

JVET-AH0058 Non-EE2: derived MIP modes with fusion

Zhihuang Xie, Yue Yu, Haoping Yu, Dong Wang

Introduction

In current ECM, the intra coding tool MIP is similar to what it was in VTM. It takes one column of *height* reconstructed neighboring samples left to the block and one row of *width* reconstructed neighboring samples above the block as inputs. Then the generation of the prediction signal follows three steps, as shown in Figure. 1, averaging, matrix vector multiplication, and linear interpolation

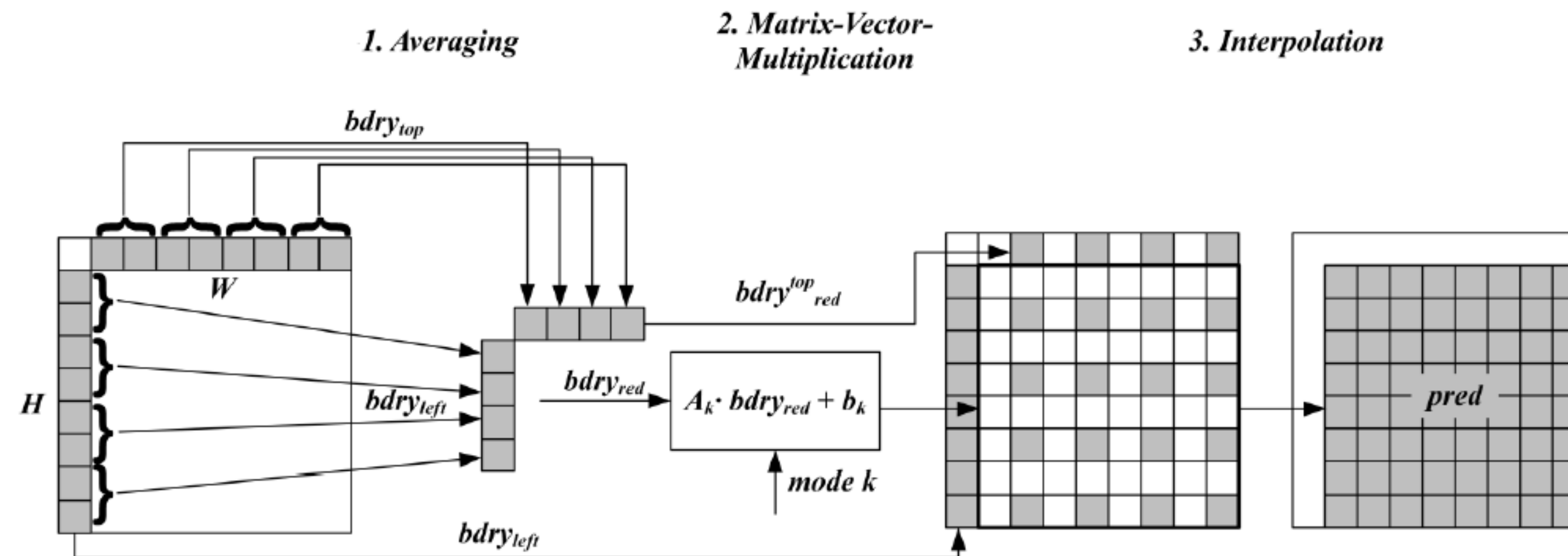


Figure. 1 Generation process of MIP prediction

In the JVET-AB meeting, JVET-AB0067 was adopted into ECM, which applied DIMD to the prediction samples to derive the LFNST transform set.

Proposed

1. Derived Mip modes with fusion

Similar to other template tools, the top and left neighboring areas are used as templates to derive the MIP modes and transposed flags for the current block, where the size of templates is $width \times 2$ plus $2 \times height$.

The proposed method first derives two best candidates of {MIP modes, transposed flag} with the smallest SATD cost over the template areas, and then it fuses the two derived MIP predictions with weights to produce a prediction for the current block.



Figure. 2 fusion decision

The fusion weights are calculated by their template costs as follow:

$$weight_{best} = SATDcost_{secBest} / (SATDcost_{best} + SATDcost_{secBest})$$

$$weight_{secBest} = 1 - weight_{best}$$

Proposed

2.2 DIMD applied to upsampled predictors for non-square blocks

For non-square and sizeId {0, 1} blocks, the DIMD process in the MIP-LFNST transform set derivation is applied to the upsampled prediction samples, which is shown in Fig.3 (b). For other blocks, the DIMD process is applied directly to the prediction samples as shown in Fig.3 (a).

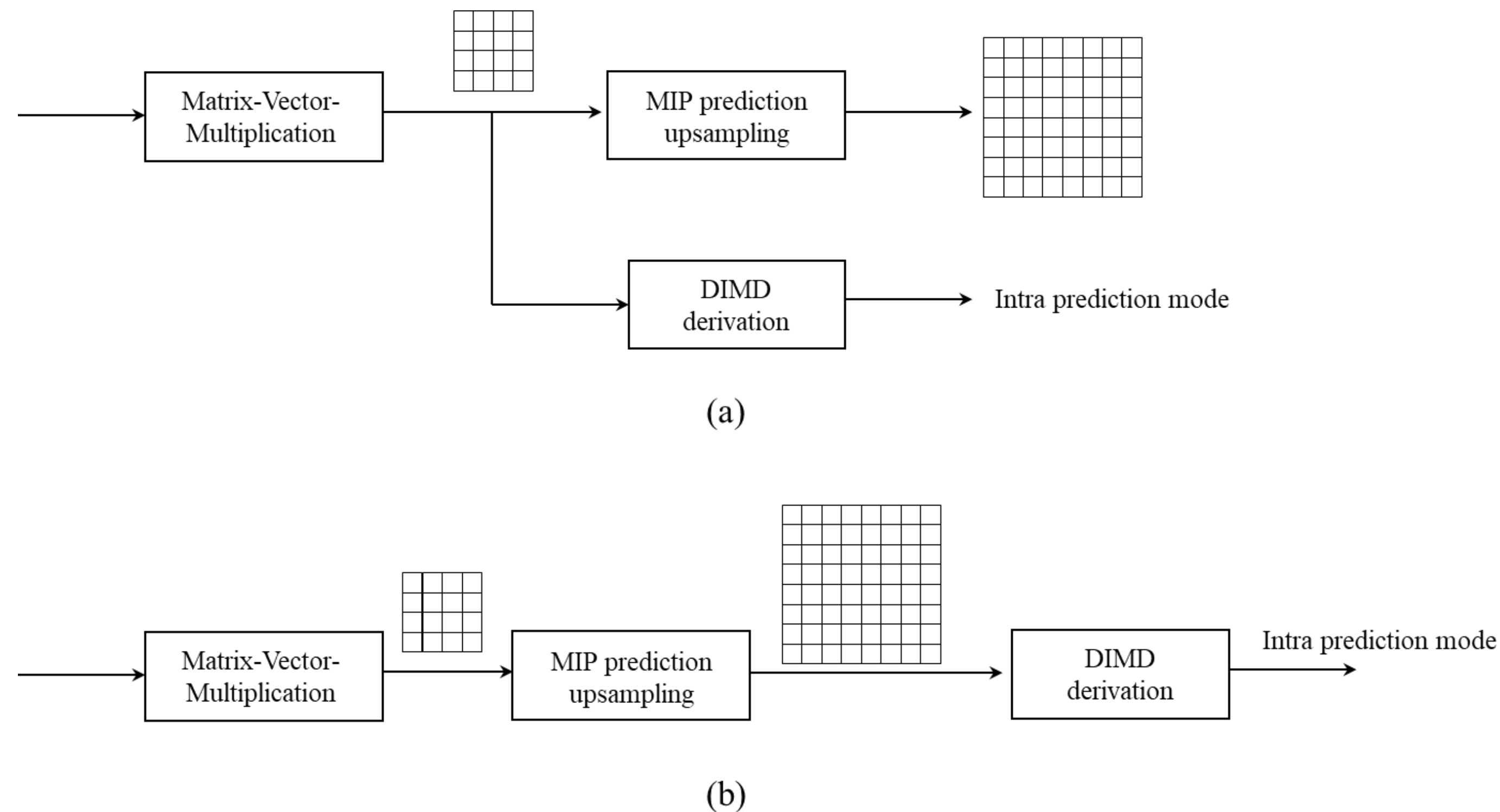


Figure. 3 DIMD process in MIP-LFNST transform set derivation

Simulation results

The proposed method was implemented on top of ECM-12.0 and tested under CTC.

	All Intra Main 10						
	Over anchor						
	Y	U	V	EncT	DecT	EncVmPea k	DecVmPea k
Class A1	-0.16%	-0.13%	0.00%	104.3%	101.8%	100.7%	100.1%
Class A2	-0.07%	0.00%	-0.02%	104.4%	100.4%	100.1%	100.0%
Class B	-0.08%	0.01%	0.06%	105.3%	100.7%	100.0%	100.0%
Class C	-0.08%	0.10%	0.14%	104.4%	100.8%	99.7%	100.0%
Class E	-0.06%	-0.01%	-0.14%	105.0%	100.4%	100.0%	100.0%
Overall	-0.09%	0.00%	0.02%	104.7%	100.8%	100.1%	100.0%
Class D	-0.09%	0.11%	0.06%	105.1%	102.4%	100.2%	100.0%
Class F	-0.06%	0.06%	-0.06%	100.9%	100.2%	100.0%	100.0%

Conclusion

In this contribution, the derived mip modes with fusion was proposed.

The proposed method brings some coding gain. It is suggested to study this method in the next round of EE.

Thanks to InterDigital for crosschecking.

Thank you

oppo