Abstract

A visual cryptography based watermarking scheme incorporating the concepts of singular value decomposition (SVD) and the homogeneity analysis of the cover image is proposed here. Firstly, feature vectors are created from the singular values of the homogeneous blocks and thereby classified using the k-medoid clustering technique. A master share is then constructed based on the clustering result and thereafter, combined with the secret binary image (watermark) ownership share is build up. This ownership share is registered with the certificate authority in case to resolve any dispute regarding rightful ownership of the image in future. A two-out-of-two visual cryptography scheme is being used in the proposed methodology and robustness validated by applying comprehensive set of attacks. The peak signal to noise ratio (PSNR) and normalized cross correlation (NCC) metric values are used for evaluation of the scheme. Higher values of these metrics establish the appropriateness of the proposed methodology as compared to the other state of art schemes for copyright protection.
predictive coding, Pattern Recognition 38 (5), 691–705.


- Chang, C. C., Hsiao, J. Y., and Yeh, J. C. 2002 A color image copyright protection scheme based on visual cryptography and discrete Fourier transform, Imaging Science Journal, 50, 133-140.


- Hsu, C. S., and Hou, Y. C. 2005 A visual cryptography and statistics based method for
ownership identification of digital images, World Academy of Science and Technology, 2, 172-175.

- Hwang, R. J. 2000 A digital image copyright protection scheme based on visual cryptography, Tamkang journal of Science and Engineering, 3(2), 97-106.

**Index Terms**

Computer Science  
Security

**Keywords**

Homogeneity Analysis  
Singular Value Decomposition (SVD)  
Visual Cryptography (VC)  
Peak Signal to Noise Ratio (PSNR)  
Normalized Cross Correlation (NCC).