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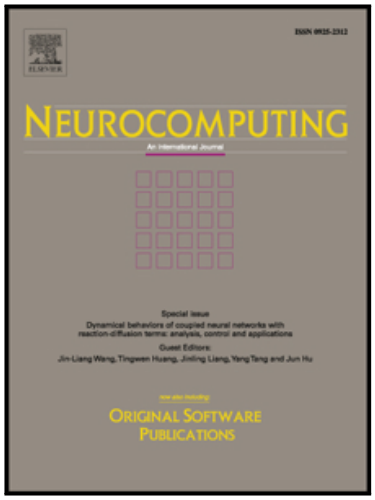

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Correntropy based Graph Regularized Concept Factorization for Clustering

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Abstract

Concept factorization (CF) technique is one of the most powerful approaches for feature learning, and has been successfully adopted in a wide range of practical applications such as data mining, computer vision, and information retrieval. Most existing concept factorization methods mainly minimize the square of the Euclidean distance, which is seriously sensitive to non-Gaussian noises or outliers in the data. To alleviate the adverse influence of this limitation, in this paper, a robust graph regularized concept factorization method, called correntropy based graph regularized concept factorization (GCCF), is proposed for clustering tasks. Specifically, based on the maximum correntropy criterion (MCC), GCCF is derived by incorporating the graph structure information into our proposed objective function. A half-quadratic optimization technique is adopted to solve the non-convex objective function of the GCCF method effectively. In addition, algorithm analysis of GCCF is studied. Extensive experiments on real world datasets demonstrate that the proposed GCCF method outperforms seven competing methods for clustering applications.

Keywords: concept factorization, graph regularization, maximum correntropy

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