, there are two free parameters, i.e., k, λ . Fig. 2 and 3 demonstrate the sensitivity of the parameters k and λ on eight data sets, respectively. Our

Table 1: Similarity visualization between refined and no-refined similarity

Datasets	No-refined	Refined
Hdigit		
100leaves		
Caltech 101		
Pascals		
Ngs		
BBCSport		
MSRCV1		
3-sources		

method is robust with respect to the parameters λ and k. The higher the value of λ, the better the performance is. Our method achieves satisfying and stable performance when the parameter k set to 1 or 3, in the large data set (the number of samples greater than or equal to 1000). For most of small data sets, it achieves best performance when the parameter k set to 5.

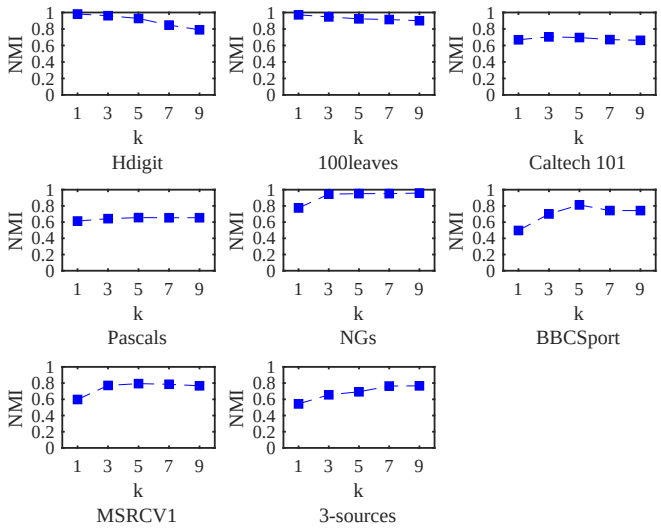


Fig. 2: Sensitivity of parameter k in eight benchmark data sets.

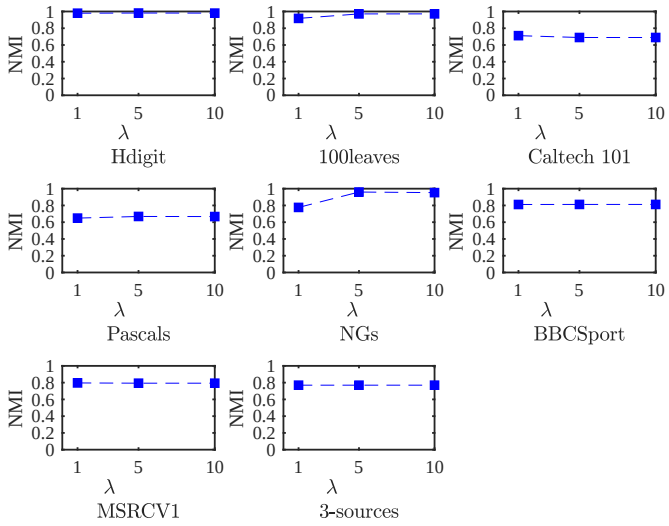


Fig. 3: Sensitivity of parameter λ in eight benchmark data sets.