

De-interleaving of 8x8 blocks in FGS (JVT-T089)

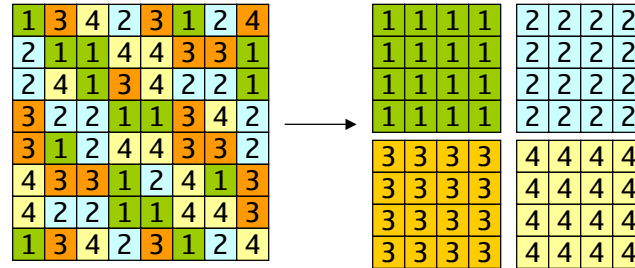
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Motivation

- Currently, CAVLC for 8x8 blocks in FGS layers involves using flags to code significance values.
 - This is inefficient.
 - Different schemes for 8x8 and 4x4 blocks.
- Goal: fix these problems.
- Idea presented previous meeting as JVT-S089.
- Since last meeting, integrated method into JSVM 5.9.
- More comprehensive set of results generated.

Proposal

- Use the de-interleaving method already employed in H.264/AVC FExt for CAVLC coding of 8x8 blocks
- Coding of each 4x4 block then proceeds as already specified for FGS



- Add 8x8 EOB symbol to signal end of entire 8x8 block, i.e. no more coefficients in any of the de-interleaved 4x4 blocks
 - Not needed when coefficients remain in only one de-interleaved block

Results

- Results generated using SNR conditions of JVT-Q009, with SymbolMode=0
- Bit-rate saving for full FGS layers:

CIF30	FGS1	FGS2	4CIF60	FGS1	FGS2
Bus	2.93%	5.51%	City	8.34	14.09
Football	1.92	3.60	Crew	1.10	5.78
Foreman	2.53	6.34	Harbour	3.02	6.31
Mobile	3.57	6.42	Soccer	4.28	9.95
City	2.49	7.00			
Crew	0.90	2.90			
Harbour	4.26	6.44			
Soccer	2.85	5.14			

- Naturally, gain is closely related to number of 8x8 blocks.

Conclusion

- De-interleaving employs existing method already used in H.264/AVC
- Same approach now used for both spatial and FGS slices
- Unifies VLC for 4x4 and 8x8 – no extra VLC tables needed
- Coding efficiency gains:
 - 3.18% bit-rate saving for first FGS layer (4.19% for 4CIF)
 - 6.62% bit-rate saving for second FGS layer (9.03% for 4CIF)
- Based on the more comprehensive results, we believe this should be incorporated into the draft