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| *Title:* | **3D-CE6.h related: Removal of post-filter for DC mode in SDC** | | |
| *Status:* | Input Document | | |
| *Purpose:* | Proposal | | |
| *Author(s) or Contact(s):* | Jian-Liang Lin, Yi-Wen Chen, Yu-Wen Huang, Shawmin Lei  No. 1, Dusing Rd. 1, Hsinchu Science Park, Hsinchu, Taiwan 30078 | Tel: Email: | Shawmin Lei +886-3-5670766 ext. 25555 {jl.lin, yiwen.chen, yuwen.huang, shawmin.lei} @mediatek.com |
| *Source:* | MediaTek Inc. | | |

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# Abstract

The simplified depth coding (SDC) is utilized as an alternative intra coding mode in 3D-HEVC. For the DC mode in SDC, the DC value needs to be calculated in two steps. It firstly calculates the mean of the depth values of neighbouring samples as the initial prediction samples of current depth block. As the second step, after a boundary post-filter is applied on the initial prediction samples, it has to re-calculate the mean of the prediction samples as the input of a depth lookup table to derive an index value. In this proposal, it is proposed to remove the second step for DC mode in SDC. The experimental results reportedly show no coding loss under the common tests conditions and all-intra test conditions.

# Introduction

In 3D-HEVC, the simplified depth coding (SDC) is applied as an alternative intra coding mode [1]. For SDC, the prediction samples () of the current depth block are generated by the conventional intra prediction or DMM intra prediction. The possible intra modes used in SDC are listed as the follows:

1. DC mode (1 partition)
2. DMM mode 1 (2 partitions)
3. Planar mode (1 partition)

Instead of transmitting quantized transform coefficients to represent the residual signal, the residual of each partition in the current depth block is coded by transmitting a constant residual value to the decoder.

In the current design of SDC, the input is a predicting depth value (), which is the mean of the prediction samples of the current depth block generated by intra prediction with mode DC, DMM mode 1, or Planar mode. A depth lookup table (DLT) is used to map the to an index value.

For the DC mode in SDC, the DC value needs to be calculated in two steps. In the first step, it calculates the mean of the depth values of neighbouring samples as the initial prediction samples of current depth block. In the second step, the boundary post-filter is then applied to smooth the boundary prediction samples with an (1, 3) or (1, 2, 1) filter as shown in Fig. 1. Then, it needs to re-calculate the mean of the prediction samples after boundary post-filtering and uses it as the input of the depth lookup table to generate the index value.

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**Fig. 1. The boundary post-filter**

# Proposed method

In this proposal, we propose to remove the second step of the DC mode in SDC. The mean of the depth values of neighbouring samples is directly used as the prediction samples of current depth block and also used as the input of the depth lookup table to generate the index value.

# Experimental results

The proposed removal of post-filter in SDC is conducted based on HTM-7.0r1 [2] under the common test conditions (CTC) [3] and all-intra test conditions [4]. The experimental results of the proposed method under the common test conditions and under the all-intra test conditions are shown in Table 1 and Table 2, respectively. The experiments results show that the proposed simplification brings no coding loss, while the post-filter in SDC is removed and the second-step calculation of DC value is also avoided.

**Table 1. Experimental results of the proposed simplification (CTC)**



**Table 2. Experimental results of the proposed simplification (All-intra)**



# Conclusion

In this proposal, it is proposed to remove the post-filter of DC mode in SDC. The mean of the depth values of neighbouring samples is directly used as the prediction samples of current depth block and also used as the input of the depth lookup table to generate the index value. The experimental results show no coding loss in the common test conditions and all-intra test condition.

# Patent rights declaration(s)

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# References

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