Applications of Computational Visual Attention Models to Visually Salient Regions Detection in Cultural Heritage Images Analysis

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Abstract

Computational visual attention systems used for detecting the most salient regions in images are based on biological models of the human vision. According to the Marr's Tri-Level Hypothesis, visual information processing systems are composed of three complementary levels of analysis: computational, representational and physical level. This principle is implemented recently through a so-called filters-based approach. Based on such a solution, we develop a software system for detecting multiple salient regions based on color, orientation details and intensity contrast features, across several scales, and investigate the potential applications of such a system for cultural heritage images analysis. The developed implementation extends the solution from the literature by allowing the selection of a sub-set of relevant features, to adapt for a specific class of images. Our implementation allows the detection of multiple salient regions, not necessarily connected; the number and extent of these regions may be used as descriptors for the analyzed image, being potentially useful for image classification. The preliminary verifications on some religious paintings show the validity and potential of the implemented system for the analysis and classification of these images, the detected salient regions being compliant with the expert's knowledge about the most salient elements in those religious paintings.

Biography

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