

**Second-Order Statistics Analysis to Cope With Contrast Enhancement Counter-Forensics**

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IEEE SIGNAL PROCESSING LETTERS  
Volume: 22 Issue: 8 Pages: 1132-1136  
DOI: 10.1109/LSP.2015.2389241  
Published: AUG 2015

Document Type: Article  
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**Abstract**  
Image forensic analysis for the detection of contrast enhancement and other histogram-based processing, usually relies on the study of first-order statistics derived from image histogram. Methods based on such an approach, though, are easily circumvented by adopting some counter-forensic attacks. To overcome such a problem, we propose a novel forensic technique based on the study of second-order statistics derived from the co-occurrence matrix. The experiments we carried out demonstrate that the proposed approach is very effective even in the presence of counter-forensic attacks, while it retains the good performance of histogram-based methods when no attack is present.

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IEEE Signal Processing Letters

Volume 22, Issue 8, 1 August 2015, Article number 7004806, Pages 1132-1136

Second-order statistics analysis to cope with contrast enhancement counter-forensics (Article)

De Rosa, A.<sup>a</sup>, Fontani, M.<sup>a</sup>, Massai, M.<sup>a</sup>, Piva, A.<sup>a</sup>, Barni, M.<sup>b</sup>

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Abstract

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Image forensic analysis for the detection of contrast enhancement and other histogram-based processing, usually relies on the study of first-order statistics derived from image histogram. Methods based on such an approach, though, are easily circumvented by adopting some counter-forensic attacks. To overcome such a problem, we propose a novel forensic technique based on the study of second-order statistics derived from the co-occurrence matrix. The experiments we carried out demonstrate that the proposed approach is very effective even in the presence of counter-forensic attacks, while it retains the good performance of histogram-based methods when no attack is present. © 1994-2012 IEEE.

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