Reversible Data Hiding for Bayer Pattern

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ABSTRACT

Digital cameras are generally applied to the general public in recent years. The scene capturing and file storing process of digital camera involves multiple image processing . In order to reduce cost and volume, digital camera usually utilizes one CCD (Charge-Coupled Device) sensor and color filter array (CFA) for capturing images, it reconstructs a full-color image using a color interpolation method, this process is called Demosaicking. Demosaicking has been integrated into the design of a variety of digital cameras. The intellectual property protection is advantage for data hiding technique. Digital camera combines with data hiding technique is an important issue. In this paper, we propose a reversible data hiding algorithm for CFA mosaic images. The proposed algorithm utilizes CFA interpolation for embedding hidden data. Secret information is hidden into the demosaicking image. Experimental results on CFA mosaic images demonstrate that the proposed algorithm can achieve high embedding capacity while maintaining good image quality. When the embedding rate is 0.8 bpp, the peak signal-to-noise ratio (PSNR) is about 52.98dB. When the embedding rate is 5.0 bpp, the peak signal-to-noise ratio (PSNR) is about 25.11dB. The results indicate that the proposed scheme can embed more data with less distortion. The proposed data hiding algorithm is very simple. It is easy to implement in hardware or software in the digital camera.

Keywords : Data hiding、Demosaicking、CFA、Bayer pattern、CCD

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