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| *Title:* | **Study on the memory bandwidth reduction using simplified DMVP for B-VSP** | | |
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# Abstract

This contribution informs the results of simplified method of disparity vector derivation applied to VSP(view synthesis prediction) process based on the proposed by Nokia-C0169. The result is shown that the performance become worse when simplified method is applied to VSP.

# Simulation Results

Common test conditions specified in JCT2-B1100 [1] is used for the evaluation. Table 1 shows two test cases. For Test 1, only VSP process was modified. The bottom-right depth sample of 16x16 MB was employed [2] for deriving disparity vector.

For Test 2, the bottom-right depth sample of 16x16 MB was employed for deriving disparity vector in inter-view and temporal motion vector prediction. And, the maximum depth value of 4 corners of 16x16 MB was employed [3] for deriving disparity vector in VSP.

Since both two test cases shows considerable decrease of coding gain, the simplified disparity derivation methods are hard to be unified for VSP and other MVP processes

Table 1. Test cases

|  |  |  |  |
| --- | --- | --- | --- |
|  | Inter-view | Temporal | VSP |
| Test 1 | N/A | N/A | Bottom right of 16x16 MB |
| Test 2 | Bottom right of 16x16 MB | Bottom right of 16x16 MB | Maximum from 4 corners of 16x16 MB |

Table 2. Result of the Test 1 (VSP: bottom-right of 16x16 MB)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Texture Coding | | Depth Coding | | Total (Coded PSNR) | |
|  | dBR, % | dPSNR,dB | dBR, % | dPSNR,dB | dBR, % | dPSNR,dB |
| S01 | 1.04 | -0.03 | 0.00 | 0.00 | 0.93 | -0.03 |
| S02 | 3.77 | -0.11 | 0.00 | 0.00 | 3.43 | -0.10 |
| S03 | 3.18 | -0.11 | -0.01 | 0.00 | 2.93 | -0.10 |
| S04 | 5.73 | -0.20 | 0.00 | 0.00 | 5.37 | -0.19 |
| S05 | 2.70 | -0.13 | 0.00 | 0.00 | 2.02 | -0.09 |
| S06 | 1.77 | -0.09 | -0.01 | 0.00 | 1.44 | -0.07 |
| S08 | 0.94 | -0.04 | 0.00 | 0.00 | 0.73 | -0.03 |
| Average | 2.73 | -0.10 | 0.00 | 0.00 | 2.41 | -0.09 |

Table 3. Result of the Test 2 (Inter-view, Temporal: bottom-right of 16x16 MB

, VSP: maximum from 4 corners of 16x16 MB)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Texture Coding | | Depth Coding | | Total (Coded PSNR) | |
|  | dBR, % | dPSNR,dB | dBR, % | dPSNR,dB | dBR, % | dPSNR,dB |
| S01 | 0.67 | -0.02 | 0.00 | 0.00 | 0.59 | -0.02 |
| S02 | 1.27 | -0.04 | 0.00 | 0.00 | 1.15 | -0.03 |
| S03 | 3.11 | -0.10 | -0.01 | 0.00 | 2.86 | -0.10 |
| S04 | 1.96 | -0.07 | 0.00 | 0.00 | 1.83 | -0.07 |
| S05 | 1.00 | -0.05 | 0.00 | 0.00 | 0.72 | -0.03 |
| S06 | 1.30 | -0.06 | -0.01 | 0.00 | 1.06 | -0.05 |
| S08 | 0.52 | -0.02 | 0.00 | 0.00 | 0.41 | -0.02 |
| Average | 1.40 | -0.05 | 0.00 | 0.00 | 1.23 | -0.04 |

# Conclusions

This contribution informs that the simplified disparity derivation method is hard to be unified on VSP and other MVP processes. Thus, simplified disparity derivation method for VSP should be studied independent from other MVP processes.

If 8x8 B-VSP(Block based view synthesis prediction) mode[4] is used and bottom-right of 8x8 partition is taken for all the partitions inside 8x8 partition, the performance can be increased. So, the simple disparity derivation method using bottom-right of 8x8 partition blocks should be studied for 8x8 B-VSP mode.

# References

[1] D. Rusanovskyy, K. Müller and A. Vetro, “Common Test Conditions of 3DV Core Experiments”, 2st JCT3V Meeting, JCT3V-B1100, Shanghai, CN, Oct. 2012.

[2] G. Bang, K. Y. Kim, Y. S. Heo, G. H. Park, W. S. Cheong, N. Hur, “3D-CE2.a results on simplification on the disparity vector derivation”, 3rd JCT3V Meeting, JCT3V-C0122, Geneva, CH, Jan. 2013.

[3] Y. W. Chen, J. L. Lin, Y. W. Huang, S. Lei, J. Y. Lee, H. C. Wey, D. S. Park, “3D-CE2.a related: MB-level depth-to-DV conversion in ATM”, 3rd JCT3V Meeting, JCT3V-C0134, Geneva, CH, Jan. 2013.

[4] D. Rusanovskyy, M. M. Hannuksela, “CE1.a-related: Simplification of BVSP in 3DV-ATM”, 3rd JCT3V Meeting, JCT3V-C0169, Geneva, CH, Jan. 2013.