Use of Adaptive Resizing in 3–D DCT Domain for Video Coding

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Abstract :  
This paper proposes an adaptive resizing algorithm in DCT domain for 3–D DCT based video codec. An 8×8×8 cube is resized to three modes along temporal dimension: a single 8×8 block, a downsized 8×8×4 cube and two 8×8×4 cubes. The mode selection is based on the local motion activity and determined after 2–D DCT on each block. In addition, the proposed algorithm even simplifies the computational complexity for sequences with low motion activity. Experimental results show that the proposed algorithm can improve the coding efficiency for different types of video sequences. Best performance can be expected for those with low motion activity. Moreover, it outperforms other variable size of 3–D DCT schemes. Potential applications could be for portable digital devices with restrict battery lifetime and other areas with restrict real–time requirement.