Abstract

In this paper, the performance of SVD and Schur decomposition is evaluated and compared for image copyright protection applications. The watermark image is embedded in the cover image by using Quantization Index Modulus Modulation (QIMM) and Quantization Index Modulation (QIM). Watermark image is embedded in the D matrix of Schur decomposition and Singular Value Decomposition (SVD). Watermarking in SVD domain is highly flexible. This is
A Comparative performance evaluation of SVD and Schur Decompositions for Image Watermarking
due to the availability of three matrices for watermarking. Singular values in SVD and Schur decomposition are highly stable. Compared to Singular Value Decomposition (SVD), Schur decomposition is computationally faster and robust to image attacks. The proposed algorithms based on SVD and Schur decompositions are more secure and robust to various attacks, viz., rotation, low pass filtering, median filtering, resizing, salt & pepper noise. Superior experimental results are observed with the proposed algorithm over a recent scheme proposed by Chung et al. in terms of Normalized Cross correlation (NCC) and Peak Signal to Noise Ratio (PSNR).

Reference


Index Terms

Computer Science Wireless
A Comparative performance evaluation of SVD and Schur Decompositions for Image Watermarking

Key words

Schur Decomposition

Digital Image Watermarking

SVD

PSNR

NCC