

Abstract

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A Fast Block-Based Motion Estimation Using Early Stop Search Techniques for H.264/AVC Standard

H.264/AVC is a new video coding standard of the ITU-T Video Coding Expert Group which has a significant improvement in the rate distortion efficiency compared with the previous standards. However, there is an exhaustive motion search across multiple block sizes and multiple reference frames leading to a linear increase in processing time. Although the encoding quality is improved, the complexity of the encoder computational cost is also increased at the same time. In this paper, we reduce the computational cost by reducing the number of candidate pixels required for the sum of absolute difference for each block (SAD) using two early stop search techniques. These techniques are applied on two scan search patterns (raster and spiral search patterns) compared with the conventional full search (FS), three step search (TSS), diamond search (DS) algorithms. Results show that there is at least 98% reduction in computations with a maximum loss of 0.1 dB compared with the conventional FS algorithm.