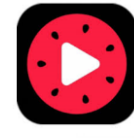


# JVET-L0269

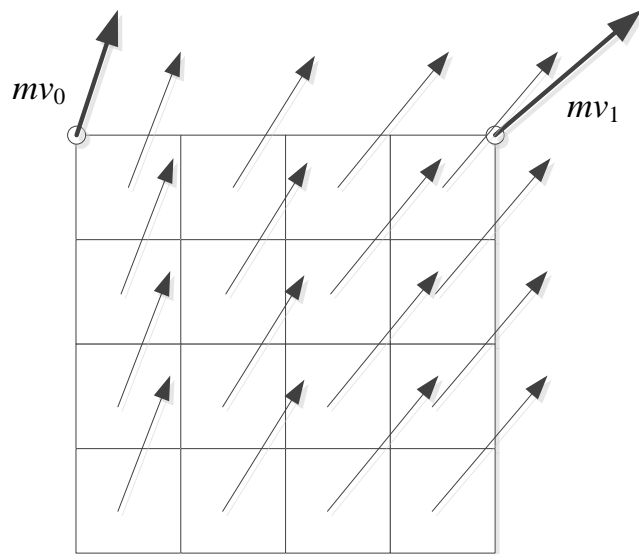
## CE10: INTERWEAVED PREDICTION FOR AFFINE MOTION COMPENSATION (TEST 10.5.1 AND TEST 10.5.2)

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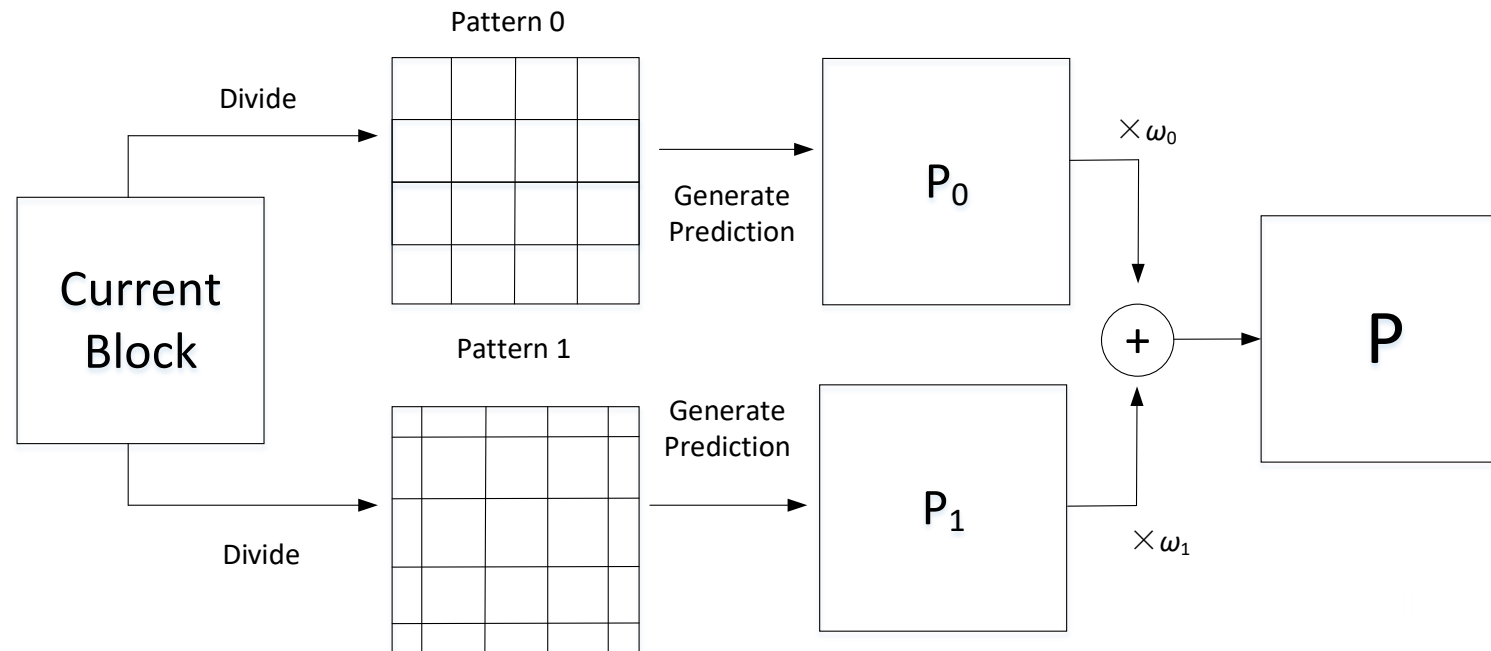
# Problem

- ❑ With affine motion compensation, a coding-block is divided into sub-blocks as small as  $4 \times 4$ , each of which is assigned with an individual motion vector (MV) derived by the affine mode
  - ❑ *MV is derived from  $mv_0$ ,  $mv_1$ , and  $mv_2$  at the control points*
- ❑ AMC faces a dilemma on the size of sub-blocks.
  - ❑ *Smaller sub-blocks result in a better coding performance but a higher complexity*



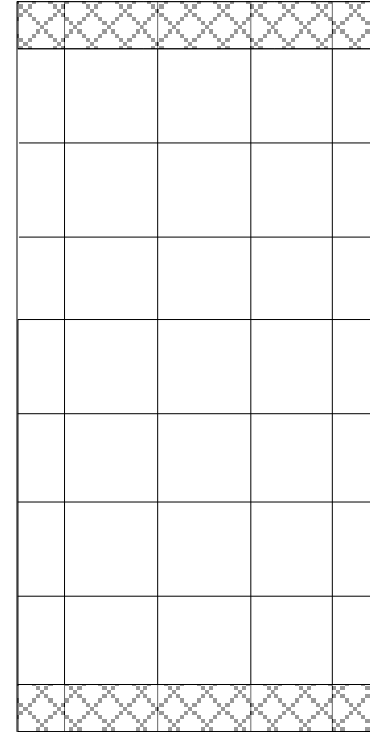
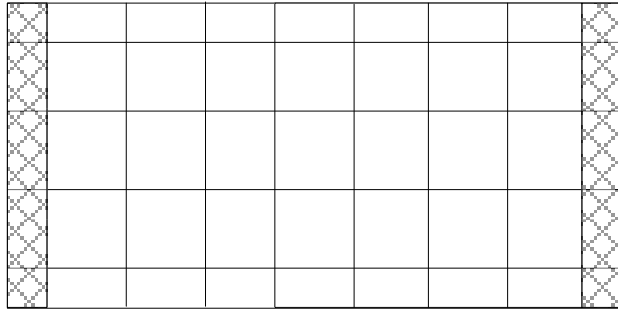
# Solution

- ❑ Affine motion compensation is done in a interleaved way
  - ❑ A coding block is divided into sub-blocks with two different dividing patterns
  - ❑ Two auxiliary predictions are generated by AMC with the two dividing patterns.
  - ❑ The final prediction is calculated as a weighted-sum of the two auxiliary predictions
- ❑ Interweaved prediction is only applied on the luma-component for with uni-prediction



# Solution (Cont.)

- Solution #1
  - *Interweaved prediction is applied to the whole block*
- Solution #2
  - *Interweaved prediction is only applied to the center part of a block*



# Simulations results on VTM-2.0.1

## ■ Solution #1

	RA					LB				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	-0.11%	0.06%	-0.05%	101%	102%					
Class A2	-0.77%	-0.18%	-0.16%	102%	102%					
Class B	-0.50%	-0.24%	-0.18%	101%	102%	-0.15%	-0.22%	-0.43%	103%	104%
Class C	-0.21%	0.06%	-0.05%	101%	102%	-0.12%	-0.06%	-0.27%	103%	103%
Class E						-0.42%	-0.55%	-0.09%	103%	99%
Overall	-0.40%	-0.09%	-0.12%	101%	102%	-0.21%	-0.25%	-0.29%	103%	102%

## ■ Solution #2

	RA					LB				
	Y	U	V	EncT	DecT	Y	U	V	EncT	DecT
Class A1	-0.07%	0.03%	-0.01%	101%	102%					
Class A2	-0.69%	-0.15%	-0.19%	101%	102%					
Class B	-0.42%	-0.24%	-0.27%	101%	101%	-0.16%	-0.18%	-0.39%	102%	101%
Class C	-0.19%	0.10%	-0.04%	102%	102%	-0.17%	-0.15%	-0.28%	101%	97%
Class E						-0.50%	-0.15%	-0.13%	104%	97%
Overall	-0.35%	-0.08%	-0.14%	101%	101%	-0.25%	-0.16%	-0.29%	102%	99%

# Conclusion

- Propose:
  - *Interweaved prediction for affine motion compensation*
- Benefits:
  - *No new mode*
  - *No new syntax elements*
  - *No change on the parsing process*
  - *No additional RD test*
  - *0.35% coding gain with 101% encoding time*
- Recommend:
  - *Adopt solution #2 in VTM*