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Analysis of Global Spatial Statistics Features in Existing Contrast Image Quality Assessment Algorithm

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Abstract:

Most of existing image quality assessment algorithms (IQAs) have been developed during the past decade. However, most of them are designed for images distorted by compression, noise and blurring. There are very few IQAs designed specifically for CDI, e.g. Contrast distortion may be caused by poor lighting condition and poor-quality image acquisition device. No Reference-Image Quality Assessment (NR-IQA) for Contrast-Distorted Images (NR-IQA-CDI) is one of these few IQAs. The five features used in NR-IQA-CDI are the global spatial statistics of an image including the mean, standard deviation, entropy, kurtosis and skewness. Unfortunately, the performance of NR-IQA-CDI are not encouraging in two of the three test image databases, TID2013 and CSIQ, where the Pearson Linear Correlation Coefficients are only around 0.57 and 0.76, respectively. Therefore, this paper presents the reason which led to poor results in existing NR-IQA-CDI. This paper also can address the problem of existing NR-IQA-CDI which the weakness of the global features in assessing images with uneven contrast.

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