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REVIEW ON EFFECTIVE MEANS OF LOSSY AND LOSSLESS IMAGE COMPRESSION

Nitin Kapoor[1], Ms Sakshi Dhingra[2]

Abstract:The type of data compression which is applied to digital images is called Image compression. It is used to minimize the cost of storage or transmission. In this paper the study of various image compression techniques has been done. These are Loosy Image Compression Methods and the Lossless Image Compression Methods. Here discussion is made on an algorithm to compressimage with minimum loss in quality ofimage. It is most suitable for image transmission during networking.
Keywords: IMAGE, JPEG, ENCODER, DECODER, COMPRESSED DATA, LOOSY IMAGE, LOSSLESS IMAGE

1. INTRODUCTION

Haryana, IndiaThe technique of data compression that may be applied to digital images is called Image compression. This technique is used for reducing cost of storage or transmission. Algorithms are takingbenefits of visual perception. It is also considering statistical properties of image data. It is to give superior results as compared to generic compression techniques.

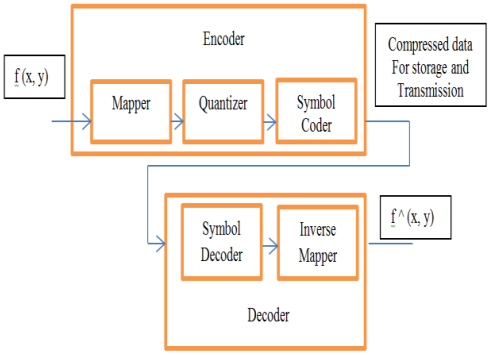

Fig 1 Image compression[1]

Image compression[2] has been considered asreducing size in bit or bytes of image/graphic file. This has been performed without quality degradation of image for unacceptable level. Reduction in file size has increased storage capacity of graphical file. Images are stored in a particular storage location. Itis also reducing time that has been needed for images. It is time to be sent over wireless network.
It is giving less expense involved with sending small sized. It is transferred on switched telephone network. Here cost of call is really dependent upon its duration.
It is not just minimizing storage requirements but also overall execution time.
This has minimized probability of transmission errors. This is because less transmission of bits is occurring.
It is providing a level of security against unlawful monitoring.

2. LOOSY & LOSSLESS IMAGE COMPRESSION

2.1 Lossy compression

Lossy compression has been category of data encoding methods. It is using inexact approximations as well as data discarding in partial. This type of mechanisms has been utilized to reduce size of data storage capacity.This is helpful in handling, and transmitting content. This is data compression with loss.The amount of data reduction possible using lossy compression has been much higher by lossless techniques.

[1] Student of Master in Technology, Department of Computer Science & application, Chaudhry Devi Lal University, Sirsa, Haryana, India
[2] Assistant Professor, Department of Computer Science & application, Chaudhry Devi Lal University,Sirsa

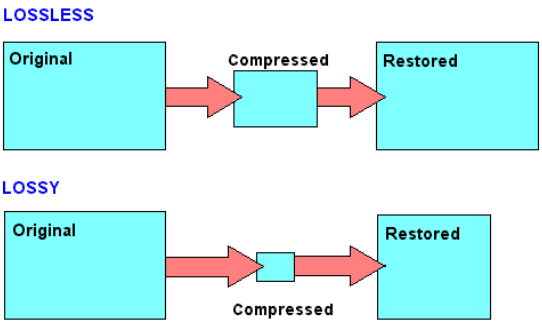

Fig 2 loosy & lossless image compression[10]

2.2 Lossy compression mechanisms:

It is minimizing color space of several graphical colours. Each pixel has pointed to index of a color.Here the selected colours would be represented in color palette in compressed graphics header.Color palette is required to do that. These mechanisms have been grouped with dithering. It was to avoid pasteurization.

Human eye is perceiving spatial changes of brightness, this has been considered by Chrome sub sampling. It has been performed more sharply as compare to those of color. This has been performed by averaging of chrominance information in graphics.

It has been considered that the transformation of coding is frequently utilized mechanism.

Fractal compression.

2.3 Lossless compression

This type of compression has been the category of data compression algorithms. This is allowing real data to be reconstructed in perfect manner. Lossy compression is permitting reconstruction only. It is done from compressed data.

Lossless data compression has been utilized in several applications. It has been used in ZIP file format. It is also used in GNU tool gzip. It has been also often utilized as a component in case of lossy data compression technologies. Lossless compression has been considered as a category of algorithmsfor data compression. It is allowing real data reconstruction fromcompressed datain perfect manner. Lossy compression allows the reconstruction of approximation of real information.

Mechanisms in case of lossless image compression have been as follow:

In case of default method, the Run-length encoding has been utilized.This type of technologies required in PCX.

Compression in case of area image

DPCM & Predictive based Coding

Chain codes

Encoding of Entropy

Adaptive dictionary algorithms like LZW. This is used in case of TIFF and GIF

Deflation needs PNG TIFF, MNG.

3. LITERATURE REVIEW

Sr. No.	Title	Author Name	Year	Description	Data Set
1	Image Compression Using Discrete Wavelet Transform	Hoque Chowdhury, M. Mozammel and Amina Khatun	2012	Compression of graphics has been considered as key technology in case f transmission and storage of digital images/graphics.	Binary Raw Data.
2	Image Transmission in case of Noisy Wireless Channels with help of HQAM and Median Filter	Md. Abdul Kader	(2013)	This paper is considering utilization of unequal error protection.	Graphical image
3	Various Techniques of	Gaurav V.	(2013)	Research is addressing several image compression	Binary Data

	Image Compression : A Survey			techniques. Research is analyzing different types of mechanisms of compression image.	
4	Image Compression Technique Using various Wavelet Function	Mrs. Shweta Shrivastava, Dr. Vineet Richariya, Naman Agrawal	2014	This research has performed comparative study has been. It has been performed using various wavelet functions. These functions are Hear, dB4 & dB6 for compression.	Digital Image
5	Literature Survey On Lossless Image Compression	MalwinderKaur	2015	Target of image compression has been to minimize duplicacy of graphical data. It is helping in increasing storage capacity. It also makes transmission efficient.	Transmitter
6	A Review of Image Compression Techniques"	Rajandeep K.	2016	Paper considers that data would be compressed using Lossy techniques. These are Block Transform Coding, Quantization, Transform coding,. These might be Lossless techniques like Run Length Coding and Multi-resolution Coding.	RGB Images
7	"Survey paper on image compression techniques "	Sudha R.	2017	This research is trying to provide best approach. It is in order to select famous image compression algorithms. It is dependent on JPEG/DCT Wavelet Fractal approaches VQ	Zero point five Bit Per Pixel
8	Insights on Error-Resilient Image Transmission Schemes on Wireless Network	Bharathi Gururaj	2017	This research considered the significant research contribution published. These were published in last 5 years. They were associated with wireless image transmission. They also considered channel coding mechanism as well as investigated scale of effectiveness in techniques. These were dependent on pros and cons.	Image has been used as input
9	"The Contour let Transform For Image Compression"	Ahmed Nabil belbachir & Peter Michael	(2010)	This paper introduces & presents an evaluation of contour let transform for image compression, which has good approximation properties for smooth 2D functions.	The JPEG 2000 Norm Uses Bi-Orthogonal
10	Exploiting Spatial Correlation in Pixel-Domain Distributed	Anne Aaron, David Varodayan	2010	This research has proposed decoders in case of lossless compression of binary images/graphics of text. First is considering image as one-	Binary Text Images

	Image Compression			dimensional stationary Markov process. Second one is assuming it as two-dimensional stationary Markov random field.	
11	Compression of Color Image dependent On Wavelet Packet Best Tree	Mr. V. H. Patil , Mr. G. K. Kharate,	2010	The research suggested novel approach that has been dependent over wavelet packet best tree dependent over Threshold Entropy. It is also considering enhanced run-length encoding. Such mechanism helps in minimizing time complexity. It is in case of wavelet packets decomposition. This is because complete tree has not been decomposed.	JOINT PICTURE EXPERT GRAPHICS
12	Compression of Image with help of Haar Wavelet Transform	Ram Krishna and Nidhi Sethi,	2011	This research is going to make lossy image compression more efficient & effective with help of wavelet techniques. Encoding time has been reduced with small graphics quality degradation as compared to traditional mechanism.	Binary format of Raw data.
13	Compression of Image with help of Discrete Cosine Transform Discrete Wavelet ransform	Anitha	2011	Here the compression of graphical file with help of DCT & DWT has been made. DCT has been utilized in case of conversion to joint picture expert graphics format. DCT is performing at medium bit rates efficiently.	Raw Data in Binary form.
14	Compression of Image with help of haar Wavelet transform	V. R. Udupi, S.S. Tamboli1	2013	This paper is focusing at making lossy image methods computationally efficient & effective. It has been done with help of wavelet techniques. Thus proposed algorithm has been made in order to compress graphical file.	Images in Binary Form

4. COMPRESSION PROCESS

The compression mechanism has been discussed here in different steps

Step 1 Input source IMAGE (GRAPHICS) I1

Step 2 Create updated huffman dependent compression (reduction) module

Step 3 Pass input IMAGE (GRAPHICS) I1 to huffman dependent compression (reduction) module

Step 4 Store get I2 as compressed IMAGE (GRAPHICS) & store on disc.

Step 5 Create updated huffman dependent decompression (reduction) module

Step 6 Put I2 to decompression (reduction) module & get I3.

Step 7 Create PNR calculation modules & pass I2 & I3 to it.

Step 8 Compare PSNR of both to check quality of IMAGE (GRAPHICS).

5. BENEFITS OF PRESENT WORK OVER TRADITIONAL WORK

In traditional work Huffman algorithm[30] has been extended to compress two dimensional data. IMAGE (GRAPHICS) in Matlab is stored in form of Matrix.
Proposed work has minimized size of IMAGE (GRAPHICS) & retained quality.
The proposed work would be less time consuming to process IMAGE (GRAPHICS).
The maximum compression (reduction) would be made by retaining quality of IMAGE (GRAPHICS).
Peak noise ratio would be calculated in order to compare quality of IMAGE (GRAPHICS).

6. CONCLUSION

In conclusion it can be said that compression of an image has been a category of data compression.Here the user could compress digital data without degrading its image quality. Image compression manages data as well as storage space. It manages cost while switching data on telephone. It also saves time and maintenance cost.All storage requirements are reduced by it and overall execution time is minimized Hence it is also reliable from security point of view and reducesprobability of transmission errors. The discussion on different Compression ofgraphical filetechniques such as Loosy Compression ofgraphical file as well as Lossless Image Compression Mechanism has been made.

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