

JVET-AB0150

Crosscheck of JVET-AB0118 (EE2-2.5a: Enhanced temporal motion information derivation)

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Subblock-Based Template-Matching for SbTMVP in Test 2.5a

- One issue about template-matching for SbTMVP is addressed
 - Inter Dir** and **RefIdx_LX** of subblock template is set same as **Center Subblock**
 - For each Ref List LX, MV_{LX} of subblock template is set to
 - if $RefIdx_LX_{Adjacent} == RefIdxLX_{Center}$ Adjacent subblock MV_{LX}
 - otherwise $MV(0, 0)$

		MV_{A-L0} MV_{A-L1}	MV_{B-L0} MV_{B-L1}	MV_{C-L0} (0, 0)	MV_{D-L0} (0, 0)
MV_{A-L0} MV_{A-L1}	MV_{A-L0} MV_{A-L1}	MV_{B-L0} MV_{B-L1}	MV_{C-L0}	MV_{D-L0}	
(0, 0) MV_{E-L1}	MV_{E-L1}				
(0, 0) MV_{F-L1}	MV_{F-L1}		MV_{P-L0} MV_{P-L1}		
MV_{G-L0} MV_{G-L1}	MV_{G-L0} MV_{G-L1}				

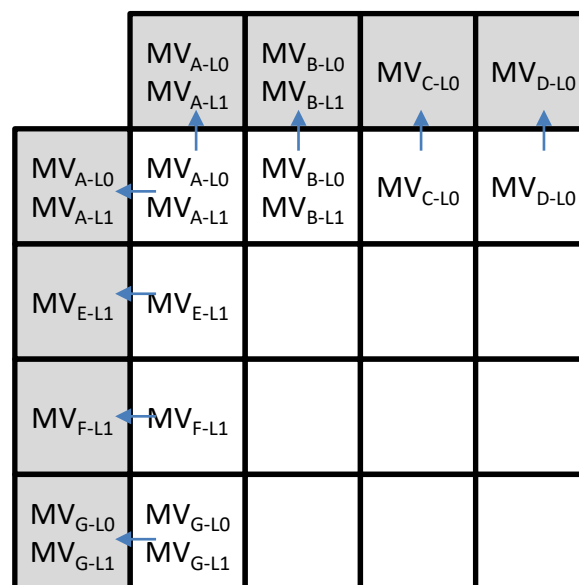
		MV_{A-L1}	MV_{B-L1}	(0, 0)	(0, 0)
MV_{A-L1}	MV_{A-L0} MV_{A-L1}	MV_{B-L0} MV_{B-L1}	MV_{C-L0}	MV_{D-L0}	
MV_{E-L1}	MV_{E-L1}				
MV_{F-L1}	MV_{F-L1}		MV_{P-L1}		
MV_{G-L1}	MV_{G-L0} MV_{G-L1}				

gray block: subblock template

(0,0) is the initialized MV at buffer initialization

Proposed Subblock-Based Template-Matching for SbTMVP

- Proposed modification of template-matching for SbTMVP
 - MV of each subblock template is simply copied from the adjacent subblock MV



gray block: subblock template

Simulation Result of Test 2.5a

- Test 2.5a

Test 2.5a	Random Access Main 10				
	Over ECM-6.0				
	Y	U	V	EncT	DecT
Class A1	-0.10%	-0.23%	-0.05%	101%	102%
Class A2	-0.11%	-0.09%	-0.19%	101%	102%
Class B	-0.07%	-0.11%	-0.23%	102%	102%
Class C	-0.20%	-0.18%	-0.21%	103%	103%
Class E					
Overall	-0.12%	-0.15%	-0.18%	102%	102%
Class D	-0.12%	-0.11%	-0.05%	103%	103%
Class F	-0.03%	-0.13%	-0.05%	102%	102%

Test 2.5a	Low delay B Main10				
	Over ECM-6.0				
	Y	U	V	EncT	DecT
Class A1					
Class A2					
Class B	-0.08%	-0.16%	0.31%	103%	102%
Class C	-0.27%	-0.28%	-0.20%	105%	106%
Class E	-0.04%	0.76%	0.54%	103%	102%
Overall	-0.14%	0.03%	0.20%	104%	104%
Class D	-0.16%	-0.06%	0.82%	104%	105%
Class F	-0.12%	-0.46%	-0.41%	102%	104%

Simulation Results of Proposed Modification

- Proposed modification over Test 2.5a

Test 2.5a-mod	Random Access Main 10				
	Over Test 2.5a				
	Y	U	V	EncT	DecT
Class A1	-0.01%	0.08%	0.03%	100%	99%
Class A2	0.02%	0.03%	0.04%	100%	100%
Class B	0.00%	0.05%	-0.02%	99%	100%
Class C	0.00%	0.09%	0.01%	99%	100%
Class E					
Overall	0.00%	0.06%	0.01%	100%	100%
Class D	-0.03%	-0.02%	-0.03%	100%	101%
Class F	-0.02%	0.00%	-0.05%	100%	100%

Test 2.5a-mod	Low delay B Main10				
	Over Test 2.5a				
	Y	U	V	EncT	DecT
Class A1					
Class A2					
Class B	#VALUE!	#VALUE!	#VALUE!	#NUM!	#NUM!
Class C	-0.02%	0.03%	0.15%	98%	99%
Class E	0.02%	-0.82%	-0.32%	100%	98%
Overall	#VALUE!	#VALUE!	#VALUE!	#NUM!	#NUM!
Class D	-0.02%	-0.19%	-0.66%	100%	100%
Class F	-0.15%	-0.22%	0.12%	100%	101%

* BQTerrace@qp22 is copied from ECM-6.0 result

Test 2.5a-mod*	Low delay B Main10				
	Over Test 2.5a				
	Y	U	V	EncT	DecT
Class A1					
Class A2					
Class B*	-0.02%	-0.10%	0.04%	100%	99%
Class C	-0.02%	0.03%	0.15%	98%	99%
Class E	0.02%	-0.82%	-0.32%	100%	98%
Overall*	-0.01%	-0.24%	-0.01%	99%	99%
Class D	-0.02%	-0.19%	-0.66%	100%	100%
Class F	-0.15%	-0.22%	0.12%	100%	101%

Conclusion

- One issue on subblock-based template-matching for SbTMVP is addressed
 - A modification is proposed on this issue
 - No runtime impact
 - Average results show that
 - There is no BDBR impact for luma in RA and LB
 - Slightly better coding gain for chroma in LB
 - Better coding gain in class F
 - -0.15%/-0.22%/0.12%
- Recommended to adopt this modification to Test 2.5a

Thanks Bytedance for the crosscheck !