

Non-CE4: Modification of the temporal merging candidate for the inter merge mode

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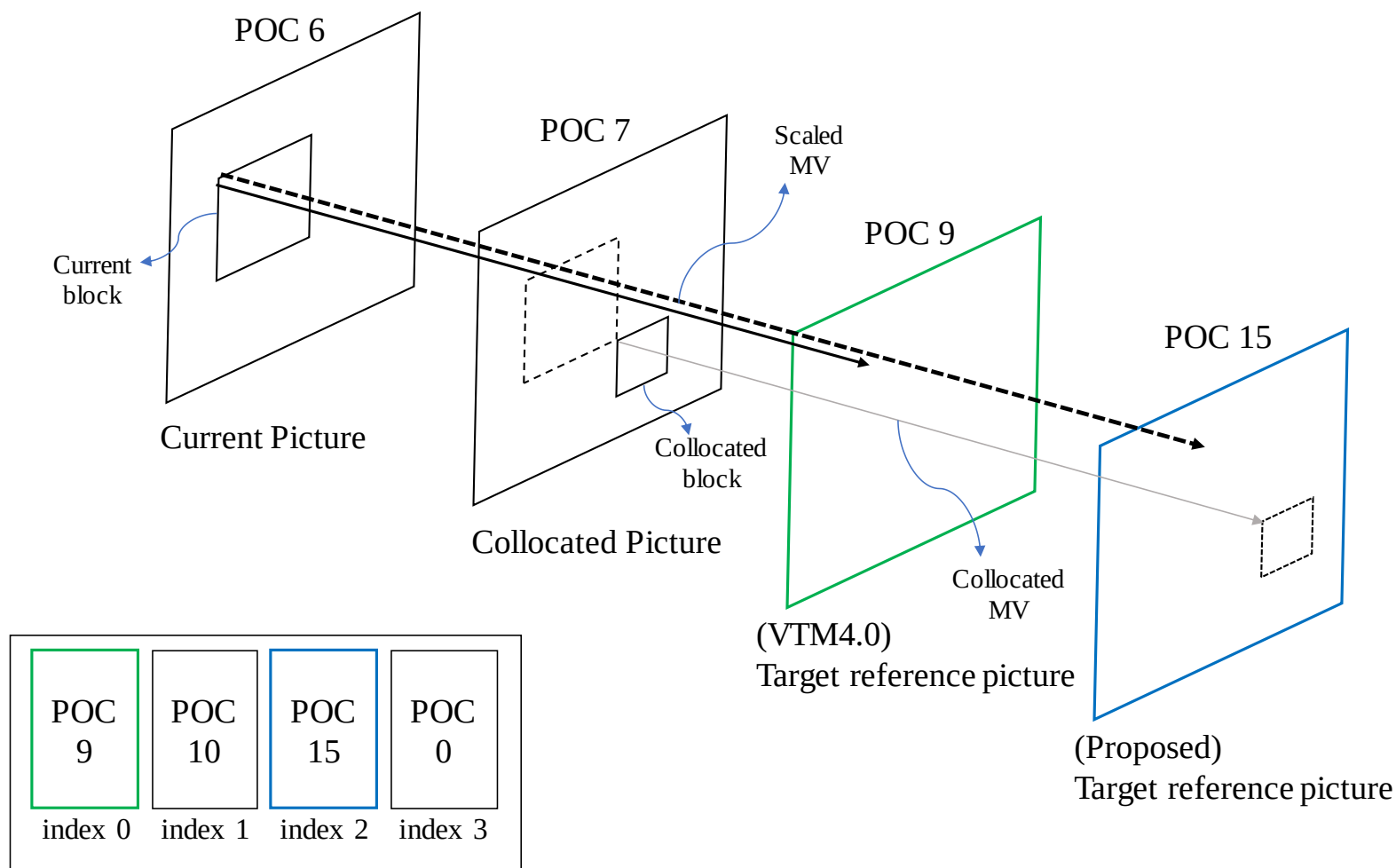
Introduction

- In VTM 4.0, when the merge mode is used, the motion vector of the collocated block is scaled considering the target picture.
- The target picture is indicated by index 0 in the current reference picture list.
- The scaled MV is used as the temporal merge candidates for current coding block.

Proposed methods

- The proposed method is used to construct the temporal merge candidate in the merge mode and merge triangle mode.
(except for subblock merge mode)
- The target picture is set to the reference picture of collocated MV if it is in the reference picture list.
- When the difference between the POCs of the current picture and the collocated picture is 1, the proposed method is used.
- Otherwise, the target picture is set to the picture whose index is 0 in the current reference picture list as in the VTM4.0.

Proposed methods



Reference picture list X of the current picture

Experimental result

- VTM4.0 using CTC in JVET-M1010

	Random access Main10				
	Over VTM-4.0				
	Y	U	V	EncT	DecT
Class A1	0.01%	0.01%	0.00%	100%	99%
Class A2	0.02%	0.01%	0.03%	100%	100%
Class B	0.02%	0.02%	0.00%	100%	100%
Class C	0.02%	0.01%	0.01%	99%	101%
Class E					
Overall	0.02%	0.02%	0.01%	100%	100%
Class D	0.04%	0.03%	0.04%	99%	99%
Class F	0.01%	0.02%	0.00%	99%	101%

	Low delay B Main10				
	Over VTM-4.0				
	Y	U	V	EncT	DecT
Class A1					
Class A2					
Class B	-0.15%	-0.37%	-0.57%	100%	100%
Class C	-0.30%	-0.45%	-0.62%	100%	100%
Class E	-0.09%	-0.66%	-0.72%	100%	100%
Overall	-0.18%	-0.47%	-0.62%	100%	100%
Class D	-0.41%	-0.58%	-1.19%	102%	99%
Class F	-0.17%	-0.27%	-0.64%	100%	100%

	Low delay P Main10				
	Over VTM-4.0				
	Y	U	V	EncT	DecT
Class A1					
Class A2					
Class B	-0.17%	-0.44%	-0.28%	100%	99%
Class C	-0.35%	-0.55%	-0.89%	100%	100%
Class E	-0.13%	-0.33%	-0.70%	100%	99%
Overall	-0.22%	-0.45%	-0.59%	100%	99%
Class D	-0.50%	-0.79%	-0.40%	99%	98%
Class F	0.00%	-0.43%	-0.26%	100%	100%

Conclusion

- In this contribution, the method to set the target picture in making the temporal merge candidate is modified.
- When the proposed method is applied, test results show +0.02%, -0.18% and -0.22% BD-rate change in RA, LDB and LDP configuration.
- There is no change in the encoding and decoding running times.
- The results have been checked by cross-checker (ETRI, JVET-N0567)
- We recommend this modification is adopted in the next version of VTM.

Thanks to ETRI for cross checking !