

JCT3V-G0078 – CE3 related: Adaptive Disabling Temporal Inter-view Candidates

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Introduction

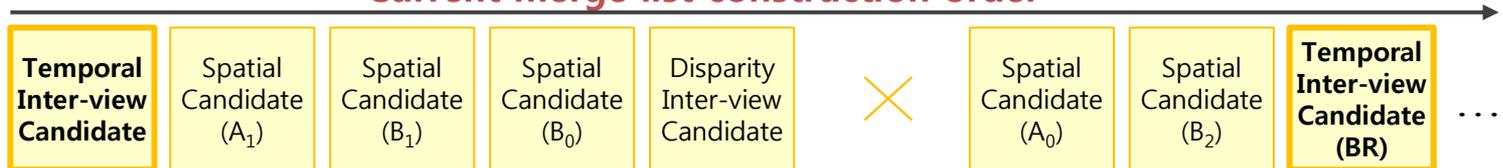
- ❖ Illumination compensation (IC) is only applied to the inter-view prediction
 - Temporal inter-view motion (TIVM) candidates always perform the temporal prediction
 - i.e. IC is never used for TIVM candidates
 - Therefore, TIVM candidates need to be adaptively disabled in merge list construction according to the value of `ic_flag`
- ❖ Disparity inter-view motion (DIVM) candidates always set vertical comp. of DV set to '0'
 - But, this can have a negative effect on the prediction of IC

Proposed Method 1

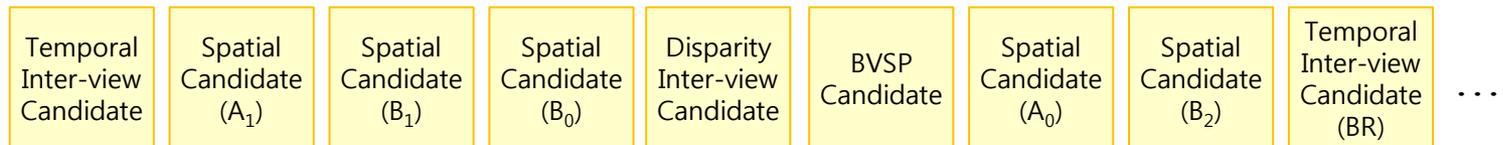
- ❖ When $ic_flag = 1$, it is proposed to disable TIVM candidates from the merge list
 - Motion info. of TIVM candidate can be used for the pruning of A_1 & B_1
 - Only comparing reference indices, but no motion vectors *as doing in 3D-HEVC*

Current merge list construction order

If $ic_flag == 1$

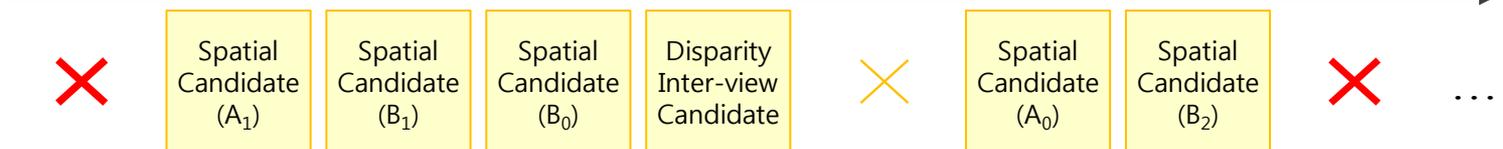


Otherwise

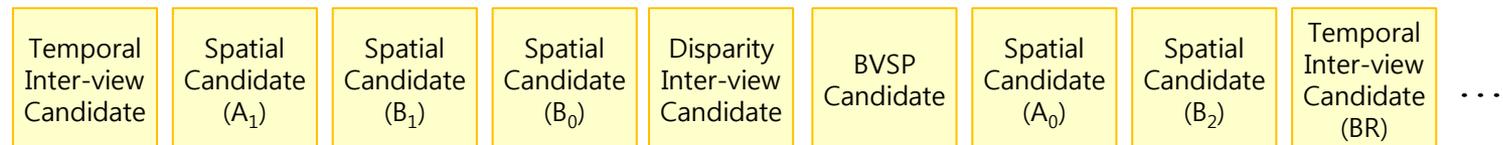


Proposed merge list construction order

If $ic_flag == 1$



Otherwise



Proposed Method 1

- ❖ Simulation Results (based on CTC with HTM 9.0r1)
 - 0.09% and 0.05% bit-saving for coded and synthesized views

	video 0	video 1	video 2	video PSNR / video bitrate	video PSNR / total bitrate	synth PSNR / total bitrate	enc time	dec time	ren time
Balloons	0.00%	-0.18%	-0.24%	-0.12%	-0.12%	-0.10%	98.9%	90.2%	94.8%
Kendo	0.00%	-0.66%	-0.55%	-0.28%	-0.25%	-0.22%	99.3%	101.1%	100.2%
Newspaper_CC	0.00%	-0.16%	-0.04%	-0.07%	-0.08%	-0.06%	99.9%	105.4%	104.5%
GT_Fly	0.00%	-0.01%	0.01%	0.00%	0.00%	0.00%	99.8%	109.1%	100.0%
Poznan_Hall2	0.00%	-0.34%	-0.04%	-0.19%	-0.18%	0.03%	100.1%	93.8%	92.5%
Poznan_Street	0.00%	-0.12%	-0.17%	-0.07%	-0.06%	-0.03%	100.2%	101.7%	101.1%
Undo_Dancer	0.00%	-0.12%	-0.01%	-0.02%	-0.02%	-0.04%	99.8%	100.7%	102.7%
Shark	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	99.2%	102.7%	96.9%
1024x768	0.00%	-0.34%	-0.28%	-0.16%	-0.15%	-0.13%	99.3%	98.9%	99.8%
1920x1088	0.00%	-0.12%	-0.04%	-0.05%	-0.05%	-0.01%	99.8%	101.6%	98.6%
average	0.00%	-0.20%	-0.13%	-0.09%	-0.09%	-0.05%	99.6%	100.6%	99.1%

Proposed Method 2

- ❖ When `ic_flag = 1`, it is proposed to allow non-zero vertical comp. for DIVM candidates
 - This enables to have better prediction of IC
- ❖ Simulation Results (w/ proposed method 1)
 - 0.13% and 0.08% bit-saving for coded and synthesized views

	video 0	video 1	video 2	video PSNR / video bitrate	video PSNR / total bitrate	synth PSNR / total bitrate	enc time	dec time	ren time
Balloons	0.00%	-0.28%	-0.25%	-0.18%	-0.18%	-0.11%	99.1%	89.4%	95.0%
Kendo	0.00%	-0.78%	-0.63%	-0.33%	-0.28%	-0.26%	99.2%	99.5%	101.2%
Newspaper_CC	0.00%	-0.27%	-0.10%	-0.10%	-0.09%	-0.05%	99.9%	105.7%	103.6%
GT_Fly	0.00%	0.00%	0.02%	0.00%	0.00%	0.01%	100.1%	101.5%	98.6%
Poznan_Hall2	0.00%	-0.49%	-0.30%	-0.26%	-0.29%	-0.12%	99.6%	94.8%	93.0%
Poznan_Street	0.00%	-0.36%	-0.44%	-0.16%	-0.14%	-0.09%	100.1%	100.6%	100.2%
Undo_Dancer	0.00%	-0.07%	0.00%	-0.02%	-0.03%	-0.03%	99.8%	98.2%	101.7%
Shark	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	99.5%	101.4%	98.2%
1024x768	0.00%	-0.44%	-0.33%	-0.20%	-0.18%	-0.14%	99.4%	98.2%	99.9%
1920x1088	0.00%	-0.19%	-0.15%	-0.09%	-0.09%	-0.05%	99.8%	99.3%	98.4%
average	0.00%	-0.28%	-0.21%	-0.13%	-0.13%	-0.08%	99.7%	98.9%	99.0%

Conclusions

- ❖ We propose to adaptively disable TIVM according to `ic_flag`, and to allow non-zero vertical comp. for DIVM
 - 0.13% and 0.08% bit-savings for coded and synthesized views
- ❖ We recommend to adopt the proposed methods into next 3D-HEVC WD

Thanks **Sharp** for the cross checking (JCT3V-G0171).

