Discovering Visual Saliency for Image Analysis

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12/21/2016 at 02:00 pm
CoRE A (301)

Abstract

Salient object detection is a key step in many image analysis tasks as it not only identifies relevant parts of a visual scene but may also reduce computational complexity by filtering out irrelevant segments of the scene. This motivates the question of how to efficiently find salient regions and objects in images. In this research, we propose novel methods to automatically discover the salient regions and objects in the images.

First, we propose salient object detection methods that combine a shape prediction driven by a convolutional neural network (CNN) with the mid and low-region preserving image information. We show that encoding spatial image content for facilitating the information of the object shape can result in more accurate salient object detection than traditional binary classification based approaches. Our model learns a shape of a salient object using a CNN model for a target region and estimates the full but coarse saliency map of the target image. The map is then refined using image specific low-to-mid level information.