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Extended Constraint Mask Based One-Bit Transform for Low-Complexity Fast Motion Estimation

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Abstract : In this paper, an improved motion estimation (ME) approach based on weighted constrained one-bit transform is proposed for block-based ME employed in video encoders. Binary ME approaches utilize low bit-depth representation of the original image frames with a Boolean exclusive-OR based hardware efficient matching criterion to decrease computational burden of the ME stage. Weighted constrained one-bit transform (WC-1BT) based approach improves the performance of conventional C-1BT based ME employing 2-bit depth constraint mask instead of a 1-bit depth mask. In this work, the range of constraint mask is further extended to increase ME performance of WC-1BT approach. Experiments reveal that the proposed method provides better ME accuracy compared existing similar ME methods in the literature.

Keywords : fast motion estimation; low-complexity motion estimation, video coding
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