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A Lossless hybrid wavelet-fractal compression for welding radiographic images

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Abstract: In this work a lossless wavelet-fractal image coder is proposed. The process starts by compressing and decompressing the original image using wavelet transformation and fractal coding algorithm. The decompressed image is removed from the original one to obtain a residual image which is coded by using Huffman algorithm. Simulation results show that with the proposed scheme, we achieve an infinite peak signal to noise ratio (PSNR) with higher compression ratio compared to typical lossless method. Moreover, the use of wavelet transform speeds up the fractal compression algorithm by reducing the size of the domain pool. The compression results of several welding radiographic images using the proposed scheme are evaluated quantitatively and compared with the results of Huffman coding algo-rithm.

Keywords : Fractal image compression, Wavelet-Fractal coder, lossless wavelet-fractal compression, Huffman algorithm, Radiographic images of weld defects