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| *Title:* | **Cross-check of TE2 3.1.4 Inter-layer texture prediction mode with skip signaling** | | |
| *Status:* | Input document to JCT-VC | | |
| *Purpose:* | Cross Check | | |
| *Author(s) or Contact(s):* | Yong He 9710 Scranton Rd, Suite 250 San Diego, CA 92121, USA | Tel: Email: | +1-858-210-4807 Yong.He@InterDigital.com |
| *Source:* | InterDigital Communications, LLC | | |

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# Abstract

This contribution reports the cross-check results of SHVC TE2 3.1.4 Inter-layer texture prediction mode with skip signalling from Huawei. The cross check results match the one proposed by Huawei.

# Introduction

In JCTVC-K0046[1], Huawei proposed inter-layer texture prediction mode with skip signalling. The proposal was assigned to TE2 for performance evaluation [2].

In case the inter-layer texture prediction results in all DCT coefficients quantized to 0s, the inter-layer texture skip mode could be signaled. It is noted that in case a CU is signaled as the inter-layer texture prediction mode, but not skipped, the no\_residue\_syntax\_flag could be inferred to be 1, thus there is no need to code this flag.

The proposed inter-layer texture skip mode applies to both intra and inter slices in the enhancement layer.

In HEVC, the skip\_flag is signaled at the beginning of a CU in P/B slices, but not in I slices. In K0046, the skip\_flag is reused in EL I slices, to indicate wheather the proposed inter-layer texture skip is used or not.

In the case of enhancement layer P/B slice, the skip\_flag is used to indicate the usage of the skip mode, so it cannot be used to signal the proposed Inter-layer texture skip mode. Besides, the proposed inter-layer texture skip mode needs to be differentiated from the ordinary skip mode. For this purpose, an addition flag inter\_layer\_texture\_skip\_flag is added right after the skip\_flag. Only when skip\_flag is 1, is this added flag parsed.

# Simulation results

The proposed scheme is verified with the software Huawei provided. Please note encode/decode times are not reliable because of the inhomogeneous computer clusters. Full simulation results are provided in the attached Excel sheets. The results match the simulation results provided by Huawei.

1. TE2 3.1.4 Cross-check Results

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **AI HEVC 2x** | | | **AI HEVC 1.5x** | | |  |  |  |
|  | Y | U | V | Y | U | V |  |  |  |
| Class A | -27.2% | -27.1% | -27.9% |  |  |  |  |  |  |
| Class B | -21.4% | -21.0% | -20.9% | -32.9% | -32.7% | -33.0% |  |  |  |
| **Overall (EL+BL)** | -23.1% | -22.8% | -22.9% | -32.9% | -32.7% | -33.0% |  |  |  |
| **Overall (EL)** | -35.2% | -34.9% | -35.2% | -58.5% | -57.8% | -58.3% |  |  |  |
| Enc Time[%] | 116.8% | | | 109.1% | | |  |  |  |
| Dec Time[%] | 96.7% | | | 91.5% | | |  |  |  |
| Enc Mem[%] | #NUM! | | | #NUM! | | |  |  |  |
| BL Match | Matched | | | Matched | | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | **RA HEVC 2x** | | | **RA HEVC 1.5x** | | | **RA HEVC SNR** | | |
|  | Y | U | V | Y | U | V | Y | U | V |
| Class A | -18.5% | -7.8% | -9.4% |  |  |  |  |  |  |
| Class B | -15.7% | -8.9% | -7.5% | -26.3% | -20.0% | -18.6% |  |  |  |
| **Overall (EL+BL)** | -16.5% | -8.6% | -8.1% | -26.3% | -20.0% | -18.6% |  |  |  |
| **Overall (EL)** | -25.5% | -13.3% | -12.7% | -47.7% | -37.5% | -35.2% |  |  |  |
| Enc Time[%] | 136.0% | | | 142.7% | | |  | | |
| Dec Time[%] | 148.8% | | | 149.5% | | |  | | |
| Enc Mem[%] | #NUM! | | | #NUM! | | | #NUM! | | |
| BL Match | Matched | | | Matched | | |  | | |
|  |  |  |  |  |  |  |  |  |  |
|  | **LD-P HEVC 2x** | | | **LD-P HEVC 1.5x** | | | **LD-P HEVC SNR** | | |
|  | Y | U | V | Y | U | V | Y | U | V |
| Class A | -13.7% | -2.0% | -3.1% |  |  |  |  |  |  |
| Class B | -12.0% | -6.6% | -4.9% | -22.3% | -16.7% | -14.9% |  |  |  |
| **Overall (EL+BL)** | -12.5% | -5.3% | -4.4% | -22.3% | -16.7% | -14.9% |  |  |  |
| **Overall (EL)** | -19.9% | -8.3% | -7.0% | -41.5% | -31.8% | -28.6% |  |  |  |
| Enc Time[%] | 113.1% | | | 115.0% | | |  | | |
| Dec Time[%] | 143.7% | | | 139.7% | | |  | | |
| Enc Mem[%] | #NUM! | | | #NUM! | | | #NUM! | | |
| BL Match | Matched | | | Matched | | |  | | |

# Patent rights declaration(s)

**InterDigital Communications, LLC may have IPR relating to the technology described in this contribution and, conditioned on reciprocity, is prepared to grant licenses under reasonable and non-discriminatory terms as necessary for implementation of the resulting ITU-T Recommendation | ISO/IEC International Standard (per box 2 of the ITU-T/ITU-R/ISO/IEC patent statement and licensing declaration form).**

# References

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