Research works had been carried out by several authors for improving image compression using PCA, LDA, 2D-PCA for gray scale and colored images. Md. Mofarreh [3] [10] and Telgaonkar Archana H. [12] has introduced some PCA and LDA algorithm to compress color images. High compression ratios can be obtained by using PCA method. Unsupervised PCA and Supervised LDA methods can be used to dimension reduction whereas accuracy of predicted values of classifier is analyzed on specific factor given.

A.Dwivedi et al. (2006) observed that Multi dimensional Principal Component works directly on the vector data of color image where each band is taken as dimension of the matrix. The work is done on the principle of applying 2DPCA and the methodology is tested on several standard images (lena, mandril, etc.). In the observation it is found that the quality of reconstructed image is good with more numbers of eigenvectors but compression ratio is compromised. Overall the method was better than standard PCA technique and the other performance measures (i.e. computational time, compression ratio) are also improved [2].

Md. Mofarreh et al. (2012) found that the speed of algorithm can be increased with parallel programming, because the compression process of the various band of the image are independent with each other. The mentioned method can be applied for images and a new format for images can be produced and short time of reconstruction of compressed images in comparison with the other formats such as JPEG [3].

Chiyuan Zhang et al. (2013) found that TEM (Total Error Minimization) algorithm and its improved version TEM-Compensate (TEM-C) for image compression has the key advantage over previous methods comes from the maximum exploitation of the full label set (i.e., the colors for all the pixels) at the encoding stage. Furthermore, TEM-C used the label set to generate and store a difference image for correcting the prediction error and improved the colorization quality significantly. Experimental results demonstrated the outstanding performance of the proposed methods. Although the computation burden is still high, TEM-C is already competitive to the industrial standard JPEG in image quality and compression ratio [4].

Ms.Pallavi et al. (2013) discussed about the image classification, wavelet compression and convert an image into an array using Delphi image control tool. They proposed a methodology which is created in Delphi to implement Huffman coding. In the experiment they found that Huffman coding of compression technique is the best technique in lossless compression and the process is complete in two passes to compress any file. The Wavelet Compression technique was used in this study [5].

Maryam Imani et al. (2014) observed that the proposed method that is called principal component discriminant analysis (PCDA) improves the classification accuracy and works better than both PCA and LDA. The experimental results obtained by using two hyper spectral data (an urban image and an agriculture image) shows the good efficiency of proposed method, here the principal components of PCA i.e. components with smaller variance that have useful classification information can be used in Discriminant Analysis to lower power components of PCA Called as Principal Component Discriminant Analysis (PCDA). Using the following method the classification accuracy can be improved by the lower power components [9].

Md. Mofarreh et al. (2015) found that High compression ratios can be obtained by using PCA method. A new PCA based (Extended PCA) method to compress color image, this can be utilized in parallel mode to increase the compression speed.

More precise method for selecting the bands of image can be utilized to improve the performance of compression.

Extended PCA based method to compress color images which can be utilized to compress single image rather than a set of separated images. This method uses the correlations between three color components of an image. This method can be utilized in parallel mode to increase the compression speed [10].

Jagruti Rajput et al. (2015) found that in the proposed technique a combination of image registration methods PCA and GPOF for Multi frame super-resolution one can measure the translation parameter and allow large pixel motion while keeping the image neighborhood relatively small. After that PCA can be used as compression method. The Image Fusion is used to get one output image with multiple low resolution images. Image interpolation using Bi-cubic method is used to get high resolution or reconstruct the image [11].

Telgaonkar Archana H et al. (2015) found that Unsupervised PCA and Supervised LDA methods can be used to dimension reduction. By the use of stated methodology performance analysis has been done on high dimensional image dataset, also the accuracy of predicted value of classifier is measured based on specific factor [12].

4. Discussion

We observed that PCA and LDA can be applied to image, color image in many different ways to get the better classification of image and in order to achieve better compression performance. Experiment has been done only for single image i.e. gray scale (one channel), and color image (multi channel). Various methods have been proposed for the image compression but still there is no study has been done to compress multiple images, large amount of redundant data can be found in the form of pixel values from multiple images which can be reduced in order to get maximum compression ratio.

5. Conclusion

An image can be pre-processed before it can be used further such as storage, transmission, etc. PCA as a statistical tool can increase the efficiency of image compression while LDA can be used as classifier. Using PCA and LDA we can improve the performance of various compression techniques as a combined approach.

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