

JVET-00261

NON-CE3: MIP WITH ONE-STAGE BOUNDARY SAMPLE DOWNSAMPLING

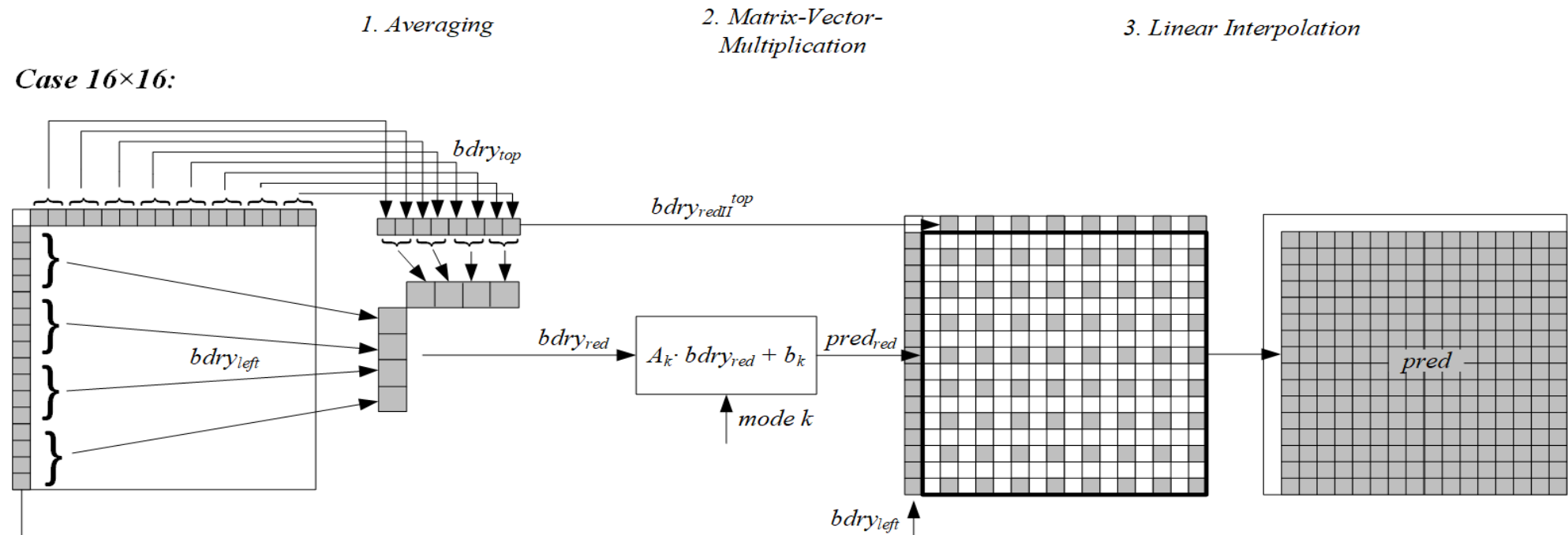
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JVET-0261: MIP with one-stage boundary downsampling

■ Problem statement

- *The operations for left and top boundaries generation are inconsistent*
- *The two cascaded averaging stages causes unnecessary operation dependency and extra storage*

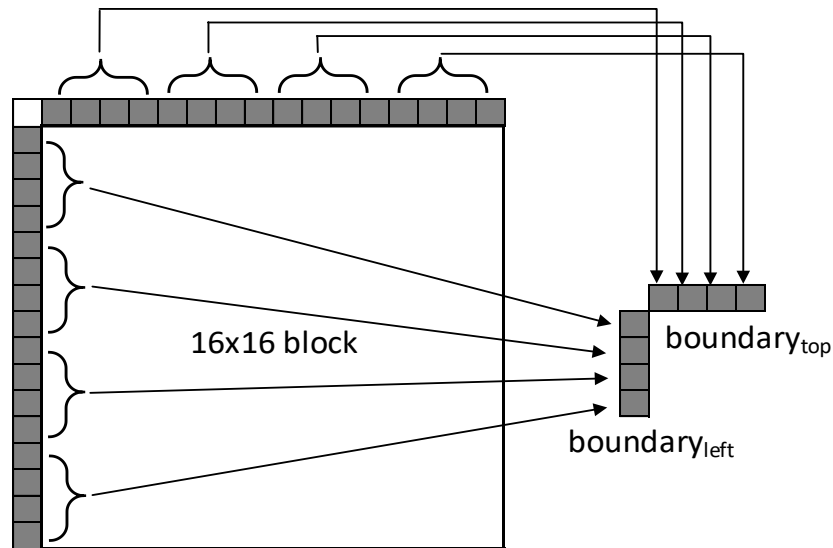


Current MIP process for 16×16 blocks

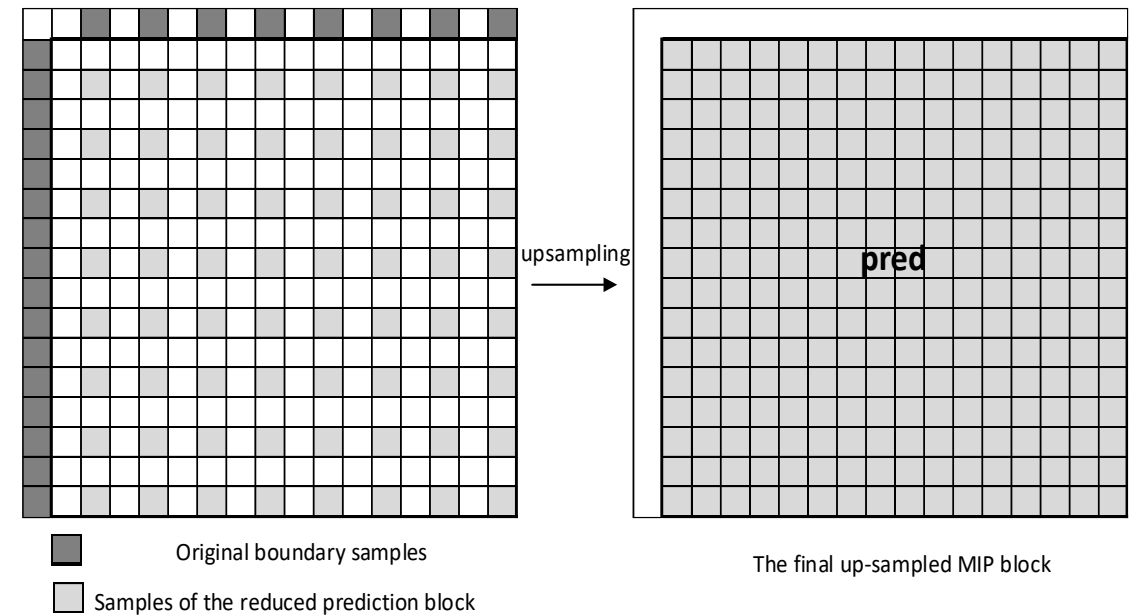
JVET-0261: MIP with one-stage boundary downsampling

■ Proposal

- *A one-stage boundary sample downsampling method for both left and top boundaries*



**Generation of reduced boundaries
for matrix multiplication**



Original boundaries used for prediction upsampling

Simulation results

All Intra					
			Over VTM-5.0		
	Y	U	V	EncT	DecT
Class A1	-0.04%	-0.11%	-0.07%	100%	100%
Class A2	-0.01%	-0.09%	-0.11%	100%	100%
Class B	-0.02%	-0.08%	0.03%	100%	100%
Class C	0.00%	-0.08%	0.10%	99%	96%
Class E	-0.01%	-0.07%	-0.03%	99%	97%
Overall	-0.01%	-0.09%	0.00%	100%	99%
Class D	0.01%	0.12%	-0.20%	100%	96%
Class F	0.00%	0.05%	0.04%	99%	98%
Random Access					
			Over VTM-5.0		
	Y	U	V	EncT	DecT
Class A1	-0.01%	-0.24%	0.01%	99%	100%
Class A2	0.00%	0.07%	0.04%	100%	100%
Class B	-0.01%	-0.04%	-0.27%	100%	100%
Class C	0.00%	-0.08%	-0.30%	99%	96%
Overall	-0.01%	-0.07%	-0.16%	100%	99%
Class D	-0.01%	0.09%	0.27%	100%	96%
Class F	0.03%	-0.04%	0.18%	99%	98%

Conclusions

■ Benefits

- *Align both of the top and left boundaries calculation*
- *Remove the operation dependency of two cascaded processes*
- *Reduce 8 shift and 8 add operation per block*

■ It is recommended adopting the proposed method

Thanks Huawei for crosschecking!