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Abstract

Image compression is usually carried out to reduce the amount of data required to store or communicate a digital image or video. The basic idea involved in the reduction process is removal of redundant data. Image compression exploits the fact that all images are not equally likely. In this regard a good number of Compression algorithms have been developed by researchers. As an alternative to the available traditional approaches, this paper presents the use of Discrete Rajan Transform for sparsification and image compression of noisy images. Discrete Rajan Transform is effective in introducing sparsity in images and thereby improving compressibility, the compromise being acceptable loss of data. In this paper, images with Gaussian, Poisson, Salt and pepper, and speckle noise have been investigated using the proposed method and a brief analysis is carried out in terms of perception of images as well in terms of three important parameters, Peak Signal-to-Noise Ratio, Mean Squared Error and Compression Ratio. On simulation, it was observed that DRT yielded higher quality image than the other candidate transforms used, namely Discrete Cosine Transform and Discrete Wavelet

Transform.

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Index Terms

Computer Science Signal Processing

Keywords

Compression, Discrete Rajan Transform, Noisy Images, Sparsification.