

JCTVC-I0175: Improved LM mode with template shift



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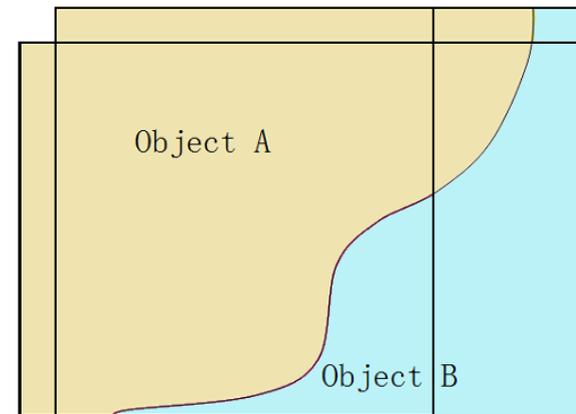
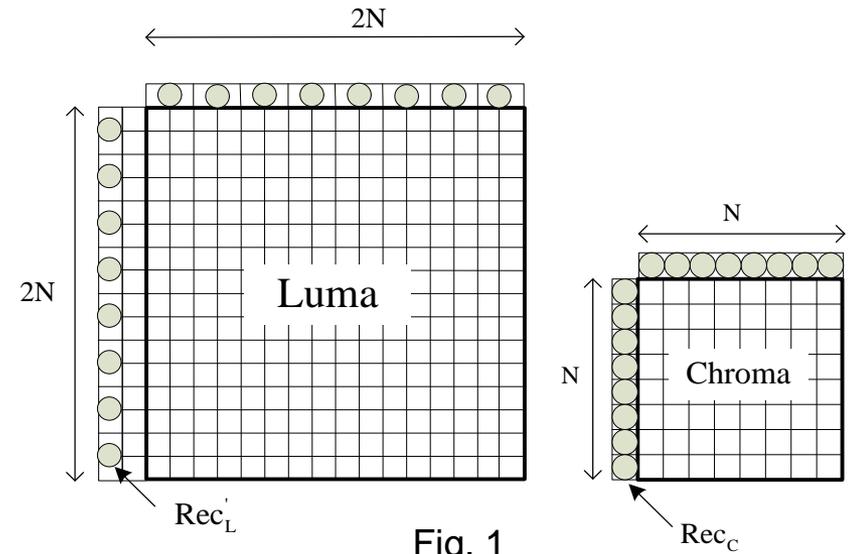
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Background

- LM mode: Using a linear model to predict Chroma from Luma. Parameters are derived by $2N$ neighboring samples.

$$Pred_C[x, y] = \alpha \cdot Rec_L'[x, y] + \beta$$

However, sometimes useful hints of the content in current block can be found in the outer border.





Proposed Modification

In order to consider both the inner border and outer border, we propose to modify the L-shape template in LM mode with:

- a right shift distance D_x for top neighboring samples
- a down shift distance D_y for left neighboring samples

Four setting of D_x and D_y are tested:

Scheme 1: $D_x=1$, $D_y=1$;

Scheme 2: $D_x=1$, $D_y=0$;

Scheme 3: $D_x=2$, $D_y=0$;

Scheme 4: $D_x=N/4$, $D_y=0$;

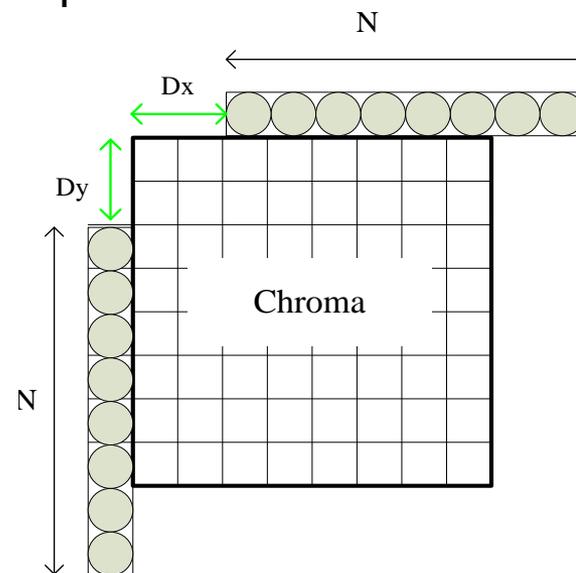


Fig. 3 LM mode with shifted template



Simulation Results on HM6.0

Test (Class A-E)	Intra-Main + LMChroma=1			Intra-HE 10bit		
	Y BD-Rate (%)	U BD-Rate (%)	V BD-Rate (%)	Y BD-Rate (%)	U BD-Rate (%)	V BD-Rate (%)
Scheme 1: Dx=1, Dy=1	-0.02%	-0.27%	-0.26%	-0.03%	-0.24%	-0.17%
Scheme 2: Dx=1, Dy=0	-0.02%	-0.23%	-0.20%	-0.03%	-0.22%	-0.14%
Scheme 3: Dx=2, Dy=0	-0.02%	-0.22%	-0.15%	-0.02%	-0.20%	-0.10%
Scheme 4: Dx=N/4, Dy=0	-0.02%	-0.25%	-0.20%	-0.03%	-0.26%	-0.15%



Thank you