

Accepted Manuscript

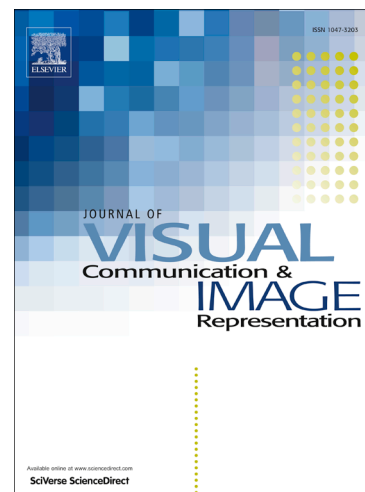
Saliency Detection via Local Structure Propagation

Ming Zhang, Yu Pang, Yunhe Wu, Yue Du, Hui Sun, Ke Zhang

PII: S1047-3203(18)30012-9
DOI: <https://doi.org/10.1016/j.jvcir.2018.01.004>
Reference: YJVICI 2116

To appear in: *J. Vis. Commun. Image R.*

Received Date: 7 February 2017
Revised Date: 2 December 2017
Accepted Date: 11 January 2018



Please cite this article as: M. Zhang, Y. Pang, Y. Wu, Y. Du, H. Sun, K. Zhang, Saliency Detection via Local Structure Propagation, *J. Vis. Commun. Image R.* (2018), doi: <https://doi.org/10.1016/j.jvcir.2018.01.004>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Saliency Detection via Local Structure PropagationMing Zhang^{1,4}, Yu Pang^{1,4}, Yunhe Wu^{1,4}, Yue Du^{1,4}, Hui Sun², Ke Zhang^{1,3,*}¹School of Information Science and Technology, Northeast Normal University, Changchun, 130117, China²College of Humanities & Sciences of Northeast Normal University, Changchun, 130024, China³School of Computer Science and Technology, Changchun University of Science and Technology, Changchun, 130022, China⁴Key Laboratory of Intelligent Information Processing, Northeast Normal University, Changchun, 130117, China

E-mail: zhangk113@nenu.edu.cn

Abstract Saliency detection is a popular topic in computer vision, especially propagation-based method. This paper proposes a novel and effective coarse-to-fine saliency detection framework. In the coarse map stage, color spatial distribution map based on hue cue and central compactness rule is proposed, and integrated with texture boundary contrast information and background information to construct multi-prior coarse saliency map. In the refining stage, saliency values are updated under the comprehensive guidance of local structure propagation which is a novel algorithm to preserve local structural integrity during saliency propagation. With the global and local information, the detection procedure enhances the correctness of salient object gradually. Demonstrated in the extensive experiments on the public benchmark datasets, the performance of the proposed framework is superior to the state-of-the-art methods.

Keywords Saliency detection; Coarse-to-fine; Local structure propagation; Color distribution map; Global and local information; Multi-prior

1. Introduction

Image region plays various role in the numerous tasks of computer vision. Rapidly detecting and locating the useful information from an image is a challenging research topic. As a preprocessing process, saliency detection aims at finding out the image regions which press close to human visual attention and effectively improves the computation speed of subsequent processing. Therefore, saliency detection is applied to a wide range of pattern recognition tasks, such as eye fixation prediction [1, 2], image retrieval [3], action recognition [4], and image segmentation [5] and so on.

The existing saliency methods are mainly divided into bottom-up methods and top-down methods. Top-down approaches [6-8] are driven by specific task and supervised learning with manually labeled ground truth. In contrast, bottom-up methods are driven by stimulus which are low-level features like color, texture and shape, widely explored by most researchers [9-12].

In this paper, we propose a novel bottom-up framework consisted of multi-prior coarse saliency map construction and saliency propagation for saliency detection. The multi-prior coarse saliency map utilizes various prior knowledge, even including a novel color spatial distribution map which is based on hue cue and central compactness rule. To further refining, each superpixel and its local structure information are taken to preserve the structural integrity of saliency objects

Download English Version:

<https://daneshyari.com/en/article/6938285>

Download Persian Version:

<https://daneshyari.com/article/6938285>

[Daneshyari.com](https://daneshyari.com)