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Efficient Semi-Supervised Feature Selection: Constraint, Relevance, and Redundancy

Abstract:

This paper describes a three-level framework for semi-supervised feature selection. Most feature selection methods mainly focus on finding relevant features for optimizing high-dimensional data. In this paper, we show that the relevance requires two important procedures to provide an efficient feature selection in the semi-supervised context. The first one concerns the selection of pairwise constraints that can be extracted from the labeled part of data. The second procedure aims to reduce the redundancy that could be detected in the selected relevant features. For the relevance, we develop a filter approach based on a constrained Laplacian score. Finally, experimental results are provided to show the efficiency of our proposal in comparison with several representative methods.