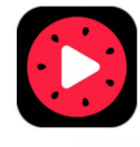


JVET-AH0203

NON-EE2: ON BVG-CCCM

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Introduction

- Block vector guided CCCM (BVG-CCCM) has been adopted in ECM
 - *BVG-CCCM uses an 11-tap CCCM model, derived from a reference area*
 - The reference area is identified by block vectors of the co-located luma blocks coded with IBC or intraTMP
 - Down-sampled luma samples are utilized in BVG-CCCM
 - *BVG-CCCM can provide coding gains on sequences with screen contents, especially on class TGM*
- The gain of BVG-CCCM in ECM-12.0 (BVG-CCCM turned-on v.s. BVG-CCCM turned-off)

	AI					RA				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	0.01%	-0.04%	-0.09%			0.02%	0.02%	0.10%		
Class A2	-0.03%	-0.35%	-0.33%							
Class B	0.00%	-0.31%	-0.26%			0.00%	-0.27%	0.11%		
Class C	-0.01%	0.05%	-0.07%			-0.03%	-0.10%	-0.17%		
Class E	-0.01%	-0.04%	0.07%							
Overall	-0.01%	-0.15%	-0.15%							
Class D	0.02%	-0.20%	0.03%			-0.07%	0.04%	-0.26%		
Class F	-0.05%	-0.31%	-0.32%	100.3%	100.1%	-0.01%	-0.04%	-0.26%	99.9%	100.0%
Class TGM	-0.43%	-0.71%	-0.55%	100.5%	100.2%	-0.10%	-0.13%	-0.13%	100.0%	100.0%

Proposed: NS-CCCM for BVG-CCCM

- NS-CCCM with 11 taps is allowed for BVG-CCCM
 - *CCCM with non-sampled luma samples (NS-CCCM) also works well for screen contents*
- When BVG-CCCM is applied, a flag is signaled to indicate whether NS-CCCM is chosen or not
- If NS-CCCM is selected, the 11-tap NS-CCCM model is derived from the non-sampled luma samples within the BV guided reference area.

Simulations results on ECM-12.0

- The proposed method compared with ECM-12.0

	AI					RA				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	0.01%	-0.03%	0.06%	100.1%	100.2%	-0.02%	-0.15%	-0.01%	100.2%	100.3%
Class A2	0.00%	0.06%	0.00%	100.8%	100.5%					
Class B	-0.01%	0.07%	0.03%	99.4%	101.0%	-0.02%	0.05%	-0.06%	100.5%	99.1%
Class C	0.00%	-0.05%	0.09%	100.6%	98.7%	0.01%	0.02%	-0.06%	99.8%	100.6%
Class E	0.00%	0.02%	0.03%	100.9%	98.2%					
Overall	0.00%	0.02%	0.04%	100.3%	99.8%					
Class D	-0.02%	0.08%	0.03%	99.9%	101.0%	0.05%	-0.32%	0.12%	100.4%	98.2%
Class F	-0.01%	-0.18%	-0.28%	100.5%	99.9%	-0.04%	-0.13%	-0.29%	99.8%	100.6%
Class TGM	-0.29%	-0.64%	-0.77%	100.2%	99.9%	0.01%	-0.16%	-0.15%	100.0%	99.8%

Simulations results on ECM-12.0 (cont.)

- The proposed method compared with ECM-12.0, BVG-CCCM turned-off

	AI					RA				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	0.02%	-0.07%	-0.03%			-0.01%	-0.12%	0.10%		
Class A2	-0.03%	-0.29%	-0.34%							
Class B	-0.01%	-0.24%	-0.22%			-0.02%	-0.22%	0.05%		
Class C	-0.01%	0.00%	0.03%			-0.01%	-0.09%	-0.23%		
Class E	-0.01%	-0.02%	0.10%							
Overall	-0.01%	-0.13%	-0.10%							
Class D	0.00%	-0.12%	0.06%			-0.02%	-0.28%	-0.15%		
Class F	-0.07%	-0.49%	-0.61%	100.9%	100.0%	-0.05%	-0.17%	-0.55%	99.7%	100.5%
Class TGM	-0.72%	-1.34%	-1.31%	100.6%	100.1%	-0.08%	-0.29%	-0.28%	100.1%	99.8%

Conclusion

- BVG-CCCM is enhanced by enabling NS-CCCM
 - *Class F*: AI: $\{-0.01\%, -0.18\%, -0.28\%\}$; RA: $\{-0.04\%, -0.13\%, -0.29\%\}$.
 - *Class TGM*: AI: $\{-0.29\%, -0.64\%, -0.77\%\}$; RA: $\{0.01\%, -0.16\%, -0.15\%\}$.
- Recommend to be further studied in EE2