

Contrast Enhancement in Digital Images Using an Adaptive Unsharp Masking Method

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Abstract : Captured images may suffer from Gaussian blur due to poor lens focus or camera motion. Unsharp masking is a simple and effective technique to boost the image contrast and to improve digital images suffering from Gaussian blur. The technique is based on sharpening object edges by appending the scaled high-frequency components of the image to the original. The quality of the enhanced image is highly dependent on the characteristics of both the high-frequency components and the scaling/gain factor. Since the quality of an image may not be the same throughout, we propose an adaptive unsharp masking method in this paper. In this method, the gain factor is computed, considering the gradient variations, for individual pixels of the image. Subjective and objective image quality assessments are used to compare the performance of the proposed method both with the classic and the recently developed unsharp masking methods. The experimental results show that the proposed method has a better performance in comparison to the other existing methods.

Keywords : unsharp masking, blur image, sub-region gradient, image enhancement

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