Abstract

Motion based prediction used for video coding is an efficient method in the field of video compression. But the complexity and computation time involved in this method is a burden to apply them in real time applications. In this paper, an arrangement of video frames in temporal-spatial (TEMPO-SPA) domain, which is 3D to 2D mapping of video signals is proposed. As video signals are more redundant in temporal domain compared to spatial domain, the video frames are arranged in such a manner to exploit both temporal and spatial redundancies to achieve good compression ratio. In order to reduce the time and complexity of DCT computation, Approximated DCT (ADCT) is used along with combined Retaining-RLE method. ADCT is an approximation of DCT, whose transformation matrix contains most of the zeros which reduces the number of multiplications involved in the normal DCT computation. The quantized 8x8 blocks are then encoded by combination of Retaining and Run Length Encoding (RLE) methods. Out of 64 quantized coefficients in an 8x8 block, only certain number of coefficients is retained while zig-zag scanning order and RLE is applied to this retained sequence of coefficients to reduce the data in retained sequence. Thus providing high level of compression compared to previous compression standards.

References
Scalable Video Compression by Employing TEMPO-SPA Arrangement along with Combined ADCT, Retaining-RLE Method

- G. Suresh, P. Epsiba, Dr. M. Rajaram, Dr. S. N. Sivanandam. IJCSNS June 2010. Scalable ACC-DCT based Video compression using up/down sampling.
- Mother and Daughter QCIF video file with 176 x 144. trace. eas. asu. edu/yuv/mother-daughter/mother-daughter_qcif.7z.

Index Terms

Computer Science
Signal Processing

Keywords

Approximate DCT  Low complexity video compression  TEMPO-SPA arrangement
Retaining-RLE compression

Video compression with higher compression ratio.