Abstract

Fractal image compression offers high compression ratios and quality image reconstruction. It uses various techniques as the fractal with DCT, wavelet, neural network, genetic algorithms, quantum acceleration etc. Additionally, because fractals are infinitely magnifiable, fractal compression is resolution independent and so a single compressed image can be used efficiently for display in any image resolution including resolution higher than the resolution of the original image. Breaking an image into pieces and identifying self-similar ones is the main principle of the approach. In this paper, the different issues in fractal image compression as partitioning, larger encoding time, compression ratio, quality of the reconstructed image, decoding time, SSIM(Structured Similarity Index) are discussed and highlighted. The various areas for improvement as larger encoding time and PSNR are also suggested. The various parameters for evaluating the performance of these techniques as PSNR, compression ratio, encoding time, and decoding time are also suggested. Comparison of Fractal techniques for color image, texture and satellite image is done using different parameters as compression time, compression ratio and PSNR. The hybrid method which combines Fractal quad tree with
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wavelet and Huffman coding is implemented and compared different parameters as compression ratio and the compression time of the proposed method with the existing methods.

References

17. Ming-Sheng Wu, “Genetic algorithm based on discrete wavelet transformation for fractal
24. Wavelets and fractals in earth system sciences—V M Gadre
25. A wavelet tour of signal processing, Stephane Mallat.
36. George, L.E. Al-Hilo, E.A. “Isometric process behavior in fractal color image compression by zero-mean method”, Int. Con. on Computer Engineering and Technology,
2010.5485963 searchababstract
38. Al-Hilo, E.A, George, L.E., “Speeding up fractal colored image Compression”, IEEE Conf. on Digital

Index Terms

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Keywords

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