



JVET-N0240

Non-CE4: Simplification of merge MVD derivation

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○ Introduction

- This contribution presents a simplification of merge MVD derivation by changing the processing order.
- The proposed method may reduce the redundant operations without any additional processes.



○ Background

- **MMVD signaling**
 - Only one MVD is explicitly signaled even when using bi-prediction.
 - The other MVD is derived from the signaled MVD and it may include the MV scaling operation.
- **Bi-prediction restriction**
 - Bi-prediction is restricted for small blocks.
 - For these blocks, bi-prediction is switched to “L0” uni-prediction.
- ➔ **Redundant MV scaling for L1 for bi-prediction restricted blocks**

* Current MV derivation structure

Construct merge candidate list

If (MMVD is used)

{

Derive merge MVD

Add MVD to the selected candidate

}

If (Bi-prediction is restricted)

Switch bi-prediction to L0 uni-prediction

← MV scaling for L1 may be included.

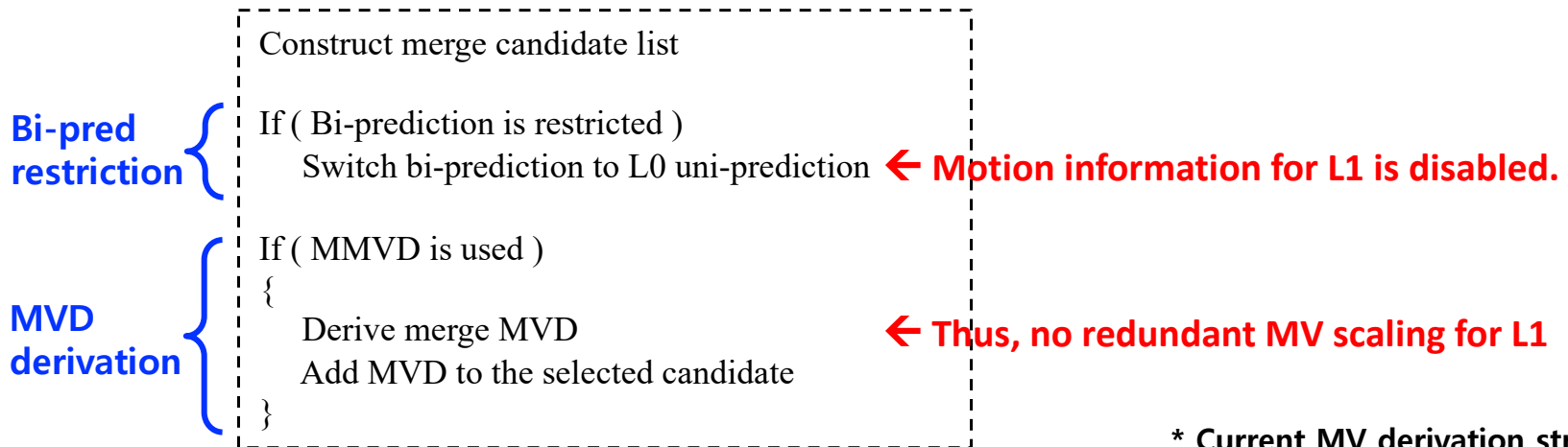
← Motion information for L1 is disabled.



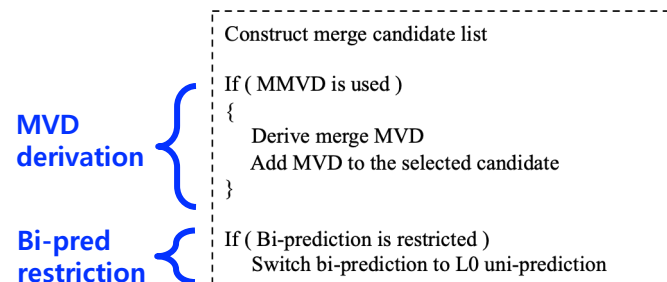
○ Proposed method

- To perform bi- to uni-prediction switching “before” the MVD derivation
 - ➔ No redundant MV scaling
 - ➔ The proposed method may reduce the number of MV scaling operations w/o additional calculations.

* Proposed MV derivation structure



* Current MV derivation structure



Experimental results

- Proposed method under CTC

	Random access Main10				
	Over VTM-4.0				DecT
	Y	U	V	EncT	
Class A1	0.00%	0.00%	-0.01%	100%	100%
Class A2	-0.01%	0.04%	0.01%	100%	100%
Class B	0.00%	-0.01%	0.00%	100%	100%
Class C	0.01%	-0.02%	-0.04%	100%	100%
Class E					
Overall	0.00%	0.00%	-0.01%	100%	100%
Class D	-0.01%	-0.07%	-0.04%	100%	99%
Class F	-0.01%	0.00%	-0.02%	101%	100%

	Low delay B Main10				
	Over VTM-4.0				DecT
	Y	U	V	EncT	
Class A1					
Class A2					
Class B	0.00%	-0.06%	0.19%	99%	100%
Class C	-0.02%	0.31%	0.11%	100%	99%
Class E	0.05%	0.04%	0.05%	100%	96%
Overall	0.00%	0.09%	0.13%	100%	99%
Class D	-0.04%	0.76%	-0.27%	100%	98%
Class F	-0.12%	-0.27%	0.23%	100%	96%

– 0.00% average luma BD-rate change for RA and LDB configurations



○ Conclusion

- The proposed method changes the processing order to reduce the number of redundant MV scaling operations.
 - It does not introduce additional processes.
 - It shows 0.00% average luma BD-rate change for RA and LDB configurations.
- Thank Kwai for crosscheck

