

A Study for Yamanaka Images for Camera

Gwanggil Jeon and Young-Sup Lee

Department of Embedded Systems Engineering, Incheon National University,
12-1 Songdo-dong, Yeonsu-gu, Incheon 406-772, Korea
{gjeon,ysl}@incheon.ac.kr

Abstract. A camera uses a CFA to have the colors of the scene in a picture. Therefore, the downsampled red, green, and blue information are obtained, and an upsampling process is mandatorily needed. In this paper, we study on Yamanaka patterned CFA in different color combination.

Keywords: Downsampling, upsampling, CFA, different pattern.

1 Introduction

For digital cameras, scene colors are obtained by a single CCD or CMOS sensor array due to price issue [1-5]. There have been many color restoration approaches proposed [6-27]. In this paper, we present a new color demosaicking method based on different color patterns such as Yamanaka. Section 2 explains presented CFA patterns and filter size combination. The proposed approach's performance is studied and explained in Section 3. Finally, we report the conclusions in Section 4.

2 Bayer to Yamanaka patterns Transition Figure

1 shows the Bayer to Yamanaka pattern transition.

3 Least Squares Methods

The least-squares method [28] was used to obtain filters.

4 Experimental results

In this paper, two performance metrics were used: CPSNR and SCIELAB [29]. We used ten LC images with the size of 720×540 or 540×720 [30]. Figure 2 and Fig. 3 show an example of CPSNR and SCIELAB results.

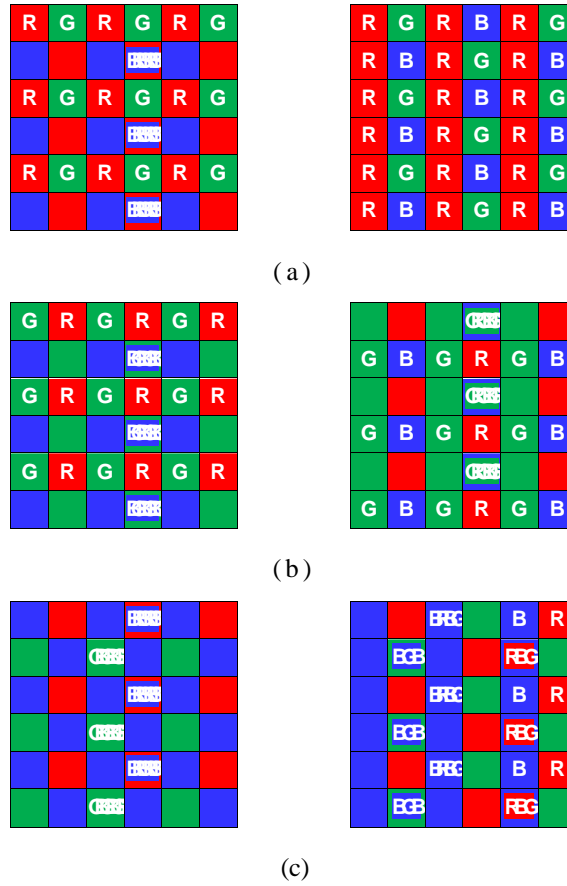


Fig. 1. Bayer and Yamanaka patterns used in single-CCD digital cameras: (a) RRGB, (b) RGG B, and (c) RGG B.

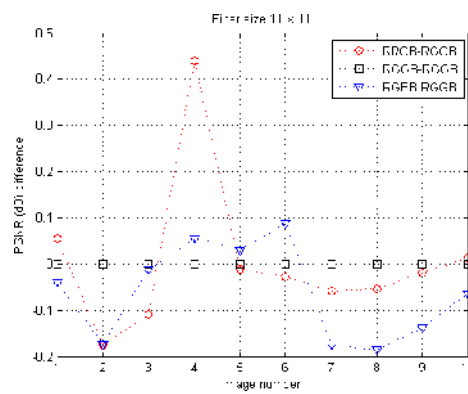


Fig. 9. Average CPSNR results.

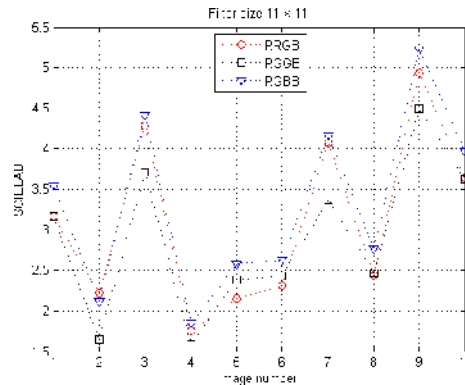


Fig. 10. Average SCIELAB results.

5 Conclusions

In this article, we studied the impact between filter size and color configuration.

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