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Robust Median Filtering Detection based on Local Difference Descriptor

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Abstract

As a content-preserved image manipulation, median filtering approach has received extensive attention from forensic analyzers. In this paper, we propose a local difference descriptor with two feature sets to reveal the traces of median filtering. The first set of features are fused rotation invariant uniform local binary patterns (LBP), which can quantify the occurrence statistics of micro-features in an image. The second features set is extracted from pixel difference matrix (PDM), which can better describe how pixel values change introduced by median filtering. To validate the effectiveness of the proposed approach, we compare it with the state-of-the-art median filtering detectors in the cases of JPEG compression and low resolution. Experimental results show that our approach outperforms existing detectors. Moreover, our approach is more reliable than prior methods to detect tampering involving local median filtering.

Keywords: Image forensics, Median filtering, Local binary patterns, Pixel difference matrix, Local difference descriptor.

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1. Introduction

Owing to the widespread applications of sophisticated digital image editing softwares, digital images can be edited easily and the detection of tampered

☆Fully documented templates are available in the elsarticle package on CTAN.

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