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Generating RGB Color Image with Visible Color from Gray Image

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Abstract
Present work is a new method of converting a gray image to an RGB color image of visible color.
Keywords: Gray image, RGB color, visible color

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I. Introduction

There may be methods to convert a gray image to RGB color image. But the devised method presented here is quite new of its kind using matlab 6.1. Here author has presented a method of converting to visible RGB color of 24 bit, from gray image.

II. Experimental Procedures

Here an RGB color image of visible color is generated from a sample gray image.
The steps of conversion process are as follows:

1. One gray sample image is taken.
2. First channel of red is generated from the sample image.
3. Similarly second channel of green is generated.
4. In the same way a third channel of blue is generated.
5. All the three new channels are combined to generate RGB color image.

1.1 Image Matrices of 8 bit gray

For better understanding of the color generation process from gray image, the author has presented this 2.1 section.

120	200
150	50

Figure 1: Original 2x2 gray sample image matrix

Figure 1 shows a 2 by 2 sample gray image matrix

100	180
130	30

Figure 2: First channel of red color

Figure 2 shows first channel of red color, generated by subtracting 20 from gray values of Figure 1 matrix.

20	100
50	-50

Figure 3: Second channel of green color

Figure 3 shows second channel of green color, generated by subtracting 100 from gray values of Figure 1 matrix.

-30	50
0	-100

Figure 4: Third channel of blue color

Figure 4 shows third channel of blue color generated by subtracting 150 from gray values of Figure 1 matrix.

100	180
130	30

Figure 5: First channel of red without approximation

20	100
50	0

Figure 6: Second channel of green after approximation

0	50
0	0

Figure 7: Third channel of blue after

approximation

Figure 6 and Figure 7 are generated after approximation of negative values to zero except Figure 5 which is without approximation. In image matrices section 2.1, the author has taken help of simple 2x2 image matrices. Figure 10, figure 12 and figure 14 are generated by color generation process as depicted in figure 1 to figure 7.

2.2 Images and corresponding histograms

Figure 8: Sample gray image (Pout.tif)

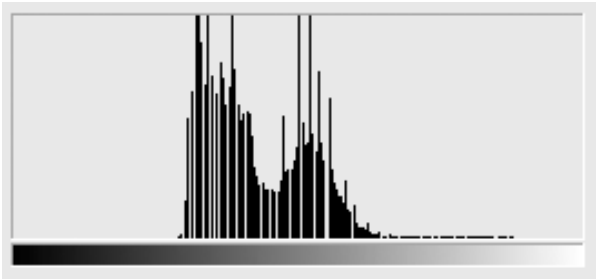

Figure 9: Histogram of Figure 8.

Figure 10: First red color (R2.tif) channel generated from figure 8.

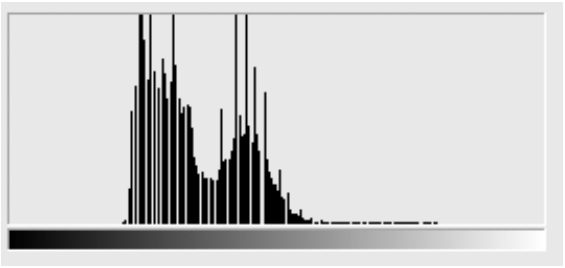

Figure 11: Histogram of Figure 10

Figure 12: Second (G2.tif) channel of green color generated from Figure 8

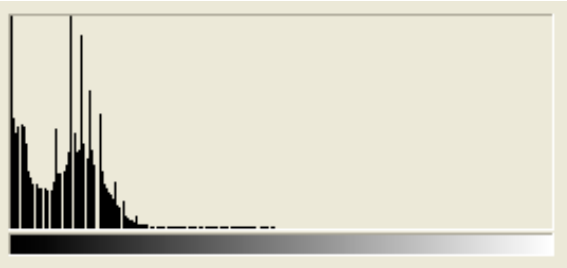

Figure 13: Histogram of Figure 12.

Figure 14: Third blue color (B2.tif) channel generated from Figure 8.

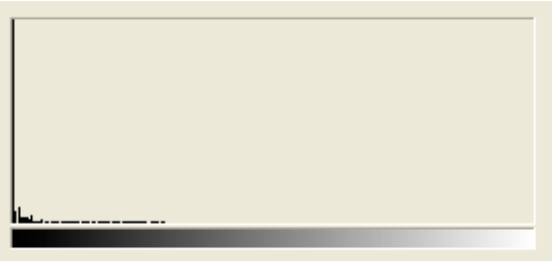

Figure 15: Histogram of Figure 14.

Figure 16: RGB color image (gr2col.tif)

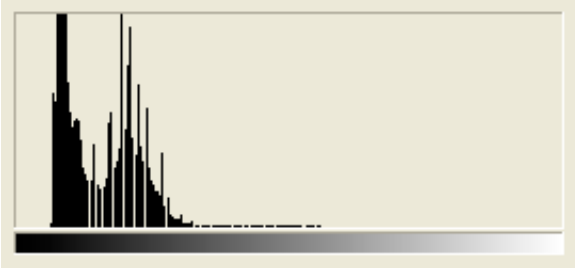

Figure 17: Histogram of Figure 16.

III. Results and Discussions

Figure 10, figure 12 and figure 14 are the red, green and blue color channels generated from the original sample gray image of figure 8. Figure 16 is the final RGB color image of visible color generated which is of considerable good quality.

IV. Conclusion

The proposed method can be used to generate RGB color image with visible color. This method is quite faster. One of the possible applications of this newer method is color imaging.

Acknowledgements

1. Matlab 6.1, The Mathworks, Inc, 1984-2001, USA