Bi-derivative merge candidate

JCTVC-F372

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1. Overview

Overview

- **Proposed technique**

  - Bi-derivative merge candidate

- **Algorithm**

  - Add bi-derivative merge candidate to existing merge candidates

- **Related contribution**

  - JCTVC-F470 by Panasonic

- **Simulation results**

  - Overall BD-rate gain 0.2% for RA, 0.7% for LD

2. Algorithm

Flowchart for creating BD merge candidate

■ Add bi-derivative (BD) merge candidate

■ if current merge candidates is not full

■ Before removing redundant merge candidates
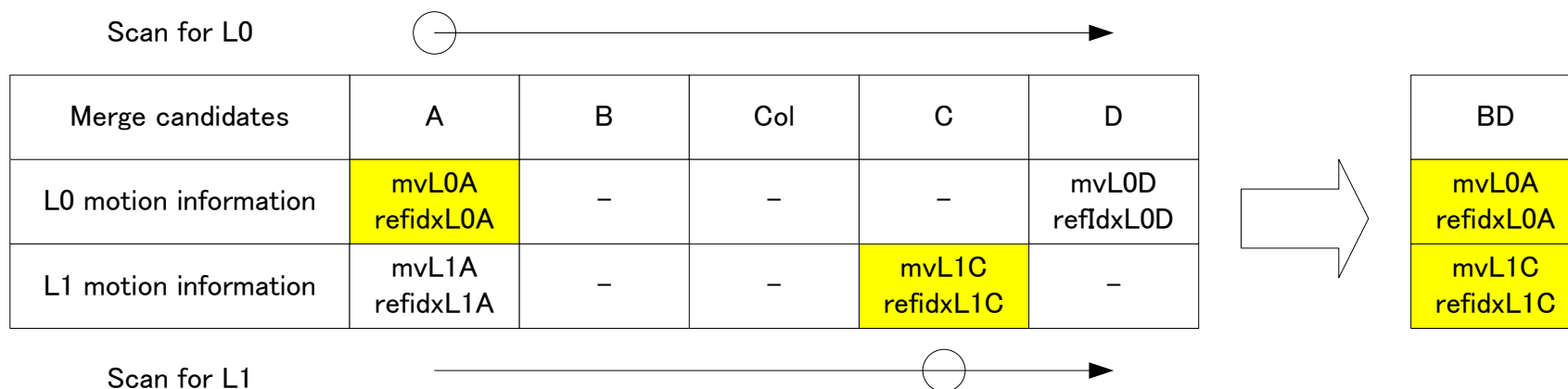
No change of max merge candidate (5)

↓

Peak throughput for removing redundant merge candidates not changed

START

get current merge candidates

NO

The number of current mereg candidates < 5

YES

derivate BD merge candidate

removal redundant merge candidates

END
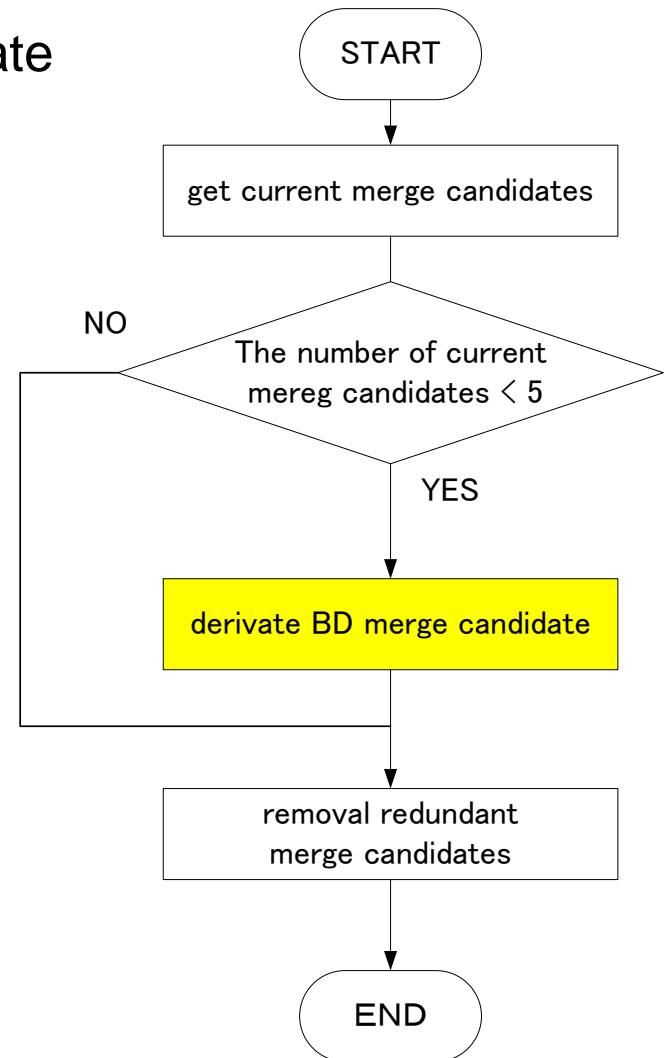
Method to add BD merge candidate

1. Scan for L0.

2. Scan for L1. (excluding the selected candidate for L0)

Either L0 or L1 not detected, no BD merge candidate added

Scan for L0

Merge candidates	A	B	Col	C	D
L0 motion information	mvL0A refidxL0A	–	–	–	mvL0D refIdxL0D
L1 motion information	mvL1A refidxL1A	–	–	mvL1C refidxL1C	–

Scan for L1

BD
mvL0A refidxL0A
mvL1C refidxL1C

3. Experiments

Simulation results

- Overall BD-rate gain 0.2% for RA, 0.7% for LD

- 3% increase of encoder runtime

	Random Access HE			Random Access LC		
	Y	U	V	Y	U	V
Class A	-0.2	-0.3	-0.1	-0.3	-0.2	-0.4
Class B	-0.2	-0.2	-0.3	-0.2	-0.2	-0.2
Class C	-0.2	-0.2	-0.2	-0.2	-0.3	-0.3
Class D	-0.2	-0.4	-0.2	-0.2	-0.4	-0.4
Class E						
Overall	**-0.2**	**-0.3**	**-0.2**	**-0.2**	**-0.2**	**-0.3**
Enc Time[%]	103%			102%		
Dec Time[%]	101%			101%		

	Low delay B HE			Low delay B LC		
	Y	U	V	Y	U	V
Class A						
Class B	-0.6	-1.0	-1.3	-1.1	-1.2	-1.0
Class C	-0.6	-0.8	-1.0	-0.7	-0.8	-1.0
Class D	-0.5	-0.7	-0.2	-0.5	-0.5	-0.2
Class E	-0.5	-0.4	-0.7	-1.1	-1.2	-1.1
Overall	**-0.5**	**-0.8**	**-0.8**	**-0.8**	**-0.9**	**-0.8**
Enc Time[%]	103%			103%		
Dec Time[%]	101%			100%		

4. Conclusion

Conclusion

- **Suggestion**

  - Further investigated in CE

- **Future work**

  - Improvement of the derivation process for BD merge candidates

  - Evaluate of BD merge candidates in robustness condition

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