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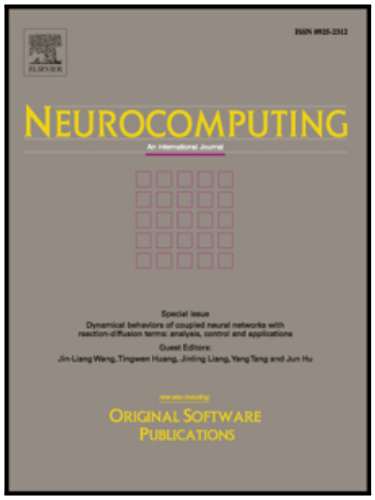

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Visual Saliency Estimation Using Constraints

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Abstract

In this paper, we propose visual saliency estimation using constraints. Based on the observations that salient regions are generally distinctive from the background, we define visual saliency as the possibility of being assigned to the label of the most salient region. First, we generate an initial saliency map for a given image at the superpixel level using superpixel segmentation and three common priors. Then, we select salient and non-salient seeds from the initial saliency map to generate adaptive constraints. Adaptive constraints are able to propagate the seed information adaptively by their correlations. Finally, we produce the visual saliency map by propagating saliency seeds to the whole image using a learned non-linear kernel mapping. Experimental results demonstrate that kernel learning and seed propagation are capable of learning distinctive saliency from images.

Keywords: Adaptive constraint, image understanding, kernel learning, saliency estimation, saliency propagation, saliency seed

1. Introduction

People have a great visual ability of focusing their attention on the most noticeable parts in a complicated scene. In the field of computer vision, simulating the capability of human visual system (HVS) to locate the most salient regions in an image becomes one of the most significant and challenging tasks. Visual saliency is a concept related to HVS, and most achievements are based on neurobiological studies [1]. In HVS, visual saliency represents the visual stimulus on different regions in an image. Saliency estimation is an operation to find the most

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