

JVET-N0079: CE2-related: Applying SMR to subblock- based merging candidate list

Authors : Yu-Cheng Lin, Chun-Chia Chen, Man-Shu Chiang, Chih-Wei Hsu, Yu-Wen Huang, Shaw-Min Lei

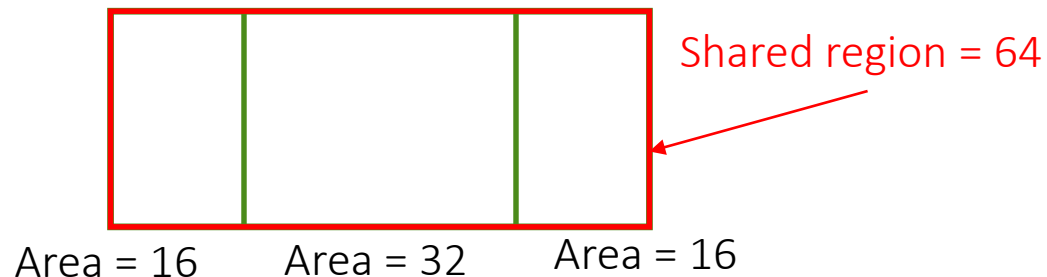
Presenter Man-Shu Chiang

Overall Summary

- Proposed Method
 - Applying SMR (shared merging candidate list region) also to subblock-based merge mode
- BD-rates and runtimes (anchor: VTM4.0)
 - Threshold = 256
 - RA: **0.02%** (Y) -0.05% (U) -0.08% (V), EncT: 100%, DecT: 102%
LB: **0.03%** (Y) 0.12% (U) -0.16% (V), EncT: 100%, DecT: 101%
 - Threshold = 512
 - RA: **0.06%** (Y) -0.02% (U) 0.05% (V), EncT: 100%, DecT: 103%
LB: **0.05%** (Y) 0.11% (U) -0.23% (V), EncT: 100%, DecT: 102%

Introduction to SMR

- SMR (Shared merging candidate list region), proposed in JVET-M0170, was adopted to VTM-4.0
 - Share the same merging candidate list for all leaf CUs of one ancestor node in the CU split tree
 - The size of the sharing node (ancestor node) is equal to or larger than 32
 - The size of one child CU for the sharing node is smaller than 32



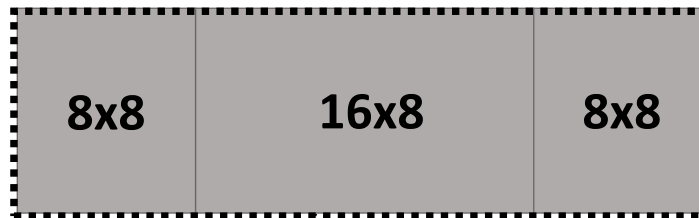
- The shared merging candidate list is generated at the sharing node

Proposed Method

- Currently, the minimum CU size of subblock merge mode is 8x8
- Extend SMR to subblock-based merge mode
 - Same SMR criteria is used
 - The size of the sharing node is equal to or larger than an threshold
 - The size of one child CU for the sharing node is smaller than an threshold

Threshold = 256

32x8



Sharing node

Simulation Results

SMR to subblock-based merge mode		Over VTM 4.0				
		Y	U	V	EncT	DecT
Threshold = 128	RA	0.01%	0.01%	-0.07%	100%	103%
	LB	0.01%	0.20%	-0.01%	100%	101%
Threshold = 256	RA	0.02%	-0.05%	-0.08%	100%	102%
	LB	0.03%	0.12%	-0.16%	100%	101%
Threshold = 512	RA	0.06%	-0.02%	0.05%	100%	103%
	LB	0.05%	0.11%	-0.23%	100%	102%

Conclusions

- Applying SMR to subblock-based merge mode is proposed
 - Facilitate parallel processing for subblock-based merge mode
 - The coding loss is minor when the threshold for SMR is 128, 256, or 512
 - On VTM-4.0
 - Threshold = 256: 0.02%/0.03% luma BD-rates for RA/LB
 - Threshold = 512: 0.06%/0.05% luma BD-rates for RA/LB
- It is suggested to consider adoption into VTM