Pseudo-Multiple-Exposure-based Tone Fusion and Visual-Salience-based Tone Mapping for High Dynamic Range Images: A Review

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Abstract

This paper presents an introduction to novel saliency-aware weighting and edge-aware weighting for HDR images. These techniques are incorporated into an existing guided image filter to form a perceptually guided image filter. The saliency-aware weighting and the new filter are applied to design a new local tone-mapping algorithm for HDR images such that both extreme light and shadow regions can be reproduced on conventional low dynamic range displays. The Visual-Salience-Based Tone Mapping (VSBTM) filter preserves sharp edges in the base layer better than the existing guided filter. Halo artifacts are thus significantly reduced in the tone-mapped image. Moreover, the visual quality of the tone-mapped image, especially attention-salient regions, is improved by the saliency-aware weighting. Pseudo-Multiple-Exposure-Based Tone Fusion (PMEBTF) gives a region-based enhancement on the pseudo-exposures to boost details in the most distinct region. Thereby the region-enhanced pseudo-exposures are fused into an HDR image. The fused image thus enhances details in the bright region of the dark image and the dark region of the bright image.
References


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Index Terms

Computer Science

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Keywords

Edge-aware weighting, high dynamic range (HDR), local filtering, saliency-aware weighting, tone mapping.