JCTVC-L0106

Non-TE5.1: Simplification of remaining modes coding

E. François, S. Shi, C. Gisquet, G. Laroche , P. Onno

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Principle

■ Co-located Intra BL mode is often relevant for the EL

■ Can be used to reduce complexity of intra mode coding, in particular to reduce the nb of possible candidates

■ Principle: limit nb of remaining modes (practically 4)
  - Reduced complexity (mainly encoding side)
  - Reduced nb of bits (2) to signal Remaining Mode

  - Total nb of possible modes is 7 instead of 35:

    3 MPMs + 4 Remaining Modes

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Proposal description

- **Based on SMuC0.11 with MPM Hook: BL Mode inserted as 1 one the 3 MPMs**

- **Algorithm: 4 possible remaining modes**

  - **If MPM0 is angular,**

    4 Closest modes around the MPM0 and different from the MPMs

    ➢ MPM0−1, MPM0+1, MPM0−2, MPM0+2 …

  - **If MPM0 is not angular,**

    4 1st modes from a pre-defined set and different from the MPMs

    ➢ {26, 10, 18, 34, 2, 22, 14}

Results

■ **SMuC0.11 with MPM Hook ON**   (macro SVC_BL_CAND_INTRA set to 1)

	AI HEVC 2x			AI HEVC 1.5x		
	Y	U	V	Y	U	V
Class A	-0.20%	-0.04%	0.06%			
Class B	-0.30%	-0.17%	-0.18%	-0.11%	0.08%	0.06%
Overall (EL+BL)	-0.27%	-0.13%	-0.11%	-0.11%	0.08%	0.06%
Overall (EL)	-0.48%	-0.17%	-0.13%	-0.26%	0.23%	0.20%
Enc Time[%]	102.7%			102.9%		
Dec Time[%]	100.7%			100.2%		

■ **Combined with Proposal**

	AI HEVC 2x			AI HEVC 1.5x		
	Y	U	V	Y	U	V
Class A	-0.25%	-0.05%	0.07%			
Class B	-0.29%	-0.15%	-0.14%	-0.11%	0.11%	0.11%
Overall (EL+BL)	-0.28%	-0.12%	-0.08%	-0.11%	0.11%	0.11%
Overall (EL)	-0.50%	-0.16%	-0.07%	-0.28%	0.33%	0.32%
Enc Time[%]	89.0%			90.3%		
Dec Time[%]	100.0%			99.9%		

■ 13% encoding runtime reduction, slight decoding runtime reduction

■ No coding loss thanks to reduced nb of bits for remaining mode signaling

Canon   Thanks to Sony for cross-check (L0402)

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Conclusion

- Since Intra BL mode is often relevant for the corresponding EL CU, the number of candidate modes is reduced to a limited set of 7 modes

- Leads to significant complexity reduction, without any coding penalty

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