

JVET-Q0191

Deblocking filter process with considering dependent quantization

Chia-Ming Tsai, Chih-Wei Hsu, Chen-Yen Lai, Zhi-Yi Lin, Olena Chubach,
Tzu-Der Chuang, Chun-Chia Chen, Ching-Yeh Chen, Yu-Wen Huang, Shaw-Min Lei

Presenter: Chia-Ming Tsai

Overall Summary

- In VVC Draft 7,
 - When DQ is applied, the effective QP for dequantization is equal to $(QP - 5)$
 - However, the $(QP - 5)$ effect is not considered in deriving DF parameters (β and t_c)
- Proposed to consider the effective QP in DF process when the DQ process is applied
 - As a simple fix, if one side of the current deblocking edge is quantized by using DQ (i.e., not coded with transform skip), the QP at the side is subtracted by 5 for deriving DF parameters
- Objective results on top of VTM7.0 under CTC

Results over VTM7.0					
	Y	U	V	EncT	DecT
AI	-0.60%	-0.72%	-0.60%	100%	100%
RA	-0.38%	-0.77%	-0.71%	100%	99%
LDB	-0.65%	-0.41%	-0.32%	100%	100%
LDP	-0.45%	-0.23%	-0.46%	100%	100%

Detailed Results

- Results of the proposed method under CTC

All Intra Main10					
Over VTM7.0					
	Y	U	V	EncT	DecT
Class A1	-0.61%	-0.74%	-0.23%	100%	102%
Class A2	-0.64%	-0.70%	-0.77%	101%	99%
Class B	-0.72%	-0.76%	-0.77%	100%	100%
Class C	-0.47%	-0.87%	-0.89%	100%	100%
Class E	-0.50%	-0.42%	-0.09%	100%	100%
Overall	-0.60%	-0.72%	-0.60%	100%	100%
Class D	-0.45%	-0.73%	-0.68%	100%	99%
Class F	-0.33%	-0.88%	-1.10%	100%	101%

Random access Main10					
Over VTM7.0					
	Y	U	V	EncT	DecT
Class A1	-0.32%	-0.59%	-0.21%	100%	100%
Class A2	-0.56%	-0.56%	-0.65%	100%	100%
Class B	-0.43%	-0.75%	-0.83%	99%	98%
Class C	-0.22%	-1.09%	-0.99%	100%	101%
Overall	-0.38%	-0.77%	-0.71%	100%	99%
Class D	-0.22%	-1.01%	-0.88%	100%	99%
Class F	-0.36%	-1.14%	-1.31%	100%	97%

Low delay B Main10					
Over VTM7.0					
	Y	U	V	EncT	DecT
Class B	-0.59%	-0.51%	-0.30%	101%	100%
Class C	-0.43%	-0.52%	-0.52%	100%	100%
Class E	-1.06%	-0.10%	-0.09%	100%	100%
Overall	-0.65%	-0.41%	-0.32%	100%	100%
Class D	-0.31%	0.43%	-0.09%	99%	99%
Class F	-0.66%	-0.90%	-0.51%	100%	99%

Low delay P Main10					
Over VTM7.0					
	Y	U	V	EncT	DecT
Class B	-0.45%	-0.12%	-0.59%	100%	99%
Class C	-0.32%	-0.26%	-0.56%	100%	100%
Class E	-0.64%	-0.39%	-0.11%	100%	99%
Overall	-0.45%	-0.23%	-0.46%	100%	100%
Class D	-0.17%	-0.27%	0.42%	99%	101%
Class F	-0.57%	-0.91%	-0.71%	100%	99%

VTM7.0
LDB, QP=37, #2 decoded picture of KristenAndSara test sequence

x4

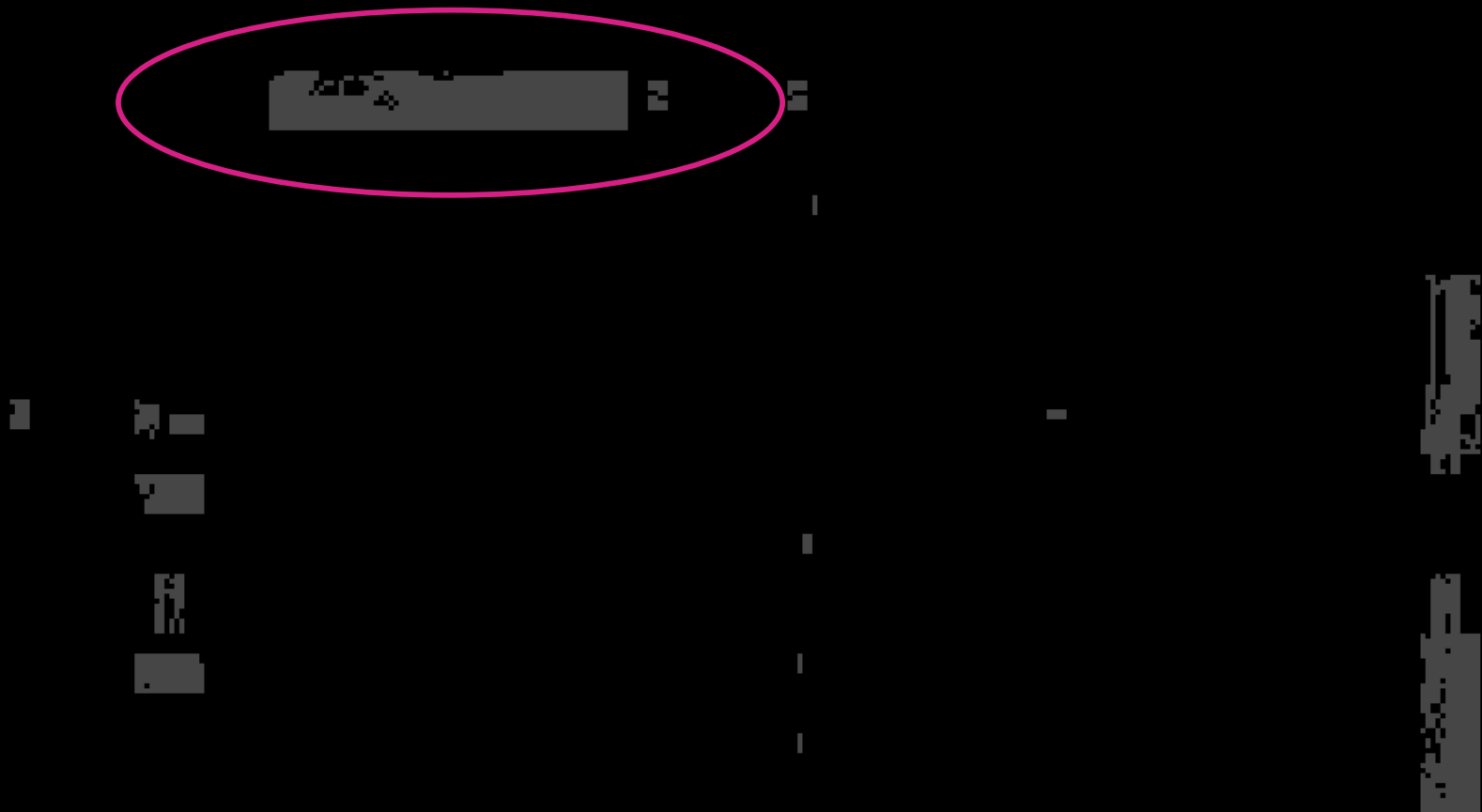


VTM7.0 + Proposed Fix
LDB, QP=37, #2 decoded picture of KristenAndSara test sequence

x4



Difference Picture Between VTM7.0 and the Proposed Fix
LDB, QP=37, #2 decoded picture of KristenAndSara test sequence



Summary

- Proposed to consider the effective QP in DF when DQ is applied
- Suggest to further study this issue in a CE
 - If the QP mismatch between the current DF and dequantization when DQ is applied is confirmed a possible issue of over-smoothing by experts in the 17th JVET meeting