

77. PERCEPTION-GUIDED MODELS FOR IMAGE CROPPING AND PHOTO AESTHETIC ASSESMENT

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Image cropping mostly used in printing industry, telephotography and cinematography. Conventional approaches suffer from the following three challenges. First the role of semantic contents are not to be focused and that are many times more important than low level visual features in photo aesthetics. Second the absence of a sequential ordering in existing cropping models. In contrast humans look at semantically important regions sequentially when viewing a photo. Third, photo aesthetic quality evaluation is a challenging task in multimedia and computer vision fields. To address these challenges, we proposes semantics-aware image cropping, which crops the image by assuming the process of humans sequentially perceiving semantically important regions of a photo. In particular, a weakly supervised learning paradigm is developed to project the local aesthetic signifiers (graphlet in this paper) into a low-dimensional semantic space. Thenceforward each graphlet can be reported by multiple types of visual features, both at low level and in high level. Since humans generally perceive only a few prominent regions in a photo, a sparsity-constrained graphlet ranking algorithm is proposed that seamlessly incorporates both the low-level and the high level visual cues. The top ranked graphlets are the recognized visually/semantically prominent graphlets in a photo. Finally we learn a probabilistic aesthetic measure based on such actively viewing paths(AVPs) from the training photos that are noticed as aesthetically pleasing by multiple users. The observational results shows that :1)the AVPs are 87.65% coherent with real human gaze shifting paths, as verified by the eye-tracking data: and 2) our photo aesthetic measure outperforms many of its competitors.

Keywords—multimodal; Actively viewing; Gaze shifting; Photo Cropping; Graphlet Path.

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