Abstract

This paper compares brightness preserving image enhancement techniques using bi-histogram equalization and tri-histogram equalization methods. Traditionally for image contrast enhancement, global histogram equalization technique is used extensively. However, global histogram equalization tends to change the mean brightness of any image to the middle gray level of the dynamic range, which often results in over or under enhancement and introduce some annoying artifacts. To overcome such problems, several bi-histogram based techniques and tri-histogram based technique has been proposed. While bi-histogram based techniques divides the histogram of any image into two sub-histograms and equalize them independently, tri-histogram based technique divides the histogram into three sub histograms. This paper compares some of these equalization techniques. Simulation results can be quantitative and qualitative in nature. For quantitative analysis, Absolute Mean Brightness Error (AMBE) measurement has been used. And qualitative results can be observed from the image itself.

**Index Terms**

Computer Science  
Image Processing

**Keywords**

Brightness Preservation, Image Enhancement, Bi-histogram Equalization, Tri-histogram Equalization