Abstract

In recent past, vector quantization has been observed as an efficient technique for image compression. In general, image compression reduces the number bits required to represent an image. The main significance of image compression is that the quality of the image is preserved. This in turn increases the storage space and thereby the volume of the data that can
be stored. Image compression is the application of data compression technique on digital images. Wavelet Transform based image compression remain the most common among diverse techniques proposed earlier. Wavelet-based image compression provides considerable improvements in picture quality at higher compression ratios. A moment ago Artificial Neural Network has attained popularity in the field of image compression. This paper proposes a technique for image compression using modified Fuzzy C-Means (FCM) algorithm based vector quantization (VQ). The VQ codebook is generated by a modified FCM algorithm. The principal shortcoming of standard FCM algorithm is that the objective function does not think about the spatial dependence therefore it deal with image as the same as separate points. This proposed paper modifies the standard FCM algorithm that join together both the local spatial context and the non-local information into the standard FCM cluster algorithm using a novel dissimilarity index in place of the usual distance metric. Experiments are carried out in order to estimate the performance of the proposed modified FCM algorithm in image compression using standard image set. The results exposed the performance of our approach in perspective with other conventional image compression techniques.

Reference


Index Terms

Computer Science

Image Processing

Key words

Bits

Codebook

Modified Fuzzy C-Means (FCM) Algorithm

Neural Networks (NN)

Vector Quantization (VQ)

Image Compression

Wavelet Transform