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Recompressed Image Data Access Energy Consumption In Video Processing by Using Gray code

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Abstract:

In video processing reducing the energy consumption place a major role. Present randomly accessing the memory in the video processing. Sending the video file from one place to another place, at that time downloading the video file will take more time due to more memory. Transmitting the video file from user to end user, the video file has to be compressed to save the energy consumption. A video stream is a sequence of image frames. The video file has to be compressed into image frames, and that image frames compressed into video file. Gray code is one of the techniques to reduce energy consumption. In video processing, by using gray code the energy will be save and it is easy to download at the end user place. This paper proposes a Gray Code Method (GCM) to reduce the energy consumption in video processing. The experimental results shows that the proposed method will save more energy when compare to previous methods.

Key words: Gray Code Method (GCM), Energy Consumption, Video Processing, Compressed.

1. Introduction:

As video processing becomes increasingly indispensable in the mobile ports, its energy-efficient implementation is of great practical interest [1]. The world becomes more dependent on mobile technology. Mobile computing has become These devices are requiring for real- time processing, and also high throughput. Energy consumption is becoming the limited factor in the amount of functional that can be placed in these devices. The rapid advance in technology can be used for several purposes. It can be used to increase performance, to add functional, but also to reduce energy consumption. Several researchers have studied the energy consumption pattern of mobile computers. Laptops use several techniques to reduce this energy consumption [3]. Portable computing such as computer and personal communication devices such as phones [4].A Gray code sequence is a set of numbers in which consecutive numbers have only one bit differ. In the case of a sequence of numbers from 0 to 16, there is 31 bit when the numbers are coded in binary representation [6].Video processing and transmission is a component of multimedia information exchange. Hence, it is integrated part of the next generation portable devices. The mobile devices communicate with the network over a wireless links .A reducing the number of transmitted bits May leads loss of video quality at the end user. The deterioration in the video quality as small as possible. The techniques for reducing the compressed video stream depends on the compression scheme [5]. Now a day's every one using the mobiles internet for sending the data and access the data from internet.

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2. Proposed Method

2.1 Gray Code Method (GCM):

Input: video file.
Output: video file.
Definition: A length n Gray code C is an ordered list of distinct binary n- tuples.

S0, S1... Sp−1 Having the property that any two adjacent code words Si and Si+l differ in exactly one component. If this property holds for Sp−1 and S0, as well, we say the Gray code is cyclic with period p, the number of deferent code words. Otherwise, we say the Gray code is acyclic.

2.1.1 Theorem of Gray Code:

Let T = t0, t1... tp−1 be a sequence with terms form 0, 1... n − 1. T is a coordinate sequence of length n Gray code with p + 1 code words if and only if, in every subsequence ti,ti+1… th of T with $0 \leq i < h \leq p - 1$, some symbol occurs an odd number of times. T is a cyclic coordinate sequence of a length n, period p Gray code if and only if, in every subsequence ti,ti+1,..., th of T with $0 \leq i < h \leq p - 2$, some symbol occurs an odd number of times, every symbol occurs an even number of times.

2.1.2 Framing the Images

The video file can be converted into image frames. We are taking the input as video file and that file has been converting into frames of images.

Input: video file.

Output: image frames of the input video.

2.1.3 Compressed Method

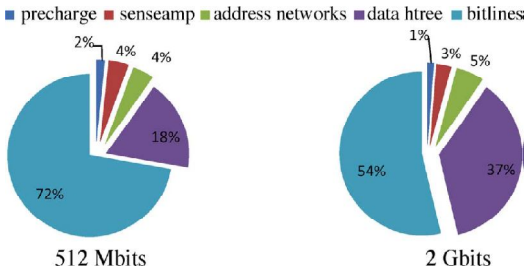
Input: Binary code.
Output: Gray code.
Binary code to Gray code Steps given as follows:

Step 1: The M.S.B. of the gray code will be the exactly equal to the first number bit of the given binary number.
Step 2: the second bit of the code will be exclusive-or of the first and second bit of the given binary number, i.e if both the bits are same the result will be 0 and if they are different the result will be 1.
Step 3: The third bit of gray code will be equal to the exclusive-or of the second and third bit of the given binary number. Thus the Binary to gray code goes on.

2.1.4 Re- Compressed Method

Input: Gray Code.
Output: Binary code.
Gray code to Binary code Steps given as follows:
Step 1: The M.S.B of the binary number will be equal to the M.S.B of the given gray code.
Step 2: if the second gray bit is 0 the second binary bit will be same as the previous or the first bit. If gray bit is one and the second bit. If it was 1 it will be 0 and if it was 0 it will be one.
Step 3: This step is continued for all the bits to do Gray code to binary number.
After Recompression the energy of the output video file is saved and used with less energy consumption.

3. Related work



Estimated breakdown of single-access energy consumption for a 512 Mb and 2 GB DRAM at 45 nm node [1].

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The basic idea is simple: We allocate a small and more energy-efficient memory array to the store those hot images data being accessed more frequently, while leave other images data stored in the main memory array. The importance of video processing in the mobile devices and market places.

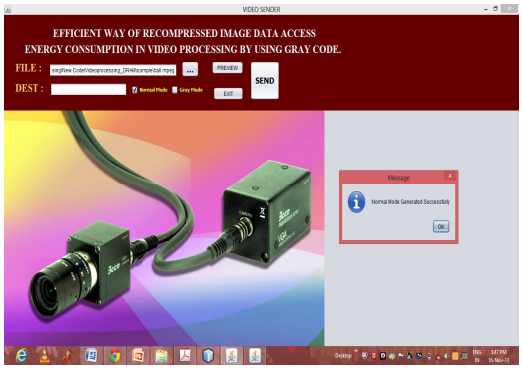
Binary Representation is used for memory addressing. The advantage of Binary representation is fast memory address calculation by binary addresses. The advantage of Gray code is, will take two consecutive values and changes one bit at a time and also it is easy to convert to a numeric value, Gray code makes very stable position digitizers because only one bit changes at a time resulting in uncertainity of only one bit.

Quantization Parameter (QP):

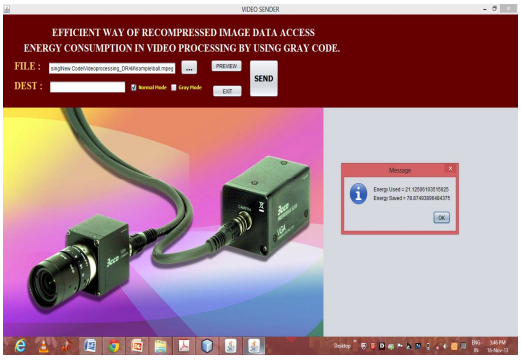
Quantization in an encoder which is controlled by a quantization parameter, QP, in which values ranges from 0 to 51 and also that QP value is used as an index value to derive a matrix and also possible to calculate the equivalent Qstep size for each value of QP

4. Experimental Results

1. Video file as an Input at User place.

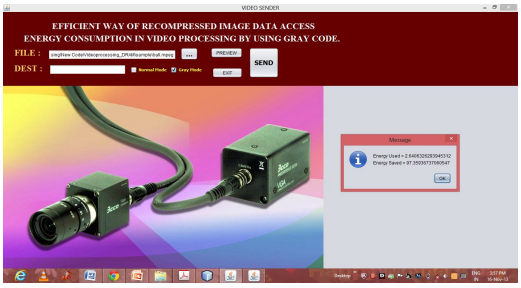


2. Using Normal Method.



In the above case without using gray code method Energy used is **20.1%** and energy saved is **88.8%**.

3. Using Gray Code Method (GCM):



In the above case by using gray code method Energy used is **2.6%** and energy saved is **97.35%**.

After reducing the energy level the video file will be received at end user to fast downloading and less energy used.

5. Analysis of Graph

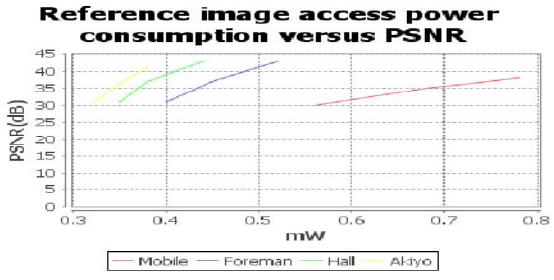


Fig 1: Points on each curve from top to bottom represent QP of 1, 2, and 3.

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Peak signal-to-noise ratio (PSNR) is the engineering term used to calculate ratio between the maximum possible power of a signal and the power of corrupting noise. Hence many signals have a very wide dynamic range.

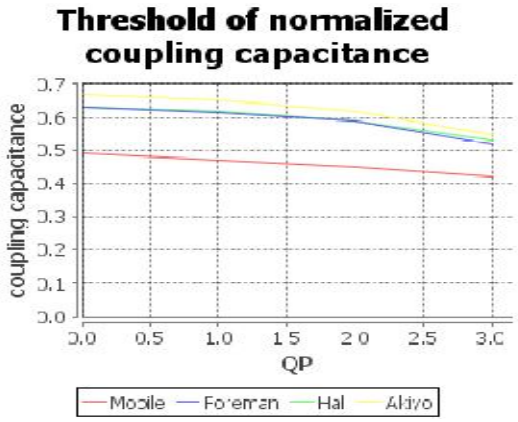

Fig 2: We can see in the above graph as we increase the compression strength threshold drops.

A coupling capacitor is a capacitor which is used to separate the various stages in a circuit. To separates the dc and ac components and 'couples' the output of one stage to the input of the next stage.

5. Conclusion:

In this paper we are using Gray Code Method (GCM) to save the energy consumption level when compared to previous techniques in video processing. Video processing is a case of processing where the input and output signals is video files or video streams. These techniques are used in TV, VCR's, DVD's, video codec's, video players, video scalar's etc.

References:

[1] Reducing DRAM Image Data Access Energy Consumption in Video Processing Yiran Li and Tong Zhang, Senior Member, *IEEE*

[2] Design techniques for energy efficient and low-power systems-IEEE International Conference on Personal Wireless Communications.

[3] Some Issues in gray code Addressing – Husefa Mehta, Robert Michoel, Mary Jane Irwin.

[4] Battery power sensitive video processing in wireless network – prathima Agrawal, Jyh-chen, Shalinee Kishore, Parameswaran Ramanathan, Krishna Sivalingam.

[5] Digital Sequences in Communication and Coding - Tuvi Etzion.

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