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| *Title:* | **3D-CE2.h related: Cross check of JCT3V-B0045 Results of Illumination Compensation for Inter-View Prediction by LG** | | |
| *Status:* | Input Document | | |
| *Purpose:* | Report | | |
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# Abstract

This document reports the cross-check results of LG proposal JCT3V-B0045, “3D-CE2.h: Results of Illumination Compensation for Inter-view Prediction” proposed by LG, as compared HTM 4.0.1 [1]. Cross-checking is performed for “Set 3”, “Set 4”, and “Set 5” shown in JCT3V-B0045. The PSNR and bitrate results performed for this cross-verification match Set 3 and Set 5 provided by the proponents, and there is a mismatch in the result observed in Set 4.

# Introduction

This document reports the cross check results on “3D-CE2.h: Results of Illumination Compensation (IC) for Inter-view Prediction” by LG [2]. Cross-checking is performed for “Set 3”, “Set 4”, and “Set 5” as shown in [2]. They are, respectively, tested for the proposed IC on luma with weighted prediction (WP), IC on luma and depth, and IC on luma and chroma.

# Examination of Software

## Set 3

The coding performance of the proposed IC technique by LG is investigated with enabling weighted performance in this evaluation. In the configuration file, parameters on weighted prediction are correctly signaled: weighted\_pred\_flag and weighted\_bipred\_flag are set to 1. In the software, they attempt to make two efforts, i.e., one for their IC technique under # LG\_IC macro and the other for relevant updates of WP adopted in the recent HM model [3, 4]. Besides, the explicit WP is only used with this modification.

The simplification method proposed in [2] is correctly implemented, and the flags on IC on/off are correctly signaled for both in a slice level and a CU level.

## Set 4

The coding performance between the proposal by LG and cross-checked by Qualcomm has a mismatch.

## Set 5

In this evaluation, the weighted prediction is disabled. The IC technique proposed by LG is extended to chroma components. The extension is straightforward, and the slice-level adaptation is performed for only luma component.

# Performance of proposed method

The proposed method is implemented on top of HTM4.0.1 software [1].

All software was compiled and run on a Linux cluster. Simulation results are shown in Table 1 and 2 for the “Set 3” and the “Set 5”. The anchor is HTM 4.0.1 with CTC [5] for all the tests. The results for “Set 4” are not shown because of the mismatch. Encoding and Decoding measurement time are not reported because of the different server status.

Table 1.Simulation result of IC  
(Anchor: 3DV-HTM v4.0.1, Tested: Proposed method+enable weighted prediction (Set 3))

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | video 0 | video 1 | video 2 | video only | synthesized only | coded & synthesized |
| Balloons | 0.1% | -0.9% | -0.5% | -0.3% | 0.1% | 0.0% |
| Kendo | 0.1% | -2.0% | -1.8% | -0.8% | 0.3% | 0.2% |
| Newspapercc | 0.1% | -0.1% | -0.4% | -0.1% | 0.2% | 0.2% |
| GhostTownFly | 0.4% | 0.3% | 0.3% | 0.4% | -0.1% | -0.1% |
| PoznanHall2 | 0.1% | 0.8% | -0.3% | 0.1% | 0.9% | 0.8% |
| PoznanStreet | 0.0% | 0.4% | 0.1% | 0.1% | 0.2% | 0.2% |
| UndoDancer | 0.0% | 0.2% | 0.2% | 0.1% | 0.0% | 0.0% |
| 1024x768 | 0.1% | -1.0% | -0.9% | -0.4% | 0.2% | 0.2% |
| 1920x1088 | 0.2% | 0.4% | 0.1% | 0.2% | 0.2% | 0.2% |
| **average** | **0.1%** | **-0.2%** | **-0.4%** | **-0.1%** | **0.2%** | **0.2%** |

Table 2.Simulation result of IC  
(Anchor: 3DV-HTM v4.0.1, Tested: Proposed method with chroma extension (Set 5))

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | video 0 | video 1 | video 2 | video only | synthesized only | coded & synthesized |
| Balloons | 0.0% | -1.2% | -1.5% | -0.6% | -0.4% | -0.5% |
| Kendo | 0.0% | -3.6% | -4.0% | -1.6% | -1.3% | -1.3% |
| Newspapercc | 0.0% | -0.6% | -1.1% | -0.4% | -0.2% | -0.3% |
| GhostTownFly | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% |
| PoznanHall2 | 0.0% | 0.1% | -0.1% | -0.1% | 0.1% | 0.0% |
| PoznanStreet | 0.0% | 0.0% | -0.4% | -0.1% | -0.1% | -0.1% |
| UndoDancer | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1024x768 | 0.0% | -1.8% | -2.2% | -0.8% | -0.6% | -0.7% |
| 1920x1088 | 0.0% | 0.0% | -0.1% | 0.0% | 0.0% | 0.0% |
| **average** | **0.0%** | **-0.7%** | **-1.0%** | **-0.4%** | **-0.3%** | **-0.3%** |

# Reference

[1] <https://hevc.hhi.fraunhofer.de/svn/svn_3DVCSoftware/tags/HTM-4.0.1>

[2] H. Liu, J. Jung, J. Sung, J. Jia and S. Yea, “3D-CE2.h : Results of Illumination Compensation for Inter-View Prediction”, JCT3V-B0045, Shanghai, China, October 2012.

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[5] D. Rusanovskyy, K. Müller, A. Vetro, “Common Test Conditions of 3DV Core Experiments”, The 1st JCT-3V meeting, JCT3V-A1100, Stockholm, Sweden, July 2012.