

JVET-AC0103

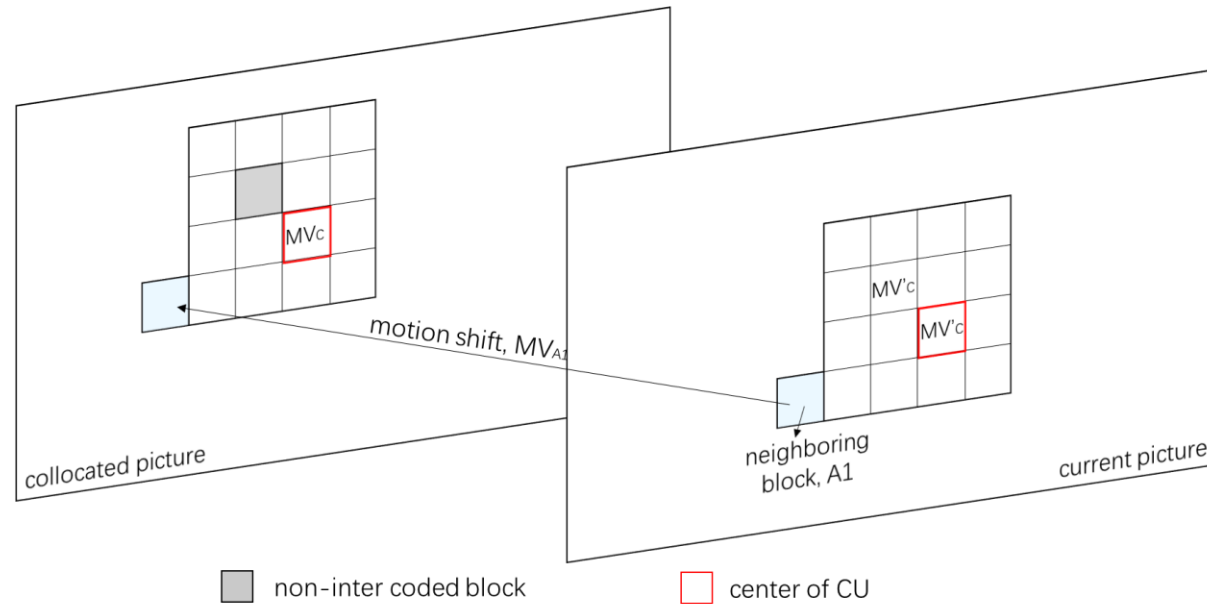
Non-EE2: AMVP mode with subblock-based temporal motion vector prediction

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Alibaba

Introduction

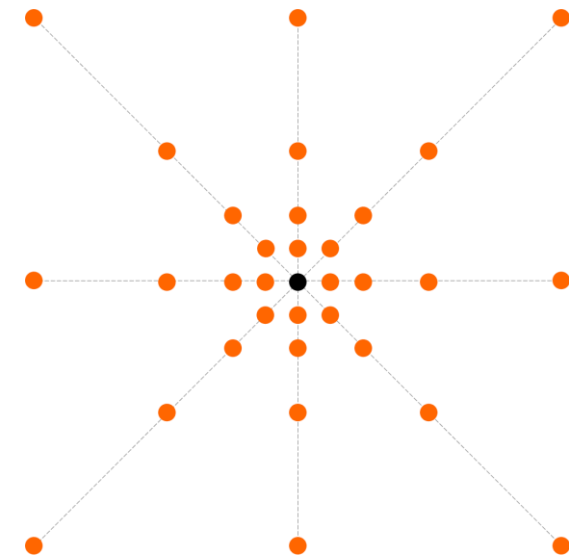
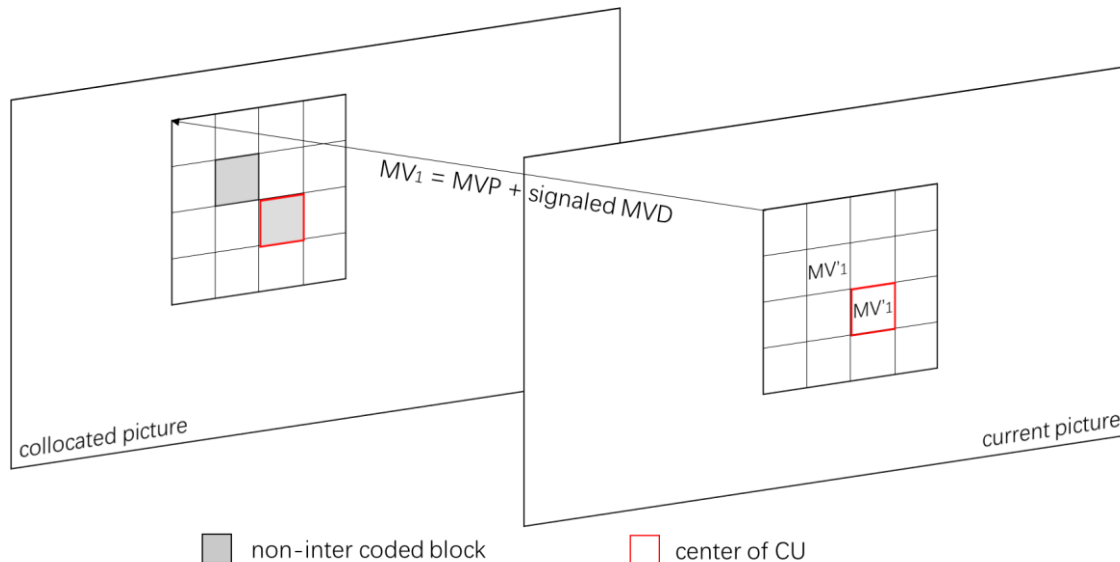
- SbTMVP is only allowed in merge mode in ECM-7.0



- To fully utilize the benefits of SbTMVP, it is proposed to apply SbTMVP to normal AMVP

Proposed methods

- Extend collocated CTU to collocated CTU row for SbTMVP
- Apply SbTMVP to normal AMVP
 - MVP is derived using similar way to that of MVP of normal AMVP
 - When calculating TM cost, the template is predicted using collocated TMVP and is predicted at 4x4 subblock level
 - MVD is constrained to 32 candidates



8 motion directions $\{0^\circ, 45^\circ, 90^\circ, 135^\circ, 180^\circ, 225^\circ, 270^\circ, 315^\circ\}$
4 motion magnitudes $\{4\text{-pel}, 8\text{-pel}, 16\text{-pel}, 32\text{-pel}\}$

Syntax of AMVP with SbTMVP

- A CU-level flag is signaled for non-merge non-affine coded CU
- A flag is signaled to indicate whether MVD exists, and MVD index is signaled if MVD exists
- Reference picture is set to collocated picture instead of being signaled
- OBMC may be applied to the proposed mode which is indicated by the existing OBMC flag
- AMVR, LIC and MHP are not applied to the proposed mode

Simulation results

	Random access Main10				
	Over ECM-7.0				
	Y	U	V	EncT	DecT
Class A1	-0.10%	-0.13%	-0.03%	104%	100%
Class A2	-0.07%	-0.01%	-0.08%	105%	100%
Class B	-0.06%	-0.03%	-0.16%	104%	101%
Class C	-0.19%	-0.17%	-0.15%	104%	101%
Class E					
Overall	-0.10%	-0.08%	-0.12%	104%	101%
Class D	-0.11%	-0.18%	-0.28%	104%	101%
Class F	-0.08%	-0.15%	0.02%	102%	100%

	Low delay B Main10				
	Over ECM-7.0				
	Y	U	V	EncT	DecT
Class A1					
Class A2					
Class B	-0.13%	-0.24%	-0.78%	106%	103%
Class C	-0.30%	-0.30%	-0.35%	102%	99%
Class E	-0.50%	-1.17%	-0.36%	103%	98%
Overall	-0.28%	-0.49%	-0.53%	104%	101%
Class D	-0.33%	0.19%	-0.38%	106%	103%
Class F	-0.15%	0.03%	-0.66%	101%	98%

Conclusion

- It is proposed to extend SbTMVP to normal AMVP mode
- Results show 0.10% gain for RA and 0.28% gain for LDB
- It is recommended to further study in EE
- Thanks Kwai for cross-checking