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Title: **AHG 16: Transform-free coding for 2×N or N×2 chroma blocks**

Status: Input document to JVET

Purpose: Proposal

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Abstract

In this contribution, no transform/inverse-transform is required for tiny blocks with sizes 2×N or N×2. The 2-point transform could be removed accordingly. Two solutions are provided. In the first solution, tiny blocks are always coded with all residues equal to 0. In this case, the 2×2 coding group scan is also removed. In test 2, tiny blocks are always coded with the transform-skip mode. In test 1, simulation results reportedly show 0.06%/1.55%/1.76% and 0.11%/3.31%/3.57% BD-rate changing on Y/Cb/Cr components for All Intra (AI) and Random Access (RA) configurations, respectively, in average compared with VTM-2.0.1. Meanwhile, it reports encoder running time is also reduced by 2%. In test 2, simulation results reportedly show 0.11%/1.40%/1.58% and 0.13%/2.92%/3.10% BD-rate changing on Y/Cb/Cr components for AI and RA configurations, respectively.

Introduction

In the current VVC, tiny blocks with size 2×N or N×2 are allowed to code chroma components. Therefore, 2×N or N×2 transform/inverse-transform is required, which is not desirable in the hardware implementation.

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LINKS

CARD

JVET-L0334

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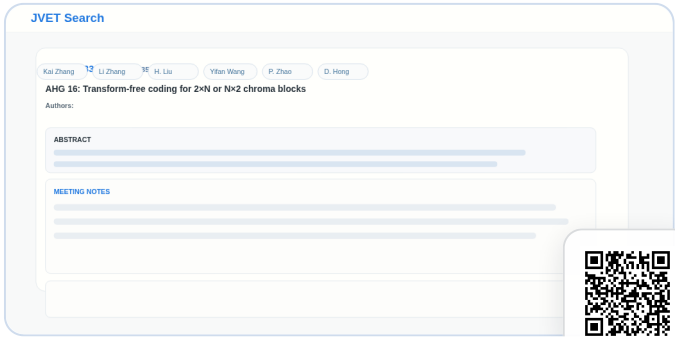

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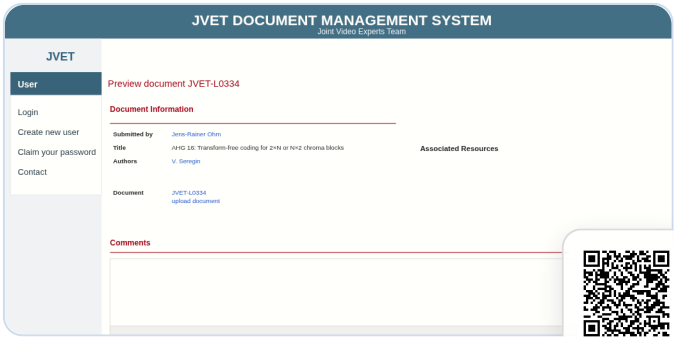

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MEETING NOTES

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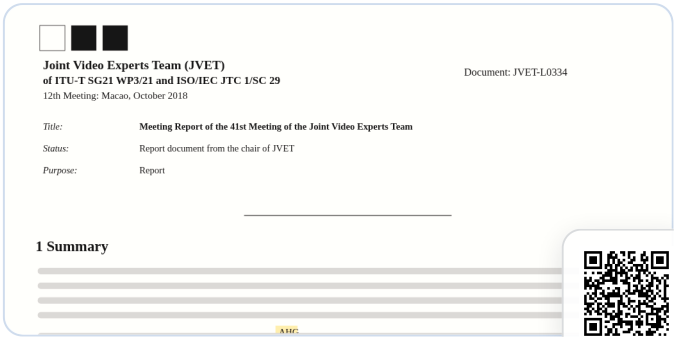

MEETING NOTES

JVET-L0334 AHG 16: Transform-free coding for 2×N or N×2 chroma blocks [K. Zhang, L. Zhang, H. Liu, Y. Wang, P. Zhao, D. Hong (Bytedance)]

In this contribution, no transform/inverse-transform is required for tiny blocks with sizes 2×N or N×2. The 2-point transform could be removed accordingly. Two solutions are provided. In the first solution, tiny blocks are always coded with all residues equal to 0. In this case, the 2×2 coding group scan is also removed. In test 2, tiny blocks are always coded with the transform-skip mode. In test 1, simulation results reportedly show 0.06%/1.55%/1.76% and 0.11%/3.31%/3.57% BD-rate changing on Y/Cb/Cr components for All Intra (AI) and Random Access (RA) configurations, respectively, in average compared with VTM-2.0.1. Meanwhile, it reports encoder running time is also reduced by 2%. In test 2, simulation results reportedly show 0.11%/1.40%/1.58% and 0.13%/2.92%/3.10% BD-rate changing on Y/Cb/Cr components for AI and RA configurations, respectively.

Implicitly enforcing zero coding is not appropriate in particular in the low QP range.

The loss in chroma is relatively large (and even reflected in luma loss, as the bit rate is apparently increased).

Generally, a length 2 transform is not critical in complexity.

> No action was taken on this.

CITATION

K. Zhang, L. Zhang, H. Liu, Y. Wang, P. Zhao, D. Hong, "AHG 16: Transform-free coding for 2×N or N×2 chroma blocks", JVET-L0334, 12th Meeting: Macao, October 2018.

REFERENCES

1. F. Bossen, J. Boyce, X. Li, V. Seregin, K. Sühring, "JVET common test conditions and software reference configurations for SDR video", JVET-K1010, 11th Meeting: Ljubljana, July 2018.