Using Predictive Vector and Search Pattern for Fast Motion Estimation

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ABSTRACT

Multimedia communication relies on video compression technology to reduce the data bits of transmission and enhance transmission speed is necessary. In block motion estimation, the use of different predictive vector and search pattern has a very important impact on the performance of motion estimation. In recent years, many fast motion estimation algorithms were proposed, such as three-step search (TSS), Diamond Search (DS), and Hexagon-based Search (HS). A Hybrid Predictive vector and Search pattern for fast motion estimation (HPS) is proposed. It could be used efficiently in video compression. It adopts the condition of early termination which can speed up on searching motion vector. The experimental results show that the proposed algorithm is faster than DS and HS about 14~21ms/frame, while the average image quality is increased 0.1dB~0.28dB. Although the proposed method is slower than FPSA-ET about 3ms/frame, it can increase the image quality about 0.02dB. The experimental results show that the proposed algorithm can effectively improve the reconstructed image quality and be suitable for real-time applications.

Keywords : Motion Estimation、Motion Vector、Predictive Vector、Video Encoding

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