A New Approach of Feature Combination for Object Detection in Saliency-based Visual Attention

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Abstract

This paper presents a fuzzy approach of feature maps combination in saliency-based visual attention model proposed by Itti. This strategy applies fuzzy rules to combine three conspicuity maps instead of linear combination in the basic model of visual attention that does not seem reasonable biologically. In this method, in addition to bottom-up features, top-down cues are also considered in the model. As fuzzy rules are designed using target mask information, top-down characteristics of the target are considered helping the model to make the target more conspicuous in the final saliency map. This can be applied in further processing such as object detection and recognition application. The experimental results show the effectiveness of our new fuzzy approach in finding the target in the first hit. A database of emergency triangle in natural environment background is used in this paper to show the results. Moreover, the comparison of this fuzzy combination approach with some other combination methods also proved the priority of the approach over other combination strategies.

References
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Index Terms

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Pattern Recognition
Keywords

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Object Detection