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Improved multi-scale composition based on high-quality candidate region extraction

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Abstract

Image composition is the process of first extracting a candidate region from a candidate image and then embedding this region into a target image. Traditional composite methods focus on reducing appearance gaps (boundary, brightness, color, and sharpness) between the candidate region and the target image. However, in the composite process, low-quality candidate region extraction negatively affects the composite results. In several complicated images, the composite results are not realistic, especially for the boundary.

This study proposes an innovative algorithm that can solve the drawback of traditional methods. We combined wavelet transform and high-quality candidate region extraction model to achieve composition. On one hand, segmentation and improved matting models are used for high-quality candidate region extraction. On the other hand, wavelet transform is used for multi-scale decomposition, which obviously improves the composite results. Experimental results using a large database show the superiority of the proposed method.

Keywords: image composition, Poisson equation, candidate region, wavelet transform

1. Introduction

In recent years, researchers have conducted studies on the development of composite techniques. In terms of high-quality composition, we inevitably focus on one essential problem:

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