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Hybrid of Extended Locality-constrained Linear Coding and Manifold Ranking for Salient Object Detection ☆

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Abstract

Recent years have witnessed great progress of salient object detection methods. However, due to the emerging complex scenes, two problems should be solved urgently: one is on the fast locating of the foreground while preserving the precision, and the other is about reducing the noise near the foreground boundary in saliency maps. In this paper, a hybrid method is proposed to ameliorate the above two issues. At first, to reduce the essential runtime of integrating the prior knowledge, a novel Prior Knowledge Learning based Region Classification (PKL-RC) method is proposed for classifying image regions and preliminarily locating foreground; furthermore, to generate more accurate saliency, a Locality-constrained Linear self-Coding based Region Clustering (LLsC-RC) model is proposed to improve the adjacency structure of the similarity graph for Manifold Ranking (MR). Experimental results demonstrate the effectiveness and superiority of the proposed method in both higher precision and better smoothness.

Keywords: Salient object detection, Complex scene, Locality-constrained Linear Coding (LLC), Manifold ranking, Region classification, Region clustering

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