

Abstract:

This paper shows the using of the Contourlet Transform (CT) in compression the digital image. The digital image takes large space in storing and transmission, so to delete it's redundancy and to reduce it's size many techniques of compression was used in order to store information and transmit the data of the image in an acceptable size. CT is a new two-dimensional transform providing multiscale and multidirectional decomposition and it is attained efficaciously by a double iterated filter bank structure: Laplacian Pyramid (LP) decomposition and Directional Filter Banks (DFB) decomposition. The using of the CT is to get different and flexible number of directions at each scale so we can preserve the important information of the digital image and get rid of the unimportant information. In this work several images with size of (512*512) were decomposed into 2-level by contourlet transform then the thresholding process was done by calculating the threshold of the coefficients, after that the coefficients with values above the threshold were reconstructed only. The methods of testing used in this work are: PSNR, MSE, and NC, the simulation results of comparing between the original and the reconstructed images obtained prove that CT maintains image quality: such that when only 1% of the coefficients remained and reconstructed the result was good about (27-28) PSNR and the image still clear. Also the same algorithm was implemented in Wavelet transform (WT) and then comparing it with the (CT) to check their performances, but from the results it's clear that (CT) was stronger than (WT) in compressing the image. The overall results demonstrate the robustness and the benefits of this work in transmission and storing digital image in real world.