

{tag}

{/tag}

International Journal of Computer Applications
© 2012 by IJCA Journal

Volume 52 - Number 20

Year of Publication: 2012

Authors:

Ensaf Hussein

Mohamed A. Belal

10.5120/8321-1961

{bibtex}pxc3881961.bib{/bibtex}

Abstract

Digital watermarking is hiding the information inside a digital media. Its widely used in copyright protection of digital images . This paper presents a comparative study of digital watermarking techniques in frequency domain and explores the role of Discrete cosine transform DCT, Discrete wavelet transform DWT and Contourlet transform CT in generating robust embedding technique that resist various attacks. The experimental results show the superiority of CT-based watermarking over DWT and DCT watermarking techniques, the quality of the watermarked image is excellent, it can include huge amount of hidden data, but it's not much better than other techniques in resisting attacks.

Refer

ences

- C. S. Lu, Multimedia Security: Steganography and Digital Watermarking for Protection of Intellectual Property, Idea Group Publishing, 2005.
- F. Hartung, and M. Kutter, "Multimedia Watermarking Techniques", IEEE Proc. IEEE, Special Issue on Identification and Protection of Multimedia Information, vol. 87, pp. 1079–1107, July 1999.

- Sin-Joo Lee and Sung-Hwan Jung, "A Survey of Watermarking Techniques Applied to Multimedia", ISIE 2001.
- Dickman Shawn D. , "An Overview of Steganography", James Mandison University Infosec Transport, July 2007.
- Petitcolas Fabien A. , Anderson Ross J. , Kuhn Markus G. , "Information Hiding – A Survey", Proceedings of IEEE, Special issue on protection of multimedia content, pp 1062-1078, July 1999.
- Bijan Fadeena and Nasim Zarei, "Hybrid DCT-CT " Digital Image Adaptive Watermarking", 3rd International Conference on Advances in Database, Knowledge, and Data Applications, IARIA 2011.
- Tay P. , Havlicek J. P. , "Image Watermarking using Wavelets", IEEE, pp 258-261, 2002.
- M. N. Do and M. Vetterli, "The contourlet transform: An efficient directional multiresolution image representation," IEEE Trans. on Image Processing, vol. 14, No. 12, pp. 2091–2106, December 2005.
- Shereem Ghanem and Fatma A. E. Abou-Chadi, "Contourlet Versus Wavelet Transform: A Performance Study for a Robust Image Watermarking", 2009.
- Jayalakshami M. , S. N. Merchant, Uday B. Desai, "Digital Watermarking in Contourlet Domain", 18th International Conference on Pattern Recognition, 2006.
- Ibrahim A. El rube, Mohamed Abou El Nasr, Mostafa M. Naim, Mahmoud Farouk, "Contourlet Versus Wavelet Transform for a Robust Digital Image Watermarking Technique", World Academy of Science, Engineering and Technology, 2009.
- B. Chandra Mohan and S. Srinvas Kumar, "Robust Digital Watermarking Scheme using Contourlet Transform", IJCSNS International Journal of Computer Science and Network Security, vol. 8, No. 2, February 2008.
- Malini Mohan and Anurenjan P. R, "A New Algorithm for Data Hiding in Images using Contourlet Transform", 2011.
- Hedieh Sajedi and Mansour Jamzad, "A Steganalysis Method based on Contourlet Coefficients", International Conference on Intelligent Information Hiding and Multimedia Signal Processing, 2008.
- Taha El Areef, Hamdy S. Heniedy, S. Elmougy, and Osama M. Ouda, "Performance Evaluation of Image Watermarking Techniques", Third International Conference on Intelligent Computing and Information Systems, Faculty of Computer & Information Sciences, ICICIS 2007, March 15-18, 2007, Cairo.
- S. Voloshynovskiy, S. Pereira, T. Pun, University of Geneva J. J. Eggers and J. K. Su, University of Erlangen-Nuremberg, "Attacks on Digital Watermarks: Classification, Estimation-based Attacks and Benchmarks ", 2001.

Computer Science

Index Terms

Information Security

Keywords

Digital watermarking Discrete Cosine Transform Discrete Wavelet Transform
Contourlet Transform