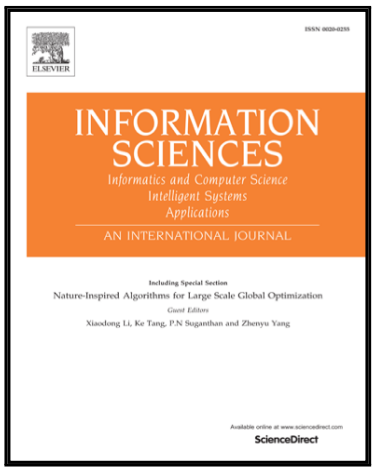

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PII: S0020-0255(18)30480-8
DOI: 10.1016/j.ins.2018.06.040
Reference: INS 13733

To appear in: *Information Sciences*

Received date: 18 August 2017
Revised date: 29 January 2018
Accepted date: 14 June 2018

Please cite this article as: Chi-Man Pun , Jim-Lee Chung , A Two-stage Localization for Copy-Move Forgery Detection, *Information Sciences* (2018), doi: 10.1016/j.ins.2018.06.040

A Two-stage Localization for Copy-Move Forgery Detection

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Abstract-A two-stage localization for copy-move forgery detection (CMFD) is proposed in this paper. In the first stage, rough localization, Simple Linear Iterative Clustering (SLIC) is employed to segment the image into meaningful patches (superpixels). Subsequently, the Weber Local Descriptor (WLD) is proposed to calculate and extract the feature from each superpixel. Then, based on an experimental analysis, a matching threshold is employed to obtain the superpixel matches. Finally, Euclidean distance is employed to filter out the weak features of the superpixels and obtain the rough suspected matches. In the second stage, precise localization, circular blocks with different radii are slid over the above rough suspected regions to extract the block features by employing the Discrete Analytic Fourier–Mellin Transform (DAFMT). Then, Locality-Sensitive Hashing (LSH) is employed to match the candidate circular block matches. Post-processing is applied to further filter out the weak matches and obtain the detected regions. Geometric morphological operations are employed to remove the isolated regions and indicate the final detected regions. The comprehensive experimental results demonstrate that the proposed method performs better on public benchmark databases than do other state-of-the-art CMFD schemes.

Keywords—Copy-move forgery detection, Weber Local Descriptor, Discrete Analytic Fourier-Mellin Transform, circular blocks with different radii.