Color Image Processing using Histogram Analysis

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Abstract. In this report, a new color combination method is proposed. Test results with natural images are presented to compare and analyze presented method’s performance.

Keywords: Image, histogram, color image.

1 Introduction

Image processing change images in different ways, and they include photographs, photochemical photographs, or illustrations. The higher image quality enables researchers to develop state-of-art approaches for image enhancement [add]. The histogram equalization has been employed due to its simplicity and efficiency. The histogram equalization modifies the pixel intensities and the intensity histogram of the resulting image becomes uniform.

We assume gray scale image and color image are 1-D and 3-D approach as color image has three color channels. The rest of this report is composed as follows. In Section 2, we introduce the flowchart of the proposed method. Section 3 shows simulation results. Conclusion is shown in Section 4.

2 Proposed algorithm

Figure 1 shows the flowchart of the proposed method. The presented method consists of following steps:

Step 1: Channel separation: Color image to gray scale image  
Step 2: Histogram investigation  
Step 3: Histogram modification in each color channel  
Step 4: Reconstruct color images with different color combination  
Step 5: Image display
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Fig. 1. Flowchart of the proposed method.

Fig. 2. Histogram of #30 LC image. (a) R channel, (b) G channel, and (c) B channel.

3 Simulation Results

The experiments were conducted on LS test images. Figure 2 shows the histogram of R, G, B channels for #30 LC image. Figure 3 shows the reconstructed color images with different color combination.

4 Conclusion

A new color combination approach was presented in this report. Simulation results obtained by natural images are presented to assess the visual performance.
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Fig. X. Color channel exchanged images on #21, #22, #29, #30 LC images. (a) RGB pair, (b) RBG pair, (c) GRB pair, (d) GBR pair, (e) BRG pair, and (f) BGR pair.

References