A Literature Review on Video Compression using DCT Algorithm

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***Abstract*: Video Compression is very essential in the real time video transmission. The technique video compression is related to image processing which has many applications. The compression technique decreases the memory size of the media which is to be transmitted. The proposed system uses DCT algorithm in order to increase the compression rate and also to maintain the video quality by decreasing the video's size. The proposed system has been developed using DCT algorithm, SPYDER (Python 2.7), ANACONDA2.**

***Keywords*: DCT, SPYDER (Python 2.7), ANACONDA2, Compression rate.**

I. INTRODUCTION

The increasing demand to incorporate video data into telecommunications services, the corporate environment, the entertainment industry, and even at home has made digital video technology a necessity. A problem, however, is the data rates of image and video is very large, typically in the range of 150Mbits/sec. The data rates of the image and video which will consumes large amount of bandwidth and storage space in the personal computer systems. Because of this reason, Picture redundancy has been eliminated by developing the video compression standards. By allowing video information to be transmitted and stored in a compact and efficient manner.

Video compression is the process of encoding a video file such that it consumes less memory than the original file size, then it is easy to transmit over the network/Internet. It is a type of compression technique that reduces the size of video file formats by eliminating redundant and non-functional data from the original video file. The video compression can be done by removing the repetitive images and sounds from the video. Video compression can be performed by video codec which works on one or more compression algorithms. For example, a video may have the same background, image or sound played several times or the data displayed/attached with video file is not that important. Video compression will remove all such data to reduce the video file size.

The video quality and amount of compression rate obtained will always be inversely proportional to each other. The quality of video decreases as the compression ratio increases. The Discrete cosine transform and Discrete Wavelet transform are the best algorithms mostly used methods for better video compression and video quality.

II. LITERATURE SURVEY

The technique video compression which is related to image processing which is widely used in many applications. The major problem is memory requirement size in order to store the recorded videos of different applications. The compression technique can be used to decrease the memory size of the media. The proposed system has been developed using Discrete Wavelet Transform (DWT) algorithm, MATLAB, XILINX platform and FPGA SPARTEN 3 board. The proposed algorithm which saves the memory and also it increases the signal to noise ratio, and it also calculates the overall performance of the system [1].

Video has become one of the most useful media in order to represent some of the important information. Videos and images are the most essential approaches to represent the data. The problem occurs with media is because of its large size and it also contains a lot of redundant information. The main aim of this paper is to solve the bandwidth requirement problem and it uses Discrete Cosine Transform (DCT) algorithm for compressing video's size [2].

This paper provides a video compression using Hybrid (DCT-DWT) algorithm. Lossy and lossless are the two compression techniques used for data compression. Lossy compression is preferred for video compression. It has to achieve high compression ratio and also to maintain the quality of the reconstructed video in the following compression scheme. DCT and DWT transforms are used in hybrid compression technique. Arithmetic coding is used for more compression. The performance of the system can be evaluated using criterion compression ratio, PSNR and mean square error [3].

Data file can be reduced by compressing the size of the data file is said to be data compression. Lossy and lossless are the two compression techniques used for data compression. Lossy compression is preferred for video compression. It has to achieve

high compression ratio and also to maintain the quality of the reconstructed video. The information cannot be lost in the lossless compression and the Lossy compression which reduces the number of bits by identifying the unnecessary information and it removes that unnecessary information. The compression technique can be used to decrease the memory size of the media and it increases the transmission capacity. The compressed data must be decompressed later in order to use or read that data, this extra process may increases costs or it will become complex. The design of data compression strategy which will calculate the degree of compression and the amount of distortion which is introduced [4].

Video processing became very popular and it requires very large storage area. The redundant data must be removed in order to reduce the storage area. Here, the motion vectors are estimated to preserve quality of the video and it is the heart of the video processing. The proposed system has been developed using WBM method and SPIHT algorithm for video compression and it measures the performance using some of the parameters like mean squared error (MSE), peak signal to noise ratio (PSNR), compression ratio and structural similarity index (SSIM) [5].

Nowadays, our demands for video streaming services are increasing due to the development of network technology and multimedia technology. The video service became one of the most important service in communication network. Due to some constraint conditions in the network, the quality of video will be decreased and the people may not satisfy this. The proposed system has been developed using MDP, which is used to choose the compression rate, and it also improves the quality of video under limited bandwidth [6].

Video compression which plays a very important role in many digital video processing applications. Video compression which reduces and removes the redundant data and it minimizes the storage space in the system. In this project video compression is done based on the motion compensation technique in order to reduce the size of the video. Motion compensation is an algorithmic technique employed for the encoding of video data for video compression. Motion compensation describes a frame in terms of the transformation of a reference frame with respect to the current frame. The reference frame may be previous in time or even from the future. The proposed method reduces the candidate of the prediction modes based on the Sum of Absolute Hadamard-Transformed Difference (SATD) between the original block and the intra predicted block. Motion of each block is obtained based on the SATD value. The current frames are further reduced by using the combination of motion and most probable displacement. The proposed method reduces the number of motion in frames to either one or two and also it improves the compression efficiency [7].

For the secured video transmission compressed video should be encrypted and transmitted over the media. By applying both the techniques simultaneously is one of the challenges where the size and the quality are important. In this paper a new technique is proposed for video compression and encryption. Here the compression is done using hybrid DWT and DCT and vector quantization. Reference frame encoding and current frame encoding are the two major steps of this compression algorithm which is based on the reference frame. The encryption algorithm which uses two LFSRs seeded with three secret keys to scramble the significant wavelet coefficients at multiple times. Experimental results show that the proposed algorithms have the following properties; high compression, acceptable quality, and resistance to the statistical and frequency attack with low computational overhead [8]

III. CONCLUSION

Video compression technique have important role in entertainment and the communication but it is limited by storage space and bandwidth of transmission medium. It reduces the size of the storage space and transmission bandwidth without affecting the quality of the video.

Video compression which plays a very important role in many digital video processing applications. Video compression which reduces and removes the redundant data and it minimizes the storage space in the system. Video has become one of the most useful media in order to represent some of the important information. Videos and images are the most essential approaches to represent the data. The problem occurs with media is because of its large size and it also contains a lot of redundant information. While transmitting video through the media it requires a lot of data for transmission and it also requires a more memory for storage. During transmission lots of information may lost.

In order to overcome all this problems. In this paper, video compression algorithm named as Discrete Cosine Transform (DCT) is used. The input uncompressed video is transformed into frames and the size of the frames is converted as per the requirement, then the DCT algorithm is applied to each frame. After that the sequence of compressed frames are obtained and from that compressed frames the compressed video is formed. The proposed system gives the more compression ratio and also improves quality of the compressed video as compared to all other algorithms. It gives a high Compression ratio of video as well as gives a better reconstructed quality

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