

IMPLEMENTATION OF ADVANCED IMAGE CONTRAST ENHANCEMENT TECHNIQUES

A PROJECT REPORT SUBMITTED TO

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ABSTRACT

Various enhancement schemes are used for enhancing an image which includes gray scale manipulation, filtering and Histogram Equalization (HE). Histogram equalization is one of the well known image enhancement technique. It became a popular technique for contrast enhancement because this method is simple and effective. In the latter case, preserving the input brightness of the image is required to avoid the generation of non-existing artifacts in the output image.

Histogram equalization (HE) is widely used for contrast enhancement in digital images. However, this technique is not very well suited to be implemented in consumer electronics, such as television, because the method tends to introduce unnecessary visual deterioration such as the saturation effect. To overcome these drawbacks different contrast enhancement techniques are used which are implemented. Comparative analysis of different enhancement techniques will be carried out.

In our project we implemented three different contrast enhancement techniques. They are Equi-Divided Sub-Image Histogram Equalization, Dualistic Sub-Image Histogram Equalization and Dynamic Histogram Equalization. Dualistic Sub-Image Histogram Equalization divides histogram of an image into two parts equally based on information present in it and equalizes them independently.

Dynamic histogram equalization divides the histogram into several subsections and equalizes them independently. However, in BPDHE, the division of the histogram is carried out based on the locations of the local maximums of the input histogram itself.

The comparison will be done on the basis of subjective and objective parameters. Subjective parameters are visual quality and computation time and objective parameters are Peak signal to-noise ratio (PSNR), Mean squared error (MSE), and Absolute Mean Brightness Error.