Abstract

Digital watermarking is technique to hide an invisible watermark in a host image. One such area of application could be medical image processing where watermark may contain sensitive information of the patient. Hence digital watermarking will help to secure patient data from unauthorized modifications. In this review paper, discrete wavelet transform (DWT) domain and chaotic system based medical image watermarking scheme has been proposed for hiding patient information in medical image to authenticate, in other words, to trace the origin of the image. Firstly Discrete Wavelet Transform has been applied on the host image, decomposing the image into four sub-bands namely LL, LH, HL and HH. Then LL band is chosen to hide the watermark. LL band is divided into 3x3 non overlapping blocks. Each bit of watermark is hidden into each block. To add more security, logistic map has been used through which chaotic watermark has been obtained, which has been embedded into the low frequency LL sub-band of medical image. The chaotic watermark has been embedded into each block by observing neighbor pixels conditions and modifying one of neighbor pixels. Experimental results of the proposed method have been compared with other existing medical image watermarking
scheme. Experimental results were produced on three parameters namely Mean Square Error (MSE), Peak signal to noise ratio (PSNR) and Normalized Correlation (NC).

References


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Index Terms

Computer Science  Image Processing

Keywords

digital watermarking, Discrete Wavelet transform, Chaotic watermark, Logistic map, Mean Square Error (MSE), Peak Signal to Noise ratio (PSNR), Normalized correlation (NC).