

CE7-related: Constraint on the number of regular bins per subblock

Shih-Ta Hsiang, Tzu-Der Chuang, and Shawmin Lei

Presenter: Tzu-Der Chuang

Overall Summary

- VVC Draft 4 enforces the constraint on the maximum total number of the context-coded bins for the first subblock coding pass
 - The number of context-coded bins will exceed the constraint when coded_sub_block_flag is present in the current subblock
- Propose to further consider the context-coded bins for signaling coded_sub_block_flag

	AI			RA			LB		
	Y	U	V	Y	U	V	Y	U	V
Proposed method	0.00%	0.04%	-0.01%	0.00%	0.05%	0.00%	-0.02%	-0.02%	0.33%

Introduction

- Current constraints in VVC Draft 4
 - Constrain the maximum total number of context-coded bins for each subblock in the 1st coding pass
 - Use up to 32 context-coded bins in a 4x4 subblock
 - Use up to 8 context-coded bins in a 2x2 subblock
- When coded_sub_block_flag is present in the current block
 - Use up to 32 + 1 context-coded bins in a 4x4 subblock
 - Use up to 8 + 1 context-coded bins in a 2x2 subblock

Proposed Method

- Further count the context-coded bins for coding the syntax element `coded_sub_block_flag`
 - The bin budget for 1st subblock coding pass is decremented by 1 when `coded_sub_block_flag` is present
- The maximum number of context coded-bins for the 1st subblock coding pass is under 32 and 8 for a 4x4 subblock and 2x2 subblock, respectively

Results

All Intra Main10					
Over VTM-4.0					
	Y	U	V	EncT	DecT
Class A1	0.00%	-0.03%	-0.01%	102%	106%
Class A2	0.01%	0.17%	-0.03%	102%	103%
Class B	0.01%	0.05%	0.00%	100%	100%
Class C	0.01%	-0.03%	-0.07%	101%	100%
Class E	-0.01%	0.06%	0.05%	101%	101%
Overall	0.00%	0.04%	-0.01%	101%	102%
Class D	0.02%	-0.03%	-0.12%	102%	101%
Class F	0.01%	-0.03%	-0.05%	99%	98%

Random access Main10					
Over VTM-4.0					
	Y	U	V	EncT	DecT
Class A1	0.00%	-0.04%	0.10%	102%	101%
Class A2	-0.01%	0.11%	0.08%	100%	102%
Class B	-0.01%	0.08%	-0.14%	101%	103%
Class C	0.02%	0.04%	0.06%	100%	104%
Class E					
Overall	0.00%	0.05%	0.00%	100%	102%
Class D	0.02%	-0.06%	-0.24%	99%	101%
Class F	-0.02%	-0.03%	0.09%	99%	108%

Low delay B Main10					
Over VTM-4.0					
	Y	U	V	EncT	DecT
Class A1					
Class A2					
Class B	-0.01%	-0.35%	-0.21%	102%	104%
Class C	-0.06%	0.31%	-0.19%	101%	100%
Class E	0.03%	0.08%	1.93%	102%	100%
Overall	-0.02%	-0.02%	0.33%	102%	102%
Class D	0.01%	0.38%	0.08%	104%	101%
Class F	-0.16%	0.01%	0.33%	100%	101%

Conclusions

- Propose to count the context-coded bins for signaling coded_sub_block_flag in the first subblock coding pass
 - Decrement the maximum number of context-coded bins by 1 when coded_sub_block_flag is present in the current subblock
- Thank Technicolor for cross-checking!

	AI			RA			LB		
	Y	U	V	Y	U	V	Y	U	V
Proposed method	0.00%	0.04%	-0.01%	0.00%	0.05%	0.00%	-0.02%	-0.02%	0.33%

The background is a solid green color with a repeating pattern of white line-art icons. These icons include various nautical items like anchors, lifebuoys, and seashells, as well as outdoor and travel-related items like a compass, a map, a tent, and a bird in flight. There are also symbols for technology like a smartphone and a Wi-Fi signal.

MEDIATEK

Thank you!