



Non-RCE4: Cross-CU major color index prediction

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Overall Summary

- In RCE4 Test1 (JCTVC-P0108), major color index prediction is performed within each CU.
- In this proposal, it is proposed to allow major color index prediction across CU boundaries.
- Results

Lossy coding BD-rate	AI-MT	RA-MT	LB-MT
SC YUV 444 sequences	-0.6%	-0.5%	-0.3%

- For further study in a CE

Color Index Prediction in RCE4 Test1

- Major color indices of samples in the current CU can be predicted from their left or above neighboring samples
- No cross-CU major color index prediction
 - For samples at the left or above boundary of a current CU, the left or above neighboring sample indices are set to 0 for predicting the indices of the samples on the first column or row in the current CU.

Proposed Method

- Major color index prediction across CU boundaries
- The samples on the last column of the left CU and the last row of the above CU are used for prediction.
- The pre-deblocked samples from the neighboring CUs are converted through the major color table of the current CU into major color index prediction values.
 - No additional buffer to store pre-deblocked samples

Lossy Coding Results

- Anchor: RCE4 Test1
- 0.6% / 0.5% / 0.3% BD-rate savings for SC YUV 444 sequences under AI-MT / RA-MT / LB-MT
- Thank Microsoft for cross-verification

Y BD-rate	AI-MT	AI-HT	AI-SHT	RA-MT	RA-HT	LB-MT	LB-HT
Class F	-0.3%	-0.2%	-0.2%	-0.2%	-0.2%	-0.1%	-0.2%
Class B	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SC RGB 444	-0.8%	-0.7%	-0.7%	-0.7%	-0.7%	-0.5%	-0.6%
Animation RGB 444	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SC YUV 444	-0.6%	-0.7%	-0.7%	-0.5%	-0.4%	-0.3%	-0.4%
Animation YUV 444	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%
RangeExt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SC(444) GBR Opt.	-2.6%	-2.7%	-2.8%	-2.4%	-2.5%	-1.9%	-1.4%
SC(444) YUV Opt.	-2.0%	-2.3%	-2.6%	-1.5%	-1.9%	-1.9%	-1.6%

Lossless Coding Results

- Anchor: RCE4 Test1
- 0.6% / 0.4% / 0.4% bit savings for YCbCr 444 SC sequences under AI / RA / LB

	AI	RA	LB
Class F	-0.1%	0.0%	0.0%
Class B	0.0%	0.0%	0.0%
RGB 4:4:4 SC	-0.6%	-0.5%	-0.4%
RGB 4:4:4 Animation	0.0%	0.0%	0.0%
YCbCr 4:4:4 SC	-0.6%	-0.4%	-0.4%
YCbCr 4:4:4 Animation	0.0%	0.0%	0.0%
RangeExt	0.0%	0.0%	0.0%
RGB 4:4:4 SC (Optional)	-2.8%	-2.7%	-2.6%
YCbCr 4:4:4 SC (Optional)	-2.4%	-2.0%	-0.7%

Conclusions

- Proposed to allow major color index prediction across CU boundaries
- Converting pre-deblocked samples from neighboring CUs into major color index prediction values through the major color table of the current CU
- Results

Lossy coding BD-rate	AI-MT	RA-MT	LB-MT
SC YUV 444 sequences	-0.6%	-0.5%	-0.3%

- For further study in a CE