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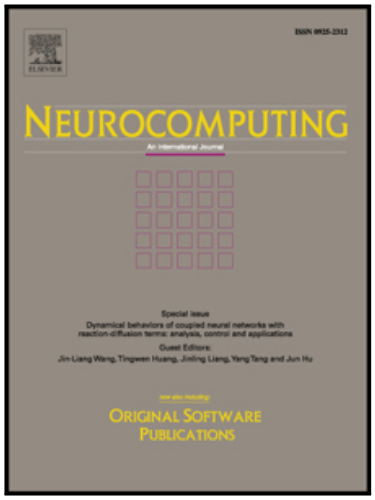

Deep Multi-Level Networks with Multi-Task Learning for Saliency Detection

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Deep Multi-Level Networks with Multi-Task Learning for Saliency Detection

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Abstract

Category-independent region proposals have been utilized for salient objects detection in recent works. However, these works may fail when the extracted proposals have poor overlap with salient objects. In this paper, we demonstrate segment-level saliency prediction can provide these methods with complementary information to improve detection results. In addition, classification loss (i.e.,softmax) can distinguish positive samples from negative ones and similarity loss (i.e.,triplet) can enlarge the contrast difference between samples with different class labels. We propose a joint optimization of the two losses to further promote the performance. Finally, a multi-layer cellular automata model is incorporated to generate the final saliency map with fine shape boundary and object-level highlighting. The proposed method has achieved state-of-the-art results on four benchmark datasets.

Keywords: Saliency detection; convolutional neural networks; multi-task learning.

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