



LG Electronics

MEDIA/TEK

JCTVC-L0069

TE2-3.1.7: Inter-layer intra prediction signaling with residual skip flag

Tzu-Der (Peter) Chuang, Yu-Wen Huang, Shawmin Lei (MediaTek)

Chulkeun Kim, Joonyoung Park, Byeongmoon Jeon (LG)

Presented by Tzu-Der (Peter) Chuang

12th JCT-VC Meeting in Geneva

14–23 Jan. 2013

Overall Summary

- A syntax coding method and a deblocking modification for inter-layer texture prediction (IntraBL mode)
- IntraBL Mode Signaling
 - An intra_BL_flag is signaled at coding unit (CU) level after the skip_flag
 - A residual skip flag, no_residual_syntax_flag, is used to skip the residual coding for IntraBL mode
- Deblocking modification
 - The boundary strengths (BS) of IntraBL mode coded blocks are set to 1
- DST is used for 4x4 TU in IntraBL mode
- The decoding time is reduced by 5-17% compared with SMuC-0.1.1 anchor

Anchor: HM-8.1 simulcast

	AI-2x	AI-1.5x	RA-2x	RA-1.5x	LP-2x	LP-1.5x
BD-rate	-23.2%	-32.9%	-16.6%	-24.6%	-12.4%	-22.1%

Proposed IntraBL Mode Signaling

- An intra_BL_flag is signaled at CU-level after the skip_flag

coding_unit(x0, y0, log2CbSize) {	Descriptor
if(slice_type != I)	
skip_flag[x0][y0]	ae(v)
if(skip_flag[x0][y0])	
prediction_unit(x0, y0, log2CbSize)	
else {	
intra_BL_flag[x0][y0]	ae(v)
if (!intra_BL_flag[x0][y0]) {	
pred_mode_flag	ae(v)
...	
}	
}	
}	

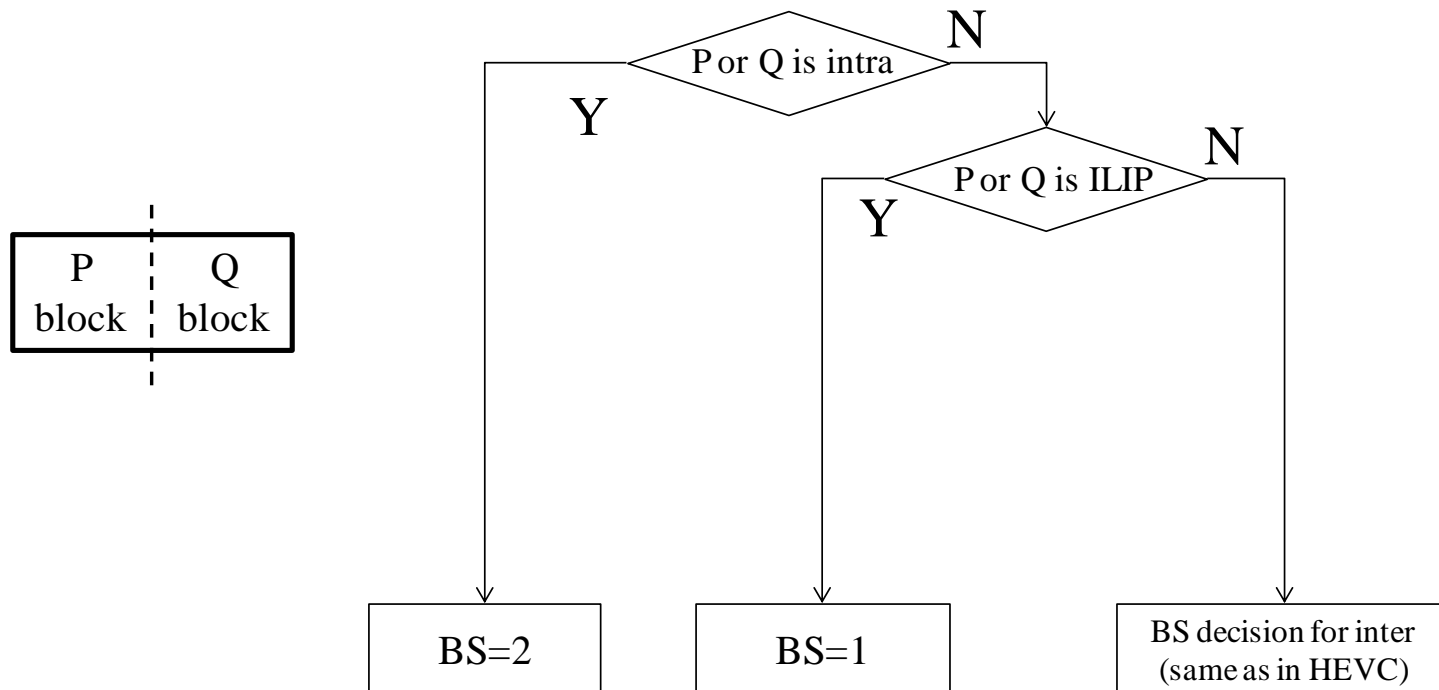
Proposed IntraBL Mode Signaling

- A residual skip flag, `no_residual_syntax_flag`, is used to skip the residual coding for IntraBL mode
 - Reuse the contexts of `no_residual_syntax_flag` in inter-coded block
 - No extra context model or line buffer is required
- DST is used for 4x4 TU in IntraBL mode

<code>coding_unit(x0, y0, log2CbSize) {</code>	Descriptor
<code>...</code>	
<code>if(!pcm_flag[x0][y0]) {</code>	
<code> if(PredMode[x0][y0] != MODE_INTRA &&</code> <code> !(PartMode == PART_2Nx2N && merge_flag[x0][y0])</code> <code> intra_BL_flag[x0][y0])</code>	
<code> no_residual_syntax_flag</code>	<code>ae(v)</code>
<code> if(!no_residual_syntax_flag) {</code>	
<code> ...</code>	
<code> transform_tree(x0, y0 x0, y0, log2CbSize, 0, 0)</code>	
<code> ...</code>	
<code>}</code>	

Proposed Deblocking Modification

- If one or two of the adjacent blocks (P or Q) for a boundary is coded as IntraBL mode, the boundary strength is set to 1



Simulation Results

- Anchor: HM-8.1 simulcast
- Thank KDDI for cross-verification (JCTVC-L0387).

	AI-2x	AI-1.5x	RA-2x	RA-1.5x	LP-2x	LP-1.5x
BD-rate	-23.2%	-32.9%	-16.6%	-24.6%	-12.4%	-22.1%

- Anchor: SMuC-0.1.1
- The decoding time is reduced by 5-17% compared with SMuC-0.1.1 anchor

	AI-2x	AI-1.5x	RA-2x	RA-1.5x	LP-2x	LP-1.5x
BD-rate	-0.6%	-0.7%	-0.3%	-0.5%	-0.2%	-0.4%
Enc. Time	99%	99%	99%	99%	99%	99%
Dec. Time	87%	83%	95%	91%	94%	88%

Conclusions

- In this contribution, a syntax coding method and a deblocking modification is proposed for IntraBL mode
 - An intra_BL_flag is signaled CU-level after the skip_flag
 - A no_residual_syntax_flag is used to skip the residual coding
 - The BS of IntraBL mode coded blocks are set to 1
- Simulation results reportedly show 12.4-32.9% bit rate reduction compared with HM-8.1 simulcast
- The decoding time is reduced by 5-17% compared with SMuC-0.1.1 anchor