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Detection and restoration of cracked digitized paintings and manuscripts using image processing (Article)

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Abstract

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Ancient paintings are cultural heritage that can be preserved via computer aided analysis and processing. These paintings deteriorate due to undesired cracks, which are caused by aging, drying up of painting material, and mechanical factors. These heritages need to be restored to their respective original or near-original states. There are different techniques and methodologies that can be used to conserve and restore the overall quality of these images. The main objective of this study is to analyze techniques and methodologies that have been developed for the detection, classification of small patterns, and restoration of cracks in digitized old painting and manuscripts. The purpose of the developed algorithm is to identify cracks using the thresholding operation, which was the output of the tophat transform morphology. Afterwards, the breaks, which were wrongly identified as cracks, were separated for utilization in a semi-automatic procedure based on region growth. Finally, both the median filter and weighted median techniques were applied to fill the cracks and enhance image quality. © 2016 Authors.

Author keywords

Classification Cracks Detection Filling Image processing Restoration

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