Abstract

It is well-known that local filtering-based edge preserving smoothing method suffers from halo artifacts. In this paper, a weighted guided image filter is introduced by incorporating an edge-aware weighting into an accessible guided image filter to address the problem. The WGIF inherit benefits of both global and local smoothing filters in the sense that: 1) the difficulty of the WGIF is \( O(N) \) for an image with \( N \) pixels, which is same as the GIF and 2) the WGIF can avoid halo artifact like the existing global smoothing filters. The WGIF is applied for single image detail enhancement, single image mist removal, and fusion of differently exposed images. Investigational results show that the resultant algorithms create images with better visual quality and at the same time halo artifacts can be avoided from appearing in the final images with negligible rise on running times.

References


Index Terms

Computer Science  Image Processing
Keywords

Edge-preserving smoothing, weighted guided image filter, edge-aware weighting, detail enhancement, haze removal, exposure fusion.