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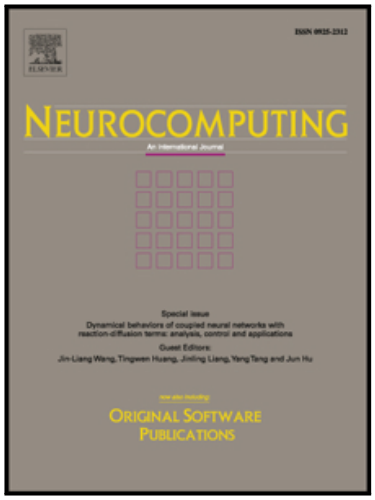

Geometric Mean Metric Learning for Partial Label Data

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Geometric Mean Metric Learning for Partial Label Data ☆

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Abstract

Partial label learning (PLL) is a new weakly supervised learning framework that addresses the classification problems, where the true label of each training sample is concealed in a set of candidate labels. To learn from such weakly supervised training data, the key is to disambiguate the ambiguous labeling information. Because it is difficult to address by only focusing on the manipulation in the label space, manifold structure among training data in the feature space has gradually been exploited simultaneously to facilitate the disambiguation process by researchers in recent years. However, the manifold structure is commonly analyzed under an assumption that the samples close to each other in the feature space will share identical labels in the label space, which may be not correct in many real-world problems. In this paper, geometric mean metric learning approach is employed to learn a distance metric for PLL problems such that can maintain the aforementioned assumption correct in as many situations as possible. It is significantly more challenging than the conventional setup of distance metric learning because it is difficult to precisely identify whether a pair of training samples belong to the same class. We propose an alternative approach in which each training sample and its neighbor with shared candidate label are taken as a similarity pair, and each training sample and its neighbor

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