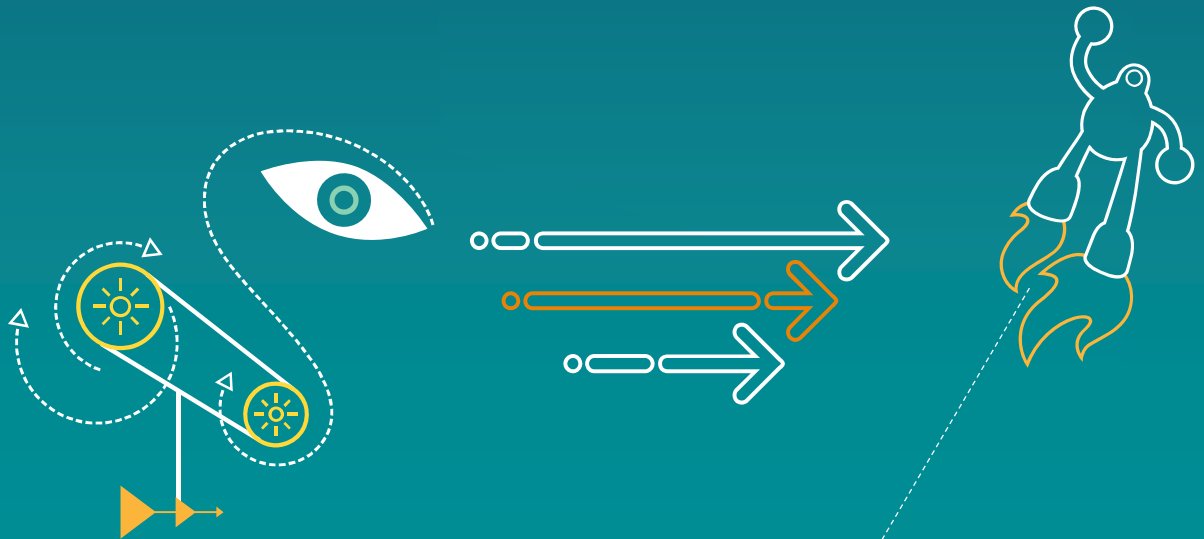


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JVET-H0057

EE1 related: Simplification and extension of PDPC



PDPC in JEM-7.0

- Only applied to planar mode
- A weighted sum of unfiltered top, left, top-left reference sample and prediction value
- Weights are initialized by a 5x6 LUT, and derived by shifts and adds along the coordinate
- Coding gain: -0.6%, enc-time: ~ 1.0x

Proposal

- PDPC simplification

- The 5x6 LUT is removed, and top/left weights is always 0.5 ($32 \gg 6$)
- For blocks more than 32 samples, a 5-Tap intra smooth filter $\{1,2,2,2,1\}$ is applied

$$pred[x][y] = wL * R_{-1,y} + wT * R_{x,-1} + wTL * R_{-1,-1} + (64 - wL - wT - wTL) * pred[x][y] + 32 \gg 6,$$

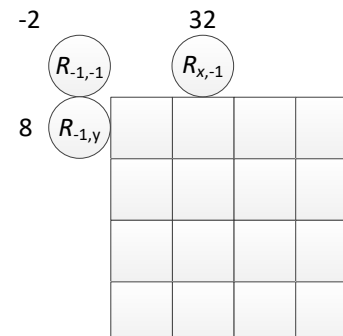
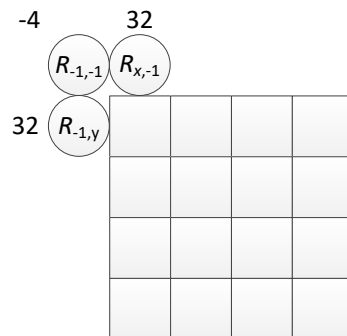
- Top and left weights

$$wT = 32 \gg ((y < 1) \gg shift)$$

$$wL = 32 \gg ((x < 1) \gg shift)$$

- Top-left weight

$$wTL = -(wL \gg 4) - (wT \gg 4)$$



Proposal

- PDPC is extended to DC, hor/ver
 - Top/left weights: same for planar/DC/hor/ver modes
 - Top-left weight:

Planar/DC	$w_{TL} = -(w_L \gg 4) - (w_T \gg 4)$
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Horizontal	$w_{TL} = -w_T$
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Vertical	$w_{TL} = -w_L$
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- DC boundary filter is not applied when PDPC is extended to DC mode
- Horizontal/Vertical boundary filter is not applied when PDPC is extended to hor/ver modes

Results

- Anchor: JEM-7.0
- Test #1: Proposal applied to planar only

	All Intra Main10					Random Access Main 10				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	-0.1%	-0.2%	-0.1%	99%	99%	-0.1%	-0.6%	-0.2%	100%	100%
Class A2	-0.1%	-0.1%	-0.2%	99%	100%	0.0%	0.0%	0.1%	100%	100%
Class B	-0.1%	-0.2%	-0.2%	98%	99%	0.0%	-0.3%	-0.2%	99%	99%
Class C	0.0%	-0.1%	0.0%	100%	101%	0.0%	0.0%	0.1%	100%	100%
Class D	0.0%	0.0%	-0.1%	99%	99%	0.0%	0.1%	0.0%	99%	99%
Class E	0.0%	-0.1%	-0.1%	99%	101%					
Overall	0.0%	-0.1%	-0.1%	99%	100%	0.0%	-0.2%	0.0%	99%	100%

Results

- Anchor: JEM-7.0
- Test #2: Proposal applied to planar, DC, horizontal/vertical

	All Intra Main10					Random Access Main 10				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	-0.3%	-0.5%	-0.4%	100%	99%	-0.2%	-0.7%	-0.2%	100%	99%
Class A2	-0.3%	-0.3%	-0.5%	101%	100%	-0.1%	0.0%	0.0%	100%	100%
Class B	-0.2%	-0.3%	-0.4%	100%	100%	-0.1%	-0.2%	-0.1%	100%	99%
Class C	0.0%	0.1%	0.2%	99%	100%	-0.1%	0.3%	0.3%	100%	100%
Class D	0.0%	0.2%	0.2%	96%	95%	-0.1%	0.3%	0.3%	99%	99%
Class E	-0.1%	-0.2%	-0.1%	98%	100%					
Overall	-0.2%	-0.2%	-0.2%	99%	99%	-0.1%	-0.1%	0.0%	100%	100%

Results

- Anchor: JEM-7.0 + Proposal applied to planar only
- Test #3: Anchor + EE1 Test2

	All Intra Main10				
	Y	U	V	EncT	DecT
Class A1	0.0%	-0.1%	-0.2%	100%	102%
Class A2	-0.1%	-0.1%	-0.2%	100%	101%
Class B	0.0%	-0.1%	0.0%	100%	100%
Class C	0.0%	0.1%	0.0%	100%	101%
Class D	0.0%	0.1%	0.1%	99%	99%
Class E	0.0%	-0.1%	0.2%	100%	99%
Overall	0.0%	-0.1%	0.0%	100%	100%

Thanks!