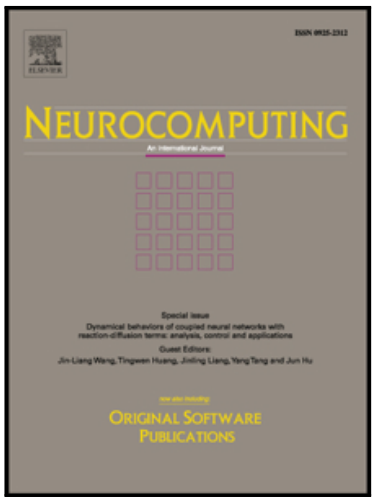

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Multi-scale Deep Encoder-Decoder Network for Salient Object Detection

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Abstract

Deep convolutional neural networks (CNNs) have recently made revolutionary improvements in salient object detection. However, most existing CNN-based models fail to precisely separate the whole salient object(s) from a cluttered background due to the downsampling effects or the patch-level operation. In this paper, we propose a multi-scale deep encoder-decoder network which learns discriminative saliency cues and computes confidence scores in an end-to-end fashion. The encoder network extracts meaningful and informative features in a global view, and the decoder network recovers lost detailed object structure in a local perspective. By taking multiple resized images as the inputs, the proposed model incorporates multi-scale features from a shared network and predicts a fine-grained saliency map at the pixel level. To easily and efficiently train the whole network, the light-weighted decoder breaks through the limit of conventional symmetric structure. In addition, a two-stage training strategy is designed to encourage the robustness and accuracy of the network. Without any post-processing steps, our method is capable of significantly reducing the computation complexity while densely segmenting foreground objects from an image. Extensive experiments on six challenging datasets demonstrate that the