Performance Comparison of Raster Line Difference Huffman Technique with Different Coding Techniques for Non-Medical Images

Syed Shabbeer Ahmad
Research Scholar ,
Computer Science and Engineering
SHRI Venkateshwara University
Gajraula,Amroha,U.P,INDIA
Shabbeer9885391855@gmail.com

Dr. T.Bhaskara Reddy
Professor in Computer Science & Technology
Sri Krishnadevaraya University
Anantapurumu,AndhraPradesh,INDIA
Bhaskrreddy_sku@yahoo.co.in

***Abstract*—**The abstract of this paper will compared so many hybrid trends compression techniques in image compression concepts with Raster Line Difference Huffman Technique for non-medical Images. In this paper we compared non medical Images like Baboon, Crane, Lena, sun and veg .In this Paper we compare size, compression rate and saving percentage of different coding techniques with Raster Line Difference Huffman Technique for non medical Images like Baboon, Crane, Lena, sun and veg . The author hope on This paper will be very helpful to known the many new hybrid techniques performance with Raster line Huffman comparison technique for non-medical images.

Keywords*-*Image,Compression,Raster Line,Huffman,Non-Medical,JPEG

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1. INTRODUCTION

Image compression is an important field of research that has been studied for nearly three decades .Compression of images has numerous applications in diverse areas such as high definition television, videophone, medical imaging, on-line product catalogs and other Multimedia applications. Another important application is browsing, where the focus is on getting high compression.

The Raster Line Difference Huffman Technique produce better compression rate than JPEG. The reconstruction of the image in both of these images is 100% because the technique is a loss less technique. The Lossy Raster Line Difference Huffman Technique produces much higher compression rate than all the techniques ,but introduces little loss.. The Raster Line Difference Huffman Technique is also applied for color images, which is producing equally good results in comparison with monochrome images. The memory requirements for processing the images in all of these techniques are significantly less compared to JPEG. The JPEG technique requires more memory because the entire image needs to be brought into memory. But for the Raster Line Difference Huffman Technique some sizable amount memory is required to build the Huffman tree and to hold the Huffman Look Table only, because they process the image pixel by pixel.

Spatial Mechanism[1]: - In this Mechanism no mathematical equations are used. It is a mechanism using that compress of an image on the base of its pixels .Unnecessary information from an image is discarded in this Mechanism. This Mechanism is fast loading and stores in small files. In this Mechanism saving memory and compression is fast .This sort of compression is only really useful when dealing with images captured from computer screens. When spatial compression is activated, Knowledge Presenter searches for images that are candidates for spatial compression. In order to be eligible, a series of images must: - be of the same size and position - Subsequent images must appear on the timeline where old ones disappear. - Must be in PNG or GIF format - must not use any display filters. - must use dynamic moving or resizing. Compressing a digital image in frequency domain is advantageous in the sense that it can achieve better compression ratio as compared to its spatial domain.

BDH Technique (Raster Line):-The BDH technique, which is used to the compression of digital images. In BDH technique, Huffman coding and Difference coding with Binary Plane Technique are combined. The BDH technique is compared with Binary Plane Technique and JPEG. Experimental results show that BDH improves compression rate compared to Binary Plane Technique. The same algorithm can be extended to color images.

Performance Comparison for Non-Medical Images:

I. Size of Different Coding Techniques vs Raster Line Difference Huffman Technique Size for Non- Medical images :

Name of the Image	Raw Image Size	BMP Size	BPT Size	RLDH Loss Less Technique Size
Baboon	16384	17980	15636	13976
Crane	65536	38500	26938	19743
Lena	49152	32824	17706	15867
Madhuri	16384	17964	14419	10738
Sun	16900	18012	12882	7808
Veg	46656	48632	44063	32358

Fig-1:Size of the different loss Less Coding Techniques are compared with Raw Size

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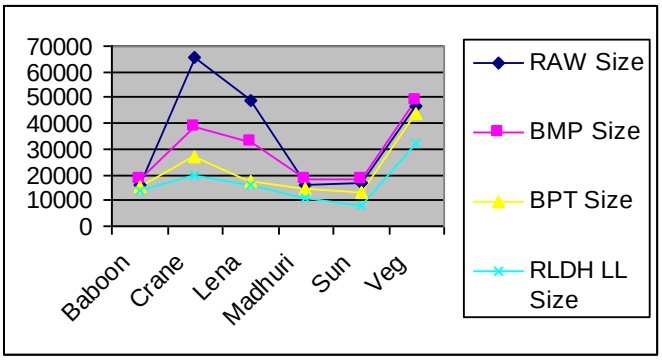

Fig:-2Size of Loss Less Coding Techniques on Non-Medical images.

Fig :-2 shows the different sizes of Non-Medical images. The graph is drawn based on image sizes of Non- Medical images. First BMP loss less compression technique is applied for nonmedical images. The graph is drawn for BMP sizes of non-medical images. Secondly binary Plane with Huffman technique is applied. The graph is drawn based on sizes. Finally Raster line Difference Huffman Technique is applied for non-medical images. The graph is drawn in terms of sizes of non-medical images. out of all these techniques Raster Line Difference Huffman Technique is better technique as size of non- medical images is minimum. Hence, this technique is most suitable for non –medical images for image storage and transmission.

II. Compression Rate of Different Coding Techniques vs Lossy Raster Line Difference Huffman Technique Size for non-Medical images .

Name of the Image	JPEG Compression Rate	LBPT Compression Rate	RLDH Lossy Technique Compression Rate
Baboon	0.82819	1.273928	1.3967
Crane	3.04904	6.386279	6.6948
Lena	2.65557	3.732401	3.7112
Madhuri	1.07134	2.21615	2.5722
Sun	1.38672	3.406571	7.8655
Veg	2.08565	1.76087	2.12

Fig:-3Compression Rate of the different lossy Coding Techniques are compared with JPEG Rate

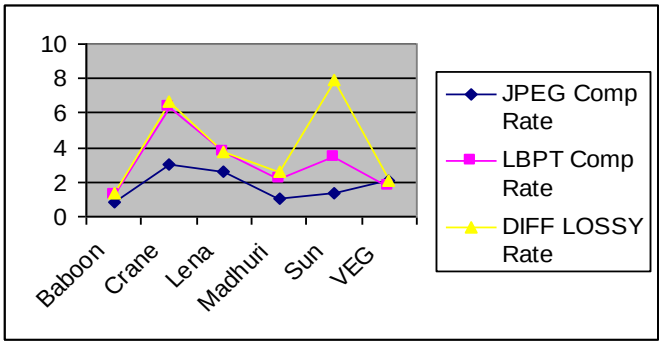

Fig:-4 Compression Rate of Loss Less Coding Techniques on Non-Medical images

Fig:-4 shows the compression rate of different non-medical images. This graph is drawn based on BMP compression rate. First BMP compression rate iscalculated based on the compression rate metric and graph is drawn for different non-medical images Second, BPT with Huffman technique is applied for non-medical images. Compression rate is calculated and graph is drawn. Finally Raster Line Difference Huffman Technique is applied for non – medical images. Compression rate is calculated based on formula and graph is drawn. Compression rate of Raster Line Difference Huffman Technique is very high than the other compression techniques. Hence, Raster Line Difference Huffman technique is more suitable for compression rate of non – medical images.

III. Saving Percentage of Different Coding Techniques vs Raster Line Difference Huffman Technique Saving Percentage for non medical images.

Name of the Image	BMP Saving Percentage	BPT Saving Percentage	RLDH Loss Less Technique Saving Percentage
Baboon	-9.74	4.57	14.70
Crane	41.25	58.90	69.87
Lena	33.22	63.98	67.72
Madhuri	-9.64	11.99	34.46
Sun	-6.58	23.78	53.80
Veg	-4.24	8.56	30.65

Fig:-5 Saving Percentage of the different loss Less Coding Techniques are compared with BMP Rate

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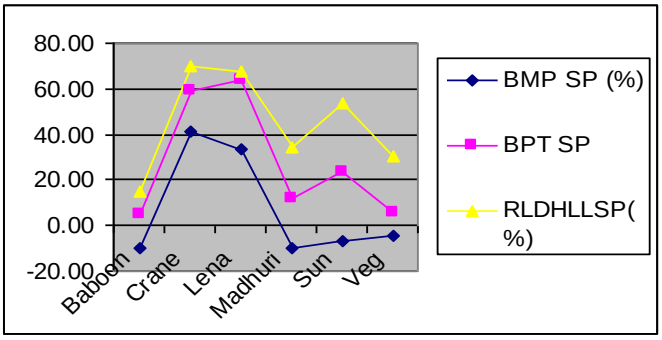

Fig 6:- Saving Percentage of Loss Less Coding Techniques on Non-Medical images.

Fig 6:-shows the saving percentage of different non-medical images. The graph is drawn based on BMP saving percentage. First saving percentage metric is calculated based on formula and graph is drawn. Second, saving percentage is calculated for BPT and graph is drawn. Finally Raster Line Difference Huffman Technique is applied for non-medical images and saving percentage is calculated. The graph is drawn based on values obtained. Out of all these techniques saving percentage of Raster Line Difference Huffman Technique is very much high than the other techniques. Hence Raster Line Difference Huffman technique is better technique for calculation of saving percentage. Hence, RLDHT is most suitable for compression of non – medical images.

IV. Acknowledgment and conclusions:

The Raster Line Difference Huffman Technique produce better compression rate than JPEG. The reconstruction of the image in both of these images is 100% because the technique is a loss less technique.

The Lossy Raster Line Difference Huffman Technique produces much higher compression rate than all the techniques explained above but introduces little loss. The loss is visually insignificant when the threshold value is 4 or 8. When the threshold is 16 or 32 the loss is visually observable.

The Raster Line Difference Huffman Technique is also applied for color images, which is producing equally good results in comparison with monochrome images. This is shown in the graphs related.

The memory requirements for processing the images in all of these techniques are significantly less compared to JPEG. The JPEG technique requires more memory because the entire image needs to be brought into memory. But for the Raster Line Difference Huffman Technique some sizable amount memory is required to build the Huffman tree and to hold the Huffman Look Table only, because they process the image pixel by pixel..

All the techniques explained are very simple to implement. They require no complex calculations and processing of the data is performed only in terms of integers, so there is no chance of loss of precision. The JPEG technique requires complex calculations. The processing is done in terms of real numbers where there is possibility of loss of precision.

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VI. AUTHORS PROFILE:

Syed Shabbeer Ahmad, Research Scholar of Computer Science &Engineering from Shri Venkateswara University,Gajaruala,U.P,India. His B.Tech from Sri venkateswarauniversity, Tirupathi, India and M.Tech from Allahabad agricultural university in 2004.He has over 15 years teaching experience and he has published many papers in National and International conferences and journals. His area of interest is in Image Processing. He guided number of projects for P.G Students and thought around 30 computer science subjects in different engineering college in A.P. His research guide Mr.T.BhaskaraReddy ,Professor in computer science in Sri Krishna Devaraya University(Inter state university,estt.1981), Anantapur ,A.P.

Dr.T.BhaskaraReddy is an Professor in the Department ofComputerScienceand Technology at S.K University,Anantapur A.P. He holds the post of DeputyDirector of Distance education at S.K.Universityand He also the CSE Coordinator of Engineering at S.K.University. He has completed his Ph.D in computer science from S.K.University.. He has been continuously imparting his knowledge to several students from the last 20 years. He has published 50 National and International publications. He hascompleted major research project (UGC). FivePh.D and FiveM.Phil have been awarded under his guidance. His research interest are in the field of image Processing, computer networks, data mining and data warehouse.