

ADAPTIVE IMAGE CONTRAST ENHANCEMENT TECHNIQUE BASED ON LOCAL IMAGE STATISTICS.

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Abstract

A simple improved adaptive contrast enhancement technique is presented, based on local image statistics. Further quality measures like derived contrast gain, image brightness, perceived contrast in terms of brightness also known as standard deviation of gray levels (stddev) have been defined for the processed image. A comparison of various contrast enhancement transformation functions in context to implementation of basic edge detectors and LoG (Laplacian-of-Gaussian) Filter is carried out with reference to their performance in image contrast enhancement and the effect on the enhanced image histogram. The proposed method deals in determining a contrast transformation function which yields maximum contrast gain by maintaining the standard deviation of gray levels of modified image as near as possible to that of the original image. The results indicate that the combination of LoG Filter and contrast enhancement function hyperbolic sine embedded by enhancement factor ($\alpha - e$) yields the best results.

Key Words : *Bright-g, Bright-g3, Standard deviation of gray levels (stddev), O-Contrast, F-Contrast, ContrastGAIN.*