



IMAGE FORGERY USING AN ENHANCED BAYESIAN MATTING ALGORITHM*

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ABSTRACT—The development of forgery techniques for multimedia has recently become an important research topic. This paper proposes a new method to construct a tampered image based on the matting approach. Most previous matting techniques focus on the alpha estimation of the source image, since an accurate alpha matte can help with compositing the selected object into a new scene. However, the lighting conditions are inherently assumed to be coherent between the source image and the new scene. We propose an enhanced Bayesian matting method that adopts a new nearest-neighbor sampling method to extract color information. It can produce a more accurate alpha matte than previous methods, especially on the fuzzy boundaries. Furthermore, the paper deals with the lighting consistency problem. The proposed approach analyzes the color variations and shading effect and then adjusts the extracted foreground object to combine with the new background. Experimental results demonstrate the effectiveness of our method by showing the forged results of the fuzzy object and the new background under different lighting conditions.

Key Words: Image forgery, digital matting, Bayesian approach, consistency problem, shading effect.