Abstract

Motion Estimation (ME) is an integral part of any video encoder and a large number of Block Matching Motion Estimation (BMME) Algorithms are proposed to cope the computational complexity and increase quality of ME process requirement. Therefore, it is necessary to evaluate the performance of these ME algorithms for different motion activities. In this paper five fast famous BMME algorithms are considered to evaluate their performance on the basis of ME time, search points, PSNR and Means Square Error (MSE). The algorithms evaluated in this paper are considered for state of the art video compression standards like MPEG 1, to MPEG4 and H. 261 to H. 264. Results show that the PSNR of Diamond Search (DS) is best for all test video sequences, whereas, Hardware Modified DS takes maximum number of search points to calculate motion vector. Moreover, hexagon search algorithm takes minimum number of search points but its PSNR is considerably lower than the other algorithms.

References

Science Vol. 64 No., pp no. 39-45
- Aroh Barjatya, 2004 "Block Matching Algorithms for Motion Estimation;" DIP 6620, Final project paper.
Performance Analysis of Fast Block Matching Motion Estimation Algorithms

- Ljubomir Jovanov, Aleksandra Pi?zurica, Stefan Schulte, 2009, &quot;Combined Wavelet-Domain and Motion-Compensated Video Denoising Based Video Codec Motion Estimation Methods&quot; IEEE transactions on circuits and systems for video technology, Vol. 19, No. 3.
- Sourab Rungta, Dr. Neeta Tripathi and Prof Anupam Shukla, 2011, &quot;Hexagonal Based Search Pattern for Motion Estimation in H. 264/AVC,&quot; World of Computer Science and Information Technology Journal (WCSIT), vol. 1, no. 2221-0741, pp. 162-166.
- Available online at: https://media. xiph. org/video/derf/

Index Terms

Computer Science

Algorithms

Keywords
- Motion estimation
- Motion vector
- MBD
- DS
- FHS
- MDS
- HexBS