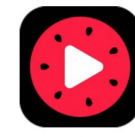


JVET-AA0142

AHG12/NON-EE2: PICTURE-LEVEL GEOMETRY TRANSFORM

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Introduction

- In the current design of video/image coding scheme, the orientation of an input picture is fixed
- In this contribution, a method of picture-level geometry transform is proposed
 - *The image can be flipped/rotated before encoding/after decoding*
 - *horizontal flip, vertical flip and 180°-rotation are supported*
- The proposed geometry transform shows -0.19% gain for AI configuration with 1% encoding complexity

Proposed: Picture-level geometry transform

- In this contribution, a method of picture-level geometry transform is proposed
 - *Three kinds of geometry transform: horizontal flip, vertical flip and 180°-rotation can be applied at picture level*
 - *It is signaled in the slice header to indicate whether a geometry transform is applied, and which transform is applied*
- The encoder tries to encode the picture with each geometry transform as well as non-transform and selects the one with the minimum RD cost
 - *To accelerate the encoder, a bundle of coding tools and partitioning choices are skipped in tentative encoding and only the picture with the selected transform is encoded with all coding tools on.*
- The decoder will restore the reconstruction picture by transform it inversely according to the parsed type of geometry transform

Simulation Results on ECM-5.0

	All Intra Main 10					Random Access Main 10				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	-0.20%	-0.04%	0.27%	103%	99%					
Class A2	-0.46%	-0.32%	-0.17%	102%	100%					
Class B	-0.29%	-0.04%	-0.41%	101%	99%	-0.19%	-0.44%	-0.56%	101%	99%
Class C	0.00%	0.00%	0.00%	100%	100%	-0.03%	0.14%	0.02%	101%	99%
Class E	0.00%	0.00%	0.00%	100%	100%					
Overall	-0.19%	-0.07%	-0.10%	101%	100%					
Class D	-0.08%	-0.36%	0.02%	104%	102%	-0.05%	-0.14%	0.08%	102%	99%
Class F	-0.05%	-0.08%	0.01%	104%	100%	-0.32%	-0.53%	-0.26%	103%	99%

Conclusions

- In this contribution, a method of picture-level geometry transform is proposed based on ECM-5
- With -0.19% for AI configuration with 1% encoding complexity on top of the ECM-5.0
- It is recommended to study the proposed method in EE2