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Improving Image Quality In Remote Cardiac Pulse Measurement Using Adaptive Filters

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Abstract - *Nowadays the number of photos taken each days is growing exponentially on phones and the number of photos uploading on internet is also increasing rapidly. Multimedia files are the files having text, images, videos, audios and animations. Which are large and required lots of hard disk space. Hence these. Files takes more time to move from one place to another place over internet. There are many different image compression schemes exits, current need and application required fast compression algorithm which produce acceptable quality image or videos. Over past decades digital video compression technologies have become an integral part of the way we create communicate and consume visual information. The data quality is very large for the digital videos. The paper describes image quality in remote cardiac pulse measurement.*

Keywords **- Video, Compression , Quality, Transmission, Optimization.**

1. Introduction

Video coding techniques provide efficient solution to represent video data in a more compact and robust way so that the storage and transmission of video can be realized in less cost in terms of size, bandwidth and power consumption. Compression is a process in which the required bit to store an image is reduce. Compression allows to storage image in less storage space and to transmit through limited bandwidth channels. Compression is two types: Lossy and Lossless. In lossy compression, the reconstructed image contain degradation with the perfect reconstruction of the image is sacrified with respect to the original image, but higher compression ratio is achieved. This is used commonly in multimedia application. In lossless compression, the reconstruction image is an exact replica of the original image after compression. Only the modest compression rate can be acheived and used in medical application. Below figure shows the basic compression.

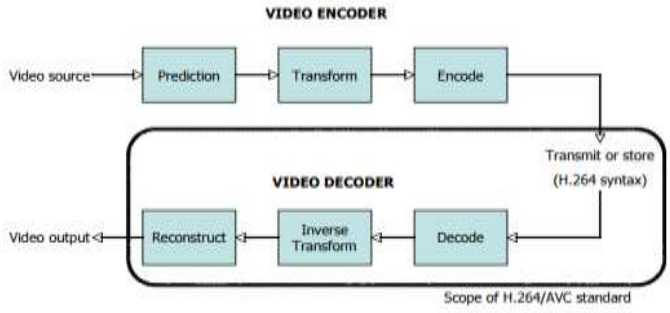


Fig. 1 : Video Encoder and Video Decoder

2. Two Basic Standards: JPEG and MPEG

The two basic compression are JPEG and MPEG. JPEG is associated with still digital picture, while MPEG is dedicated to digital videos sequence. But the traditional JPEG (and JPEG2000) image formate also come in flavor that are appropriate for digital video: Motion JPEG and Motion JPEG2000. The group of MPEG standards that include the MPEG-1, MPEG-2, MPEG-4 etc formates have some similarities as well as some notable difference

Motion JPEG

A digital video sequence can be represent as a series if jpeg picture. They are same as with single still jpeg picture flexibility both in terms of quality and compression ratio. The main disadvantages of motion JPEG is that since it uses only a series of still picture it makes no use of video compression techniques.

Motion JPEG2000

JPEG2000 can be also be used to represent a video sequence. The advantages are equal to JPEG2000 i.e, A Slightly better compression ratio compare to JPEG Better at the price of complexity.

MPEG-1
MPEG-1 video compression is based upon the same techniques that is used in JPEG. In addition to that is also includes techniques for efficient coding of a video sequence.

MPEG-2
The MPEG-2 project focused on extending the compression techniques of MPEG-1 to cover larger picture and higher quality at the expense of a higher bandwidth usage.

MPEG-3
MPEG-3 was design to handle HDTV, however it was discovered that the MPEG-2 standard could be slightly modified and then achieved the same result as the planned MPEG-3 standard.

MPEG-4
MPEG-4 is based upon the same techniques as MPEG-1 and MPEG-2 once again. The most important new features of ampeg-4, concerning video compression are the support of even lower bandwidth consuming application. eg: mobile devices etc.

3. Compression Methodologies

The data compression is achieved through the generation and coding of the interested target in a scence. High compression ratio was achieve because the number of spectral band is larger than the number of target in hyper spectral image the coding redundancy was removed by Huffman coding.

A medical image compression approach was presented by Abo.Zahhad et al. In pre processing the image is passed through DPCM. Then the application of wavelet transformed is performd on the output of DPCM. These coefficient are huffman coded resulting in threefold compression.

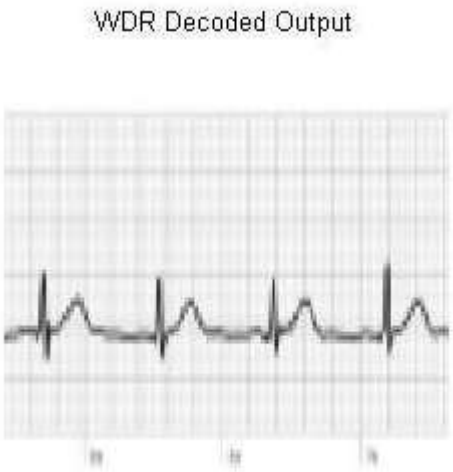
The Tools used are MATLAB and Video Processing

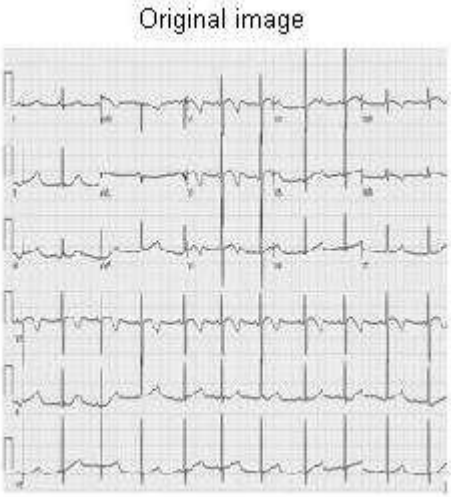
MATLAB
MSTLAB is a high level of numerical compulation visualization and programming language and interaction environment using matlab you can analysed the data, development of new algorithms and create models and applications.

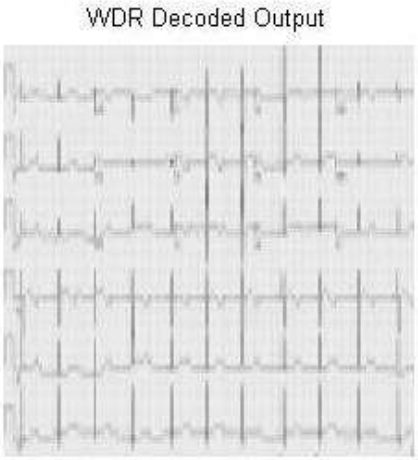
Video processing
Computer vision system toolbox provide video processing algorithm and workflow tools. Using MATLAB video processing system object thus avoiding the use of excessive memory data stream from a video files.

4. Simulation

The simulation result is shown in figure







5. Conclusions

In this paper we have concluded the basic different techniques available for video compression. We have seen here JPEG ABD mpeg techniques. The method X is better than the other methods in terms of the following parameter.

We plan to improve the parameter Y in the system based on our implementation.

Where X will be the name of the best method and Y will be the parameter which we are improving (mainly PSNR).

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