

Utilizing a FCM algorithm and RLE for YUV image compression

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The purpose of the image compression is to represent image with less data in order to save storage costs or transmission time and costs. However, the effective compression is achieved by approximation the original image (rather than reducing it exactly). Fuzzy logic offer the potential for providing anovel solution to the problem of data compression by its ability to generate an internal data by using FCM algorithm.In this paper we have been taken a color image and convert it to the Y,U,V component ,then using FCM (Fuzzy –c-mean algorithm) on the Y component ,which determine the number of cluster.Finally we have been used RLE (Run length encoding) algorithm on the (Y,U,V) component,and compute (PSNR) to measure the amount of distortion and find the compression ratio to compare our work with other work. In the other side we have been used the RLE decompression algorithm to the resulting (YUV) and costruct the RGB color image.

Keywords FCM, RLE ,PSNR, Image Compression, YUV, RGB.

1-Introduction: Compression of digital data is based on various computational algorithms,

compression is to represent images with which can be implemented either in less data in order to save storage costs software or in hardware. Compression or transmission time and costs. techniques are classified into two However, the most effective categories: (a) lossless, and (b) lossy compression is achieved by approaches. Lossless techniques are approximating the original image capable of recovering the original n reducing it exactly). representation perfectly.

Lossy techniques involve algorithms, which recover the presentation similar to the origi-

nal one. The lossy techniques provide higher compression ratios, and, therefore, they are more often applied to image and video compression than lossless techniques. The classification schemes for lossless and lossy compression are presented in Figures 2(a) and (b), respectively [1], [2].

The lossy techniques are classified into: (1) prediction-based techniques, (2) frequency oriented techniques, (3) importance-oriented techniques, and (4) hybrid techniques. Predictive-based techniques, such as ADPCM, predict subsequent values by observing previous values. Frequency-oriented techniques apply the Discrete cosine transform(DCT),or sub band coding , which relates to Fourier transform. Importance-oriented tech-