

JVET-X0086

EE2-related: Adaptive Filter Shape Selection for ALF

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Summary

■ Motivation

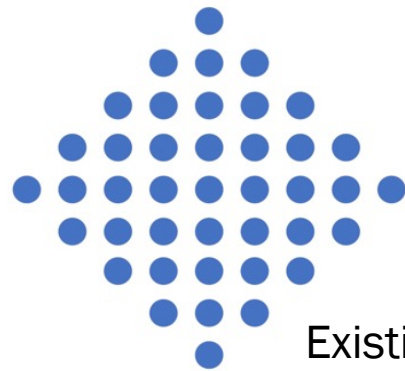
- *In ALF of ECM 2.0, only a diamond filter shape is used for online-trained luma filters*
- *Single filter shape is hard to achieve the optimal compression performance*

■ Proposed solution

- *Introduce a new designed ALF luma filter shape*
- *Adaptive filter shape selection for luma filters*

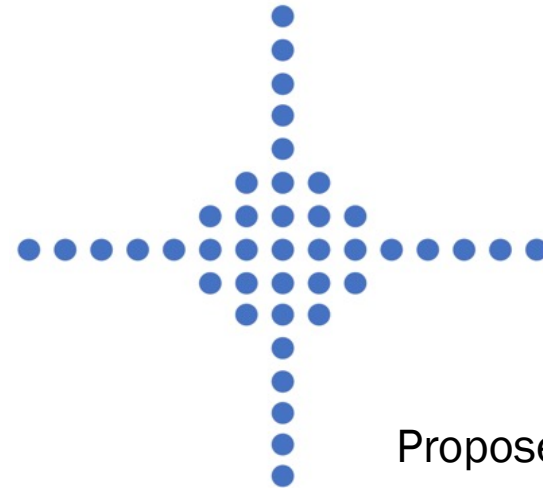
Proposed Method

■ Filter Shapes



Existing shape

diamond shape with size of 9x9



Proposed new shape

symmetrical shape with size of 15x15

- Same number of taps for two shapes
- Signal a luma filter shape index in each APS to indicate which shape is applied

Tool-off Test Results

- Anchor is ECM 2.0
- Combining with EE2-4.8 a~d
- Overall performance

Joint with	AI					RA					LB				
	Y	U	V	Enc	Dec	Y	U	V	Enc	Dec	Y	U	V	Enc	Dec
4.8a	-0.18%	-2.55%	-3.31%	105%	101%	-0.47%	-2.12%	-2.26%	105%	102%	-0.71%	-3.58%	-3.76%	107%	102%
4.8b	-0.23%	-2.53%	-3.29%	104%	100%	-0.50%	-2.13%	-2.20%	105%	102%	-0.82%	-3.54%	-3.90%	106%	100%
4.8c	-0.16%	-2.66%	-3.47%	105%	102%	-0.48%	-2.02%	-2.19%	105%	102%	-0.78%	-3.25%	-3.48%	106%	101%
4.8d	-0.22%	-2.64%	-3.45%	105%	101%	-0.52%	-2.00%	-2.18%	105%	101%	-0.82%	-3.60%	-3.41%	107%	100%

Conclusion

- An adaptive filter shape selection for ALF is proposed
- Coding gains are achieved with limited encoding and decoding time increase
- Recommend to adopt one of the combination tests into ECM

Thanks InterDigital for crosschecking

Thanks!