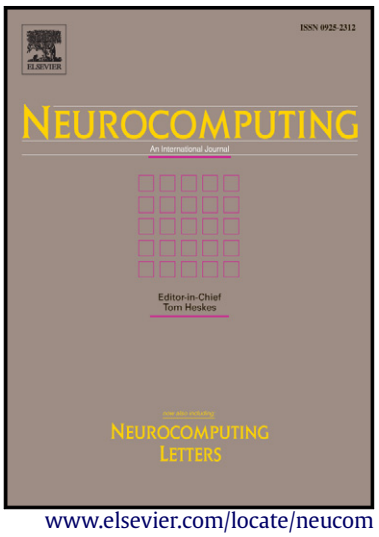

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Saliency Detection via Sparse Reconstruction and Joint Label Inference in Multiple Features

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Abstract

Based on the motivation that the appearance of salient target tends to be sparse in the entire scene, sparse representation has been applied to saliency detection. However, existing sparse representation based methods often only highlight the boundaries of salient object rather than the whole object, especially for relatively large object. In this paper, we propose a new saliency method. Given an image, we first hierarchically segment it into fine superpixels and coarse segments. Next, we use the center-remaining strategy at the coarse scale to build the dictionary to reconstruct the fine superpixels, i.e., for a segment, each superpixel it contains is described as the weighted combination of all the superpixels in the remaining segments. We average the reconstruction errors in a segment as its initial saliency. The hierarchical treatment is helpful to overcome the above problem. Finally, we further refine saliency result by using a ranking-based inference model and define a multi-feature fitting potential to describe the interaction among multiple features. Experimental results on four benchmark datasets show that the proposed method performs favorably against the state-of-the-art methods in terms of precision and recall.

Keywords: Saliency detection, sparse coding, label inference, spectral segmentation, feature fusion.