

视频编码中一种新的用于几何块划分的变换结构

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A New Transform Structure for Geometry Motion Partitioning in Video Coding

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摘要 针对几何块划分技术提出了一种任意形状的变换结构. 虽然几何块划分技术比现有视频编码标准中采用的块划分方式更为灵活, 但其所对应的变换结构并未得到合理设计, 从而导致变换效率下降. 因此, 提出对两个任意形状的残差块分别进行任意形状的变换, 并通过翻转的方法保留像素间的相关性. 实验结果表明, 将任意形状的变化结构应用于几何块划分技术可以节约1.16%~3.05%比特率.

关键词: [几何块划分](#) [变换块](#) [任意形状的变换](#)

Abstract: This paper proposes a transform structure with arbitrary shape blocks for geometry block partitioning. A square coding block is split into two arbitrary shaped prediction blocks by geometry partitioning, which is more flexible than the partitioning method used in current video coding standards. In the current design, using a square transform block for combined square residual block is not reasonable and will affect transform efficiency. To further improve the transform structure, we propose that the two arbitrary shaped residual blocks are transformed separately with arbitrary shaped transform blocks. A turnover method is used to retain the correlation of residuals. Experimental results show that a bit rate saving of 1.16%~3.05% can be achieved.

Keywords: [geometry block partitioning](#), [transform block](#), [transform with arbitrary shaped block](#)

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[1] ISO/IEC JTC1. Coding of moving pictures and associated audio for digital storage media at up to about 1.5 Mbit/s-part 2:video [EB/OL]. [2013-05-19]. <http://webstore.ansi.org/RecordDetail.aspx?sku=ISO/IEC%2011172-2/Cor3:2003#.UcDk9qV6qZE>.

[2] Kondo S, Sasai H. A motion compensation technique using sliced blocks in hybrid video coding [C]// IEEE International Conference on Image Processing. 2005: II -305-8.

[3] Divorra ` O, Yin P, Dai C, et al. Geometry-adaptive block partitioning for video coding [C]// IEEE International Conference on Acoustics, Speech and Signal Processing. 2007: I -657.


[4] ISO/IEC JTC1. Information technology-coding of audio/visual objects, part 2: visual [EB/OL]. [2013-05-19]. <http://webstore.ansi.org/RecordDetail.aspx?sku=ISO/IEC%2014496-2:2004#.UcDItKV6qZA>.

[5] Sikora T, Makai B. Shape-adaptive DCT for generic coding of video [J]. IEEE Transactions on Circuits and Systems for Video Technology, 1997, 7(4): 473-482.

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- [6] Xie T, Cheng J W, He Y, et al. A new approach to arbitrary shaped DCT [C]// IEEE International Conference on Picture Coding Symposium 1997: 97-101.
- [7] Foi A, Katkovnik V, Egiazarian K. Pointwise shape-adaptive DCT for high-quality denoising and deblocking of grayscale and color images [J] IEEE Transactions on Image Processing, 2007, 16(5):1395-1411. 
- [8] Foi A, Dabov K, Katkovnik V, et al. Shapeadaptive DCT for denoising and image reconstruction [C]// International Society for Optics and Photonics in Electronic Imaging. 2006: 60640N.

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