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KEY WORD: VIDEO CODING / MOTION ESTIMATION / BLOCK MATCHING ALGORITHM / MOTION VECTOR PREDICTION / ADAPTIVE

THAVEESAK SAPPASITWONG : ASYMMETRIC DIAMOND SEARCH ALGORITHM USING ADAPTIVE SEARCH CENTER FOR MOTION ESTIMATION IN VIDEO CODING. THESIS ADVISOR: ASSOC. PROF. SOMCHAI JITAPUNKUL, Dr.Ing., 121 pp. ISBN 974-03-1517-8.

Motion estimation is playing a significant role in digital video coding preocess. The block-based motion estimation has been widely used in general video-coding standard. This thesis proposed an adaptive asymmetric diamond search algorithm using adaptive search center which exploits the correlation of motion vectors between adjacent blocks in order to set the search pattern suitable with the case of motion object in each sequences. The proposed algorithm focuses on computational complexity reducing in motion estimation whilst maintain estimation accuracy. Simulation results show that this algorithm decreased an amount of complexity while keeping satisfactory accuracies, MSE and PSNR. In the gentle motion sequence, the proposed algorithm can reduce number of searchpoints from that of full search algorithm up to 33 times while the smallest PSNR is 38.66 db.