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Scrambling for Image and Video

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Abstract. A scrambler is a tool which transposes image or video to uninterpretable ones. As digital image and video technology has been growing, protecting copyright of the image and video contents becomes an important issue. In this report, study image and video scrambling method by random shuffling approach.

Keywords: Image, video, scrambling, protection.

1 Introduction

Image and video scrambling is a growing issue as protecting contents copyright is important. Image and video scrambling is well employed, and its general way is to hide unwanted information and disclose uninterpretable image and video. There have been many methods regarding image and video scrambling [1-11].

The rest of this report is composed as follows. In Section 2, we describe the block diagram of the proposed method. Section 3 shows experimental results. Conclusion remarks are drawn in Section 4.

2 Proposed algorithm

Figure 1 shows the block diagram of the proposed scrambling method. The proposed method consists of following four steps:

1) Image separation with *N*x*N* block size
2) Block shuffling
3) Randomly chosen color channels complementation
4) Display contents to viewers

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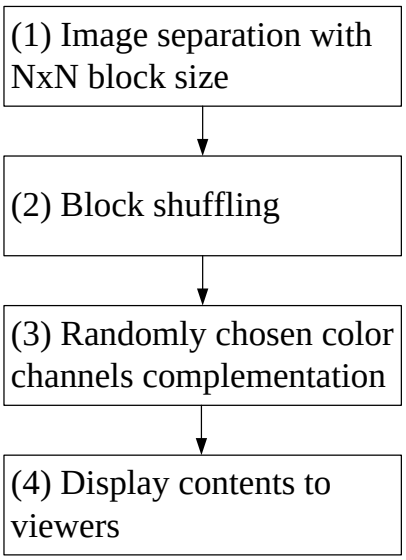


Fig. 1. Block diagram of the proposed method.

3 Experimental Results

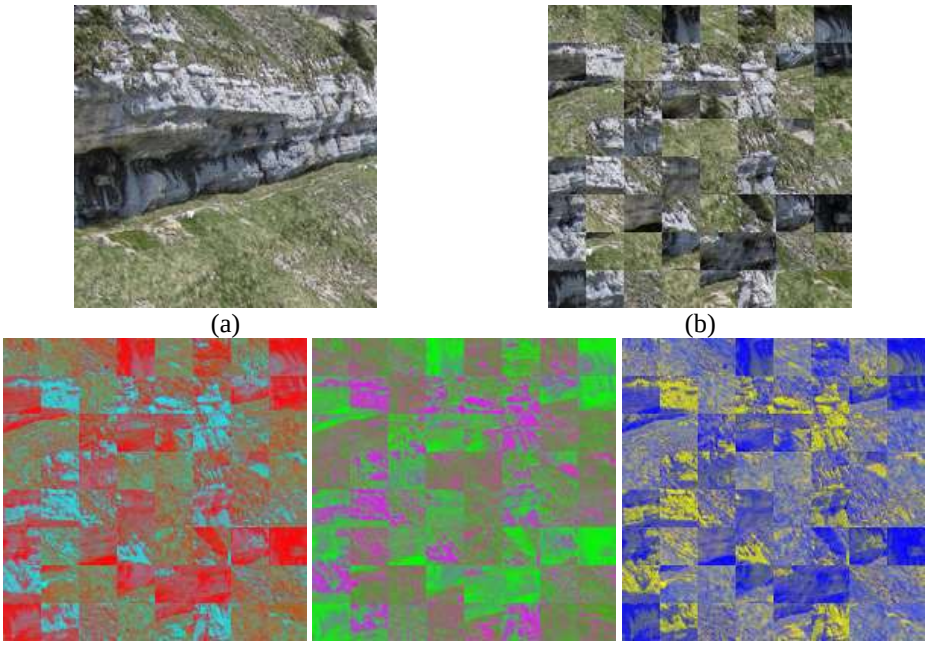
We implemented the proposed algorithm on test images. Scrambled images are shown below. Figures 2 and 3 show the results of Step (2). Figures 4 and 5 show the results of Step (3).

(a) (b) (c) (d) (e) (f)

Fig. 2. (a) Original LC #119 image, (b-f) scrambled images with random shuffling.

(a) (b) (c) (d) (e) (f)

Fig. 3. (a) Original LC #120 image, (b-f) scrambled images with random shuffling.



(a) (b)

(c) (d) (e)

Fig. 4. (a) Original LC #121 image, (b) scrambled image, (c) scrambled image with R channel complemented, (d) scrambled image with G channel complemented, and (e) scrambled image with B channel complemented.

4 Conclusion

The algorithm of digital image and video scrambling by block shuffling and color channels complementation are introduced. The scrambling is completed by randomly chosen shuffling table, therefore the implementation is conducted easily.

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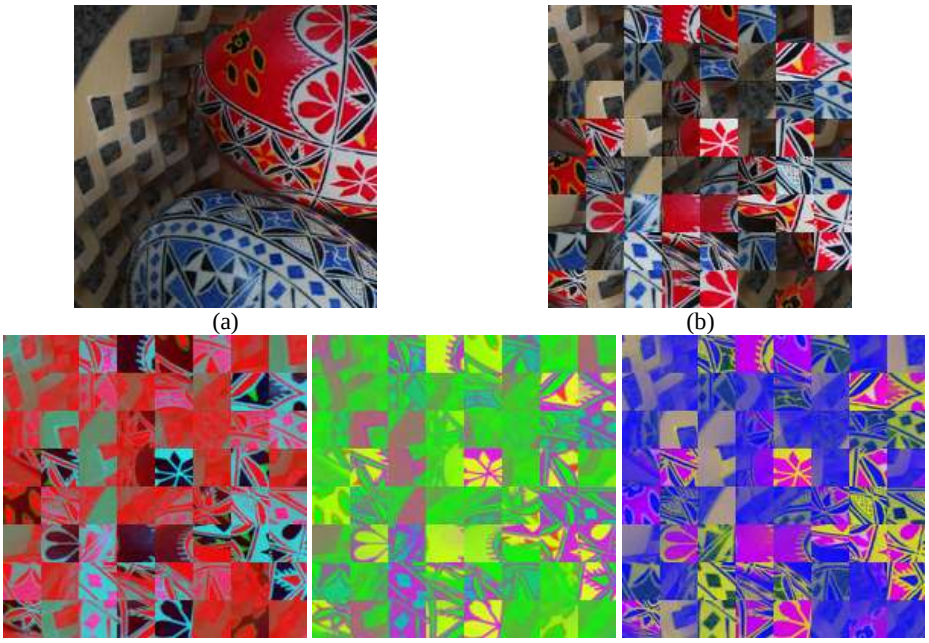

(a) (b)

(c) (d) (e)

Fig. 5. (a) Original LC #127 image, (b) scrambled image, (c) scrambled image with R channel complemented, (d) scrambled image with G channel complemented, and (e) scrambled image with B channel complemented.

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