



CE13: Results of Tests 2d and 2e in Section 3.1 on Adaptive MVP List Size

Jian-Liang Lin, Yi-Wen Chen, Yu-Wen Huang, and Shawmin Lei

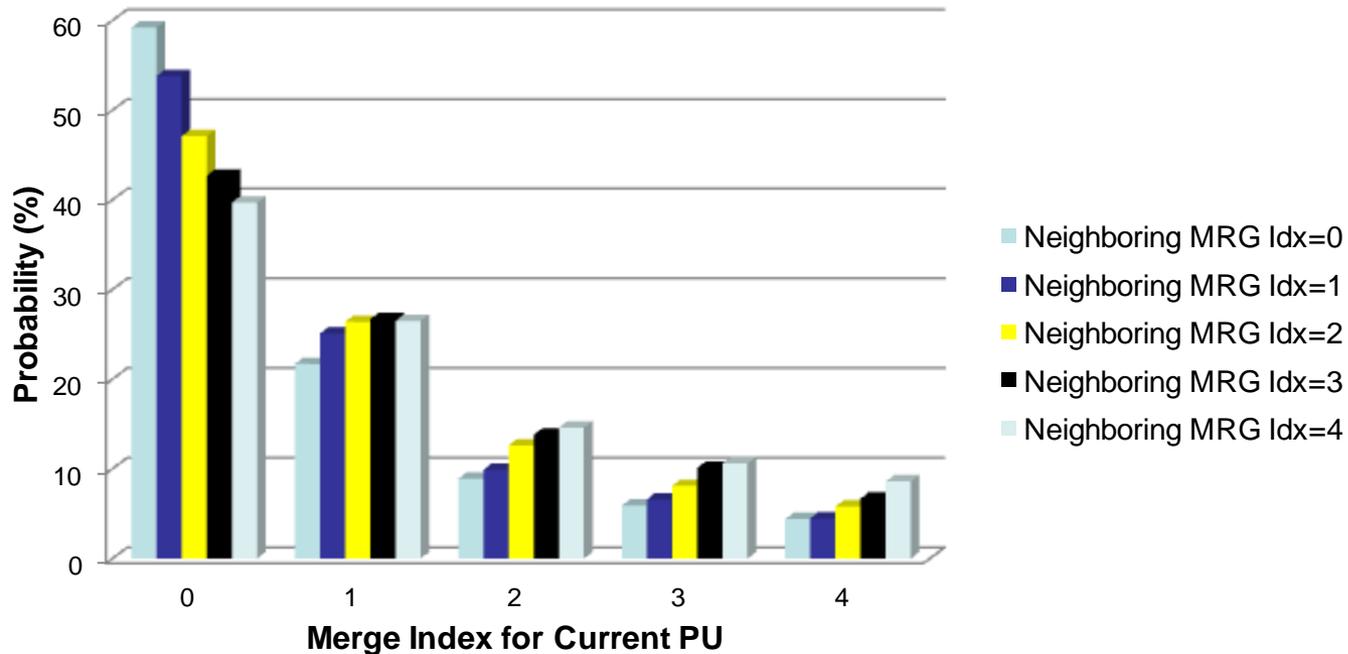


Presented by Shawmin Lei
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Overall Summary

- To reduce the complexity while maintaining coding efficiency, two tools are proposed to determine the MVP list size for Merge mode adaptively
- Tool 1: the MVP list size of each PU is adapted based on the merge indices of neighboring PUs
 - The size is adapted proportionally to the merge indices of neighboring PUs with a chosen margin.
 - 0.0-0.1% coding efficiency loss with 98-100% encoding time
- Tool 2: the MVP list size is adapted based on the current CU size
 - Reduce the MVP list size from 5 to 4 when the CU size is less than or equal to 8x8.
 - 0.0-0.1% coding efficiency loss

Observation 1: Merge Index vs. Neighboring Merge Indices



- When the merge indices of neighboring PUs are small, the MVP candidate with smaller merge Index for current PU is selected more often

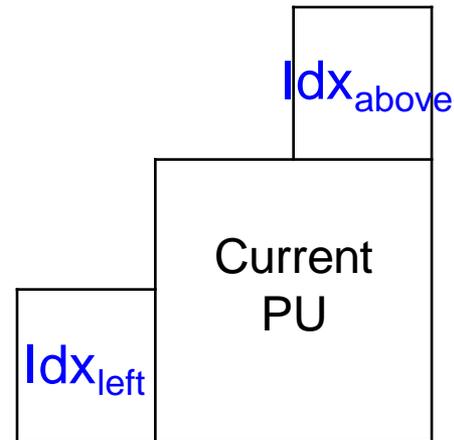
Tool 1 - Adaptive List Size Based on Merge Indices

- The MVP list size (\mathbf{S}) of a current PU is decided by

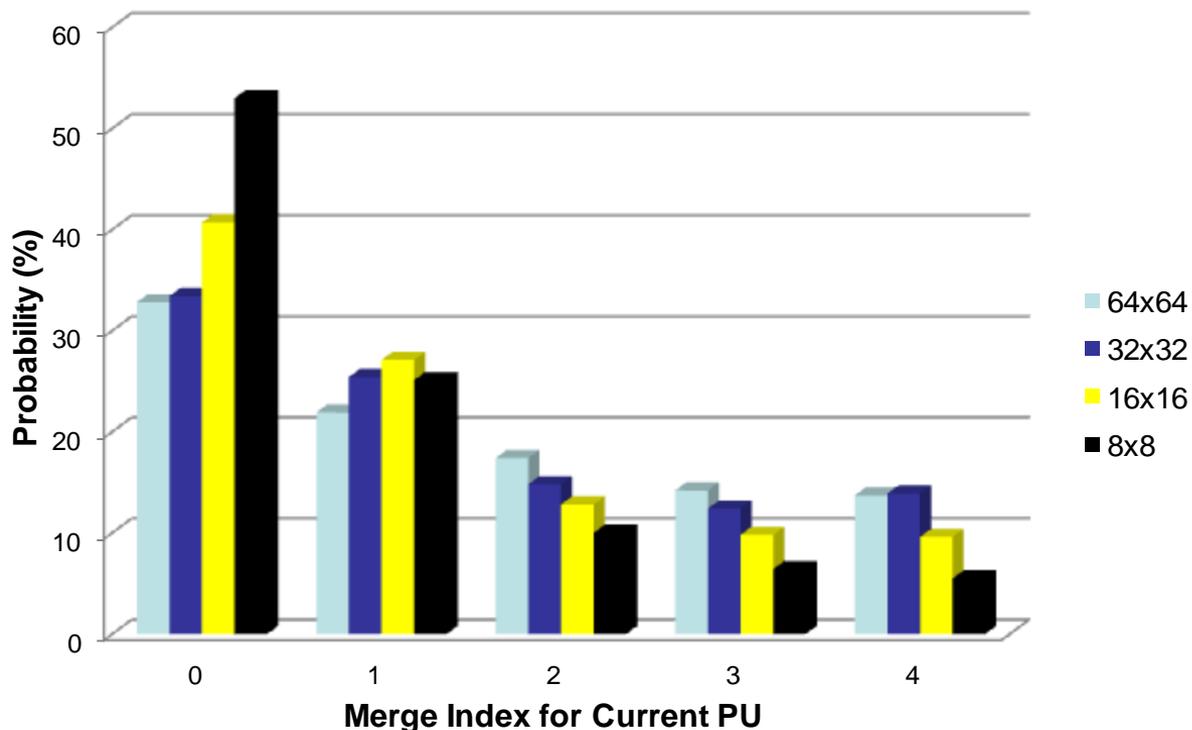
$$\mathbf{S} = \max(\text{Idx}_{\text{left}} , \text{Idx}_{\text{above}}) + \mathbf{N}$$

- Idx_{left} : the merge index of the left PU
- $\text{Idx}_{\text{above}}$: the merge index of the above PU

- \mathbf{N} is transmitted in the slice header
- By different \mathbf{N} , it provides a trade-off between the coding efficiency and complexity.



Observation 2: Merge Index vs. CU Size



- In small CUs (ex. 8x8_CU), the MVP candidate with smaller Merge Index for current PU is selected more often

Tool 2 - Adaptive List Size Based on CU Size

- In HM-4.0, the MVP list size for Merge is always 5
- Proposed modification
 - MVP list size = 4, if CU size $\leq 8 \times 8$
 - MVP list size = 5, else

Tool 1 (Test 2d)

	Random Access HE			Random Access LC		
	Y	U	V	Y	U	V
Class A	0.0%	0.0%	-0.1%	0.0%	0.0%	0.0%
Class B	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
Class C	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%
Class D	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%
Class E						
Overall	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Enc Time[%]		98%			98%	
Dec Time[%]		100%			100%	

	Low Delay B HE			Low Delay B LC		
	Y	U	V	Y	U	V
Class A						
Class B	0.1%	0.0%	0.0%	0.0%	-0.1%	0.2%
Class C	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
Class D	0.1%	0.5%	0.3%	0.1%	0.1%	0.2%
Class E	0.1%	0.2%	0.4%	0.1%	-0.3%	0.5%
Overall	0.1%	0.2%	0.2%	0.1%	-0.1%	0.2%
	0.1%	0.1%	0.2%	0.1%	-0.1%	0.2%
Enc Time[%]		99%			99%	
Dec Time[%]		100%			100%	

	Low Delay P HE			Low Delay P LC		
	Y	U	V	Y	U	V
Class A						
Class B	0.0%	0.1%	0.0%	0.0%	0.1%	0.3%
Class C	0.0%	0.1%	0.0%	0.0%	0.1%	-0.1%
Class D	0.1%	0.3%	0.0%	0.0%	-0.3%	-0.3%
Class E	0.1%	-0.1%	0.0%	0.1%	-0.5%	-0.3%
Overall	0.1%	0.1%	0.0%	0.0%	-0.1%	-0.1%
	0.1%	0.1%	0.0%	0.0%	-0.1%	-0.1%
Enc Time[%]		100%			100%	
Dec Time[%]		100%			100%	

Tool 2 (Test 2e)

	Random Access HE			Random Access LC		
	Y	U	V	Y	U	V
Class A	0.0%	-0.3%	-0.1%	0.0%	0.2%	0.1%
Class B	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
Class C	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
Class D	0.1%	-0.1%	0.2%	0.1%	-0.1%	0.0%
Class E						
Overall	0.0%	-0.1%	0.0%	0.0%	0.0%	0.1%
	0.0%	-0.1%	0.1%	0.0%	0.0%	0.1%
Enc Time[%]	99%			99%		
Dec Time[%]	100%			100%		
	Low Delay B HE			Low Delay B LC		
	Y	U	V	Y	U	V
Class A						
Class B	0.1%	0.0%	0.1%	0.1%	0.1%	0.2%
Class C	0.1%	0.2%	0.1%	0.1%	0.1%	-0.1%
Class D	0.1%	0.3%	0.0%	0.1%	0.2%	-0.2%
Class E	0.0%	0.1%	0.6%	0.0%	0.3%	-0.1%
Overall	0.1%	0.2%	0.2%	0.1%	0.2%	0.0%
	0.1%	0.1%	0.2%	0.1%	0.1%	0.0%
Enc Time[%]	99%			99%		
Dec Time[%]	99%			101%		
	Low Delay P HE			Low Delay P LC		
	Y	U	V	Y	U	V
Class A						
Class B	0.0%	0.1%	0.2%	0.0%	0.3%	0.0%
Class C	0.0%	0.1%	-0.1%	0.0%	0.1%	0.0%
Class D	0.0%	-0.1%	-0.3%	0.0%	-0.2%	0.1%
Class E	0.0%	0.3%	-0.3%	0.0%	0.2%	-0.6%
Overall	0.0%	0.1%	-0.1%	0.0%	0.1%	-0.1%
	0.0%	0.0%	-0.1%	0.0%	0.1%	-0.1%
Enc Time[%]	100%			99%		
Dec Time[%]	99%			100%		

MEDIA/TEK

Thank you

