

Non-CE6: On intra chroma mode coding

JCTVC-G185

Toru Kumakura, Shigeru Fukushima

JVC KENWOOD Corporation



1. Overview

Overview

- Proposed technique
 - Intra chroma mode coding
- Algorithm
 - Switch DM/LM mode order according to partition shape
 - Define vertical or horizontal mode exclusively based on luma mode
- Crosscheck
 - JCTVC-G431 by Qualcomm
- Simulation results
 - 0.5-0.7% chroma BD-rate gain for both IHE and ILC

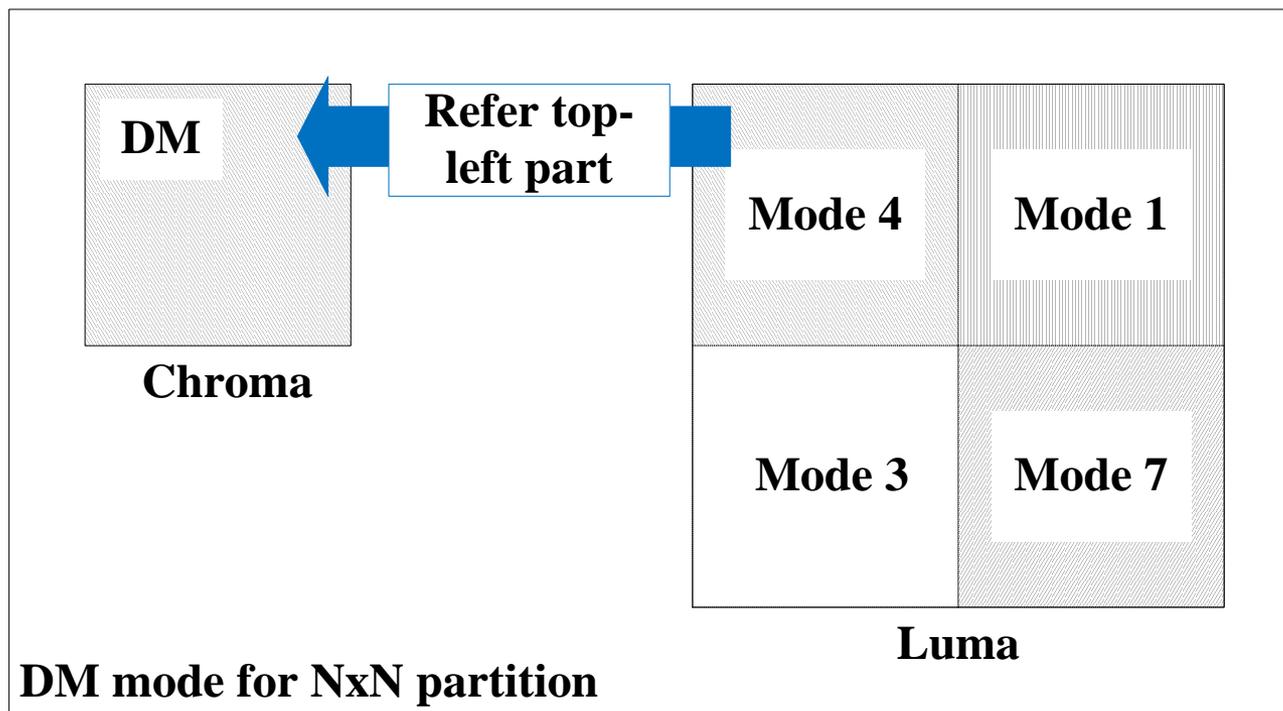


2. Algorithm

Proposal 1: DM/LM switching

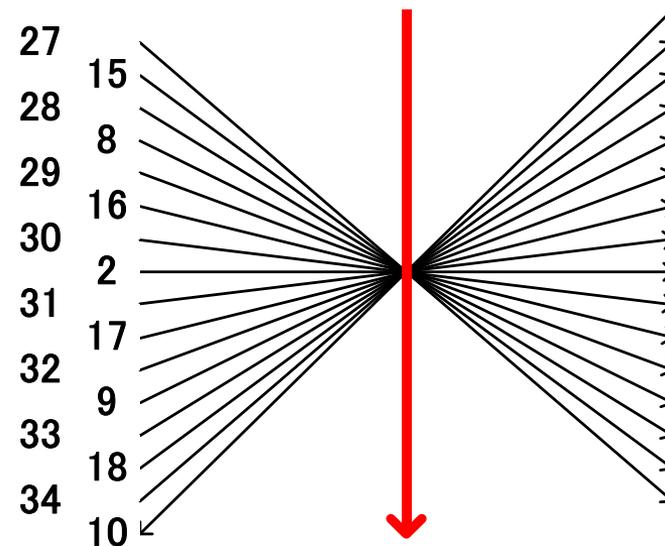
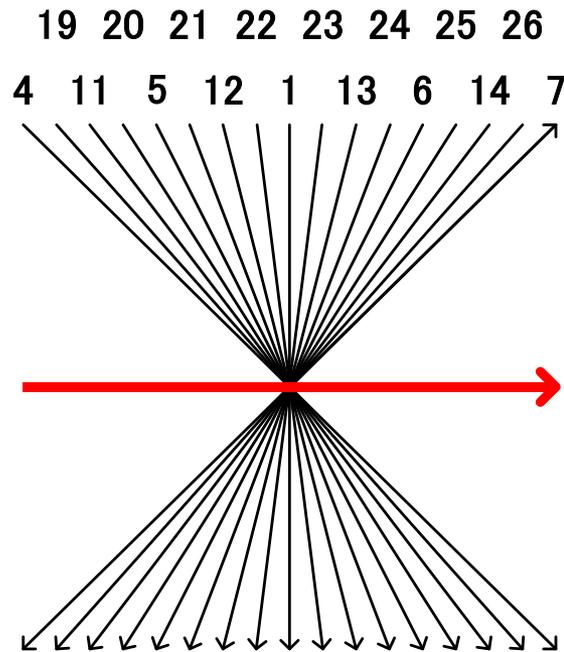
- Switching of $2N \times 2N/N \times N$ already included in the HM4.0
- Same parsing process in the HM4.0

intra_chroma_pred_mode	Bit string	$N \times N$	$2N \times 2N$
5	"0"	DM	LM
4	"10"	LM	DM



Proposal 2: Exclusive vertical/horizontal mode

- G203 based
- Replace perpendicular mode of intra chroma mode in G203
- No additional table required



3

3. Experiments

Simulation results

Proposal 1

	All Intra HE			All Intra LC		
	Y	U	V	Y	U	V
Class A	0.1%	-0.1%	0.0%	0.0%	-0.2%	-0.1%
Class B	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%
Class C	0.0%	-0.1%	0.0%	0.0%	-0.2%	-0.2%
Class D	0.0%	-0.2%	-0.1%	0.0%	-0.2%	-0.1%
Class E	0.0%	-0.4%	-0.7%	0.0%	-0.2%	-0.1%
Overall	0.0%	-0.1%	-0.1%	0.0%	-0.2%	-0.1%
	0.0%	-0.1%	-0.1%	0.0%	-0.2%	-0.1%
Enc Time[%]	100%			100%		
Dec Time[%]	101%			101%		

Proposal 2

	All Intra HE			All Intra LC		
	Y	U	V	Y	U	V
Class A	0.0%	-0.1%	-0.2%	0.0%	-0.2%	-0.2%
Class B	0.0%	-0.5%	-0.6%	0.0%	-0.5%	-0.6%
Class C	0.0%	-0.6%	-0.6%	-0.1%	-0.7%	-0.6%
Class D	0.0%	-0.5%	-0.7%	-0.1%	-0.5%	-0.6%
Class E	0.0%	-0.4%	-0.6%	0.0%	-0.6%	-0.6%
Overall	0.0%	-0.4%	-0.5%	0.0%	-0.5%	-0.5%
	0.0%	-0.4%	-0.5%	0.0%	-0.5%	-0.5%
Enc Time[%]	100%			100%		
Dec Time[%]	100%			100%		

Proposal 1 + Proposal2

	All Intra HE			All Intra LC		
	Y	U	V	Y	U	V
Class A	0.1%	-0.2%	-0.1%	0.0%	-0.4%	-0.3%
Class B	0.0%	-0.4%	-0.6%	0.0%	-0.7%	-0.7%
Class C	-0.1%	-0.6%	-0.6%	-0.1%	-0.9%	-0.8%
Class D	-0.1%	-0.7%	-0.7%	-0.1%	-0.7%	-0.8%
Class E	0.1%	-0.9%	-1.3%	0.0%	-0.9%	-0.8%
Overall	0.0%	-0.5%	-0.6%	-0.1%	-0.7%	-0.7%
	0.0%	-0.5%	-0.6%	-0.1%	-0.7%	-0.7%
Enc Time[%]	100%			100%		
Dec Time[%]	100%			101%		

4. Conclusion

Conclusion

- Suggestion
 - Adopted G203 to the next WD and HM
 - Adopted proposal1 (switching DM/LM mode)
 - Adopted proposal2 (exclusive vertical/horizontal mode)

JVCKENWOOD