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A Block-based Digital Oil Painting Method

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Abstract. In this paper, we present a method which gives oil painting effect for color images. In general, oil painting method is a process of painting with pigments that are bound with drying oil. The oil painting is widely adopted for artist who utilizes different oils. The proposed method uses digital painting approach and makes an original image painted with oil. The main purpose of oil painting is to generate visually friendly image. The conventional oil painting method requires large computations and long execution time. However our proposed method needs less complexity due to its simplicity. Performance comparison is provided that proves the reliability of our proposed method.

Keywords: Oil painting, block size, color image, embossing effect

1 Introduction

The oil painting (OP) is a procedure of painting with pigments that are bound with drying oil [1-3]. An artist can adopt different oils in the same painting depending on specific pigments [4,5]. The OP can be implemented by digital painting using computer [6-8]. In this paper we proposed OP method for color images.

The goal of OP process is to make an original image looks like an oil painting [9,10]. This process is also found in Photoshop, but the possible effect is limited. One of issues of OP is that time consumption is quite long and the process is non-linear. Therefore, once generating the OP image, it is hard to recover the original image.

In this paper, we propose a new OP method which effectively generates oil effected color images. We generate OP images using five methods (min, max, minmax, median, and histogram based). The embossing process is applied to original image and the result images are added to method selected output image. Section 2 presents a proposed method. Simulation results are shown in Section 3. The objective and subjective performances are compared in this section. We use three objective performance metrics, PSNR, MSE, and FSIM. Conclusion remarks are given in Section 4.

2 Proposed method

Figure 1 shows the flowchart of the proposed method.

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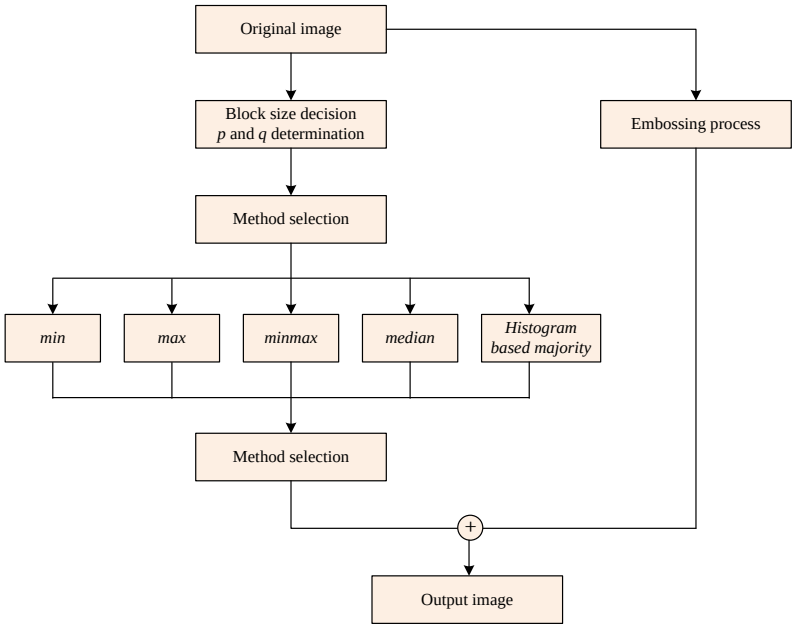


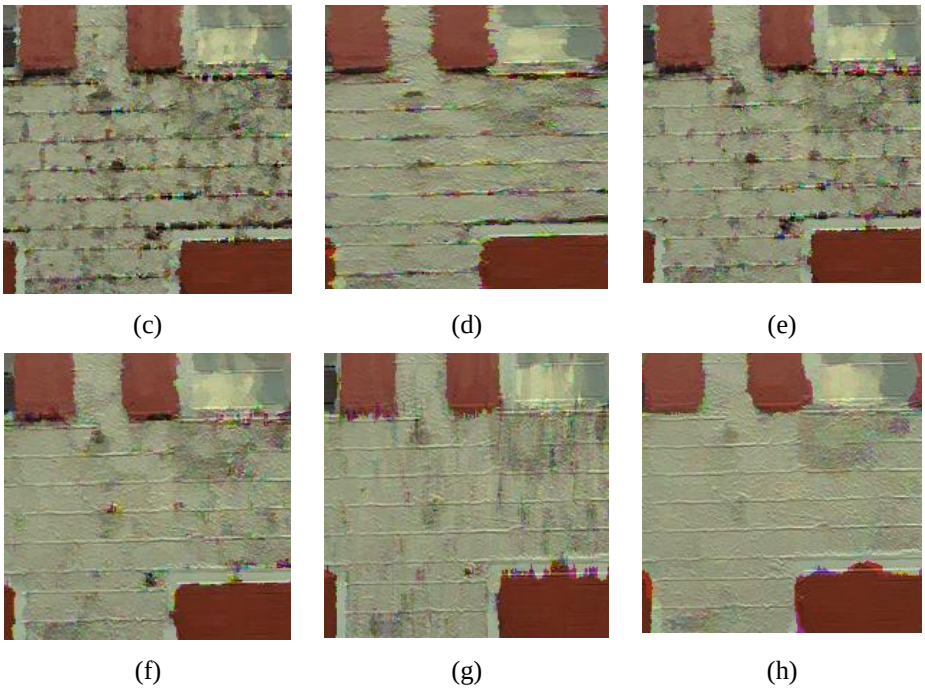
Fig. 1. Block diagram of the proposed oil painting method

3 Experimental Results

Figure 2 shows the results of the proposed method.

(a)

(b)



(c) (d) (e)

(f) (g) (h)

Fig. 2. Implemented results on Kodak #1 image with: (a) original image, (b) (p,q)=(3,3), (c) (p,q)=(5,5), (d) (p,q)=(5,20), (e) (p,q)=(7,7), (f) (p,q)=(10,10), (g) (p,q)=(20,5), and (h) (p,q)=(20,20).

4 Conclusions

This paper proposes an oil painting technique for color images. Generally speaking, oil painting approach is a procedure of painting with pigments that are bound with drying oil. The goal of the proposed method is to create visually friend oil painting images. Experimental results prove that our proposed method is reliable and give satisfied results. Objective and subjective performance comparison is provided.

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