A Robust Non-blind Algorithm for Watermarking Color Images using Multi-resolution Wavelet Decomposition

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Abstract

Research in the field of watermarking is flourishing providing techniques to protect copyright of intellectual property. Among the various methods that exploit the characteristics of the Human Visual System (HVS) for more secure and effective data hiding, wavelet-based watermarking techniques showed to be immune to attacks; adding the quality of robustness to protect the hidden message from third-party modifications. In this paper, we introduce a novel algorithm that applies a casting operation of a binary message onto the wavelet coefficients of colored images decomposed at multi-level resolution. In the extraction process, the original “unwatermarked” image is used to estimate the embedded bit-stream. Experimental results showed the low distortion effect cased by the embedding strategy of the proposed method. Furthermore, the resultant watermarked-images proved high resistance to attacks such as Jpeg compression and normal image processing like sharpening, blurring as well as image filtering. More simulations were carried out to evaluate the performance of the proposed algorithm in comparison to similar transform-domain techniques.

References
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- Considerations in the design of stegtunnel, http://www.synacklabs.net/projects/stegtunnel/

Index Terms
Keywords
watermarking secure embedding image wavelet bit casting invisibility Robustness attack.