Abstract

This paper presents a novel watermarking scheme based on Discrete Wavelet Transforms and Singular Value Decomposition. The singular values of HL band is going to embedded with watermark singular values making use of scaling factor (?). The effectiveness of the proposed algorithm is measured using peak signal to noise ratio (PSNR), structural similarity index (SSIM) and normalized correlation (NC) factors. The robustness of the proposed algorithm is tested by performing various attacks like Salt & Pepper noise, Gaussian noise and rotation etc on watermarked image. The experimental results show both the robustness and high fidelity of the algorithm.

References

- D. C. Lou, H. K. Tso, J. L. Liu, "A copyright protection scheme for digital images
- Qingtang Su, Yugang Niu, Qingjun Wang, Guorui Sheng; A blind color image
  watermarking based on DC component in the spatial domain; Optik 124 (2013),
  6255–6260.
- C. C. Lai, A digital watermarking scheme based on singular value decomposition and
- X. Y. Luo, D. S. Wang, P. Wang, F. L. Liu; A review on blind detection for image
  Steganography; Optik 124 (2013), 6255–6260.
- T. K. Tsui, X. P. Zhang, D. Androutsos; Color image watermarking using
- Qingtang Su, Yugang Niu, Xianxi Liu, Tao Yao; A novel blind digital watermarking
  algorithm for embedding color image into color image; Optik 124 (2013), 3254–3259.
- R. Liu, T. Tan; An SVD-based watermarking scheme for protecting rightful ownership,
- Yong Yang, Dong Sun Park, and Shuying Huang; A novel blind color images watermarking based on SVD; Optik
- A. Ranade, S. S. Mahabalarao, S. Kale; A variation on SVD based image compression,
- R. Z. Liu, T. N. Tan, An SVD-based watermarking scheme for protecting rightful
- M. Narwaria, W. Lin; SVD-based quality metric for image and video machine
- Seema, Sheetal Sharma; DWT-SVD based efficient image watermarking algorithm
to achieve high robustness and perceptual quality; IJACR, vol 2, issue 4, April 2012.
- Deepa Mathew; SVD based image watermarking scheme; IJACR, 2010.
- D. Kahaner, C. Moler and S. Nash; Numerical Methods and Software (New Jersey:
- U. M. Gokhale, Y. V. Joshi; A New Watermarking Algorithm Based on Image
  02, No. 03, July 2011 DOI: 01. IJNS. 02. 03. 141.
- Navnidhi Chaturvedi Dr S. J. Basha; A Novel SVD based Digital Watermarking
  Scheme using DWT and A comparative study with DWT-Arnold, SVD-DCT and SVD-DFT
  based watermarking; IJACR, Volume 1, Issue 4, November 2012.
- Z. Wang, A. C. Bovik, H. R. Sheikh, and E. P. Simoncelli; Image quality
  assessment: From error visibility to structural similarity; IEEE Trans. Image
- Zhou Wang, Alan C. Bovik and Hamid R. Sheikh; Structural similarity Based
  Range Image Quality Assessment; Digital Video image quality and perceptual coding,
  Nov 2005.
- Neha K. Kothadiya, Udesang K. Jaliya, Vikram M. Agrawal; Image Fusion
  Based on Consistency Checking and Salience Match Measure; (IJETT) -
- R. Navaneethakrishnan; Robust Gray scale Watermarking Based on TwoLevels of
  DCT and SVD; ISRJournals and Publications Volume: 3 Issue: 1 26-Jun-2014.
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