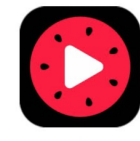


JVET-AD0196

EE2-related: On Iterative BD OF and EE2-2.6 Improvement

Mehdi Salehifar, Yuwen He, Kai Zhang, Hongbin Liu, Li Zhang
Bytedance Inc.



Introduction

- In EE2-2.6 (JVET-AD0195), it is proposed to use the high-precision equations to derive the BDOF MV refinement parameters:

$$\sum G_x.G_x * vx + \sum G_x.G_y * vy = \sum dI . G_x. \rightarrow s1 * vx + s2 * vy = s3$$

$$\sum G_x.G_y * vx + \sum G_y.G_y * vy = \sum dI . G_y \rightarrow s2 * vx + s5 * vy = s6$$

where Gx/Gy are the summation of the 2 horizontal/vertical gradients derived for each reference block.

- Summations (Σ) are weighted sums, where weights depend on the position in the target region Ω .
- It also includes adaptive DMVR subblock size selection, where depending on the blocks size either 4x4 or 8x8 subblock is used.
- Compared with ECM-8.0 it brings -0.20% RA gain.

Proposed Method

- In this contribution, iterative BDOF (IBDOF) is proposed.
- Based on adding iteration to BDOF DMVR process.
- It may include block size updating for each iteration.
- MVs could be smoothed out.
- It could be extended to non-equal POC distance cases too.

Simulation Results

- Simulation results compared with ECM-8.0

	Random access Main10				
	Over ECM-8.0			EncT	DecT
	Y	U	V		
Class A1	-0.15%	-0.13%	-0.25%	103%	106%
Class A2	-0.45%	-0.51%	-0.48%	105%	105%
Class B	-0.26%	-0.28%	-0.32%	102%	105%
Class C	-0.44%	-0.45%	-0.47%	105%	108%
Class E					
Overall	-0.33%	-0.34%	-0.38%	103%	106%
Class D	-0.78%	-0.51%	-0.77%	102%	106%
Class F	-0.10%	-0.23%	-0.06%	100%	109%

■ Simulation results compared with EE2-2.6

	Random access Main10				
	Over EE2-2.6			EncT	DecT
	Y	U	V		
Class A1	-0.08%	0.04%	-0.21%	103%	106%
Class A2	-0.21%	-0.23%	-0.23%	103%	105%
Class B	-0.08%	-0.13%	-0.14%	103%	105%
Class C	-0.16%	-0.25%	-0.24%	104%	106%
Class E					
Overall	-0.13%	-0.15%	-0.20%	103%	105%
Class D	-0.26%	-0.19%	-0.39%	101%	102%
Class F	-0.01%	-0.06%	-0.03%	100%	110%

Conclusions

- An improvement for BDOF on top of the EE2-2.6 is proposed.
- It has -0.33% gain for RA configuration, with 103%/ 106% complexity on top of the ECM-8.0.
- It has -0.13% gain for RA configuration, with 103%/ 105% complexity on top of the EE2-2.6.
- It is recommended to study the proposed method in the next round of EE2.
- Thanks vivo for cross-checking.