



REDEFINING MOBILITY



Non-SCE1: Dynamic range control of intermediate data in re-sampling process (JCTVC-N0214)

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16 bits overflow prevention in upsampling filter process

- Background

- 2D-separable upsampling filter

- Filter coefficients accuracy is same to that of motion compensation (MC) interpolation filter

- Bit depth increases by 8 bits after horizontal filter

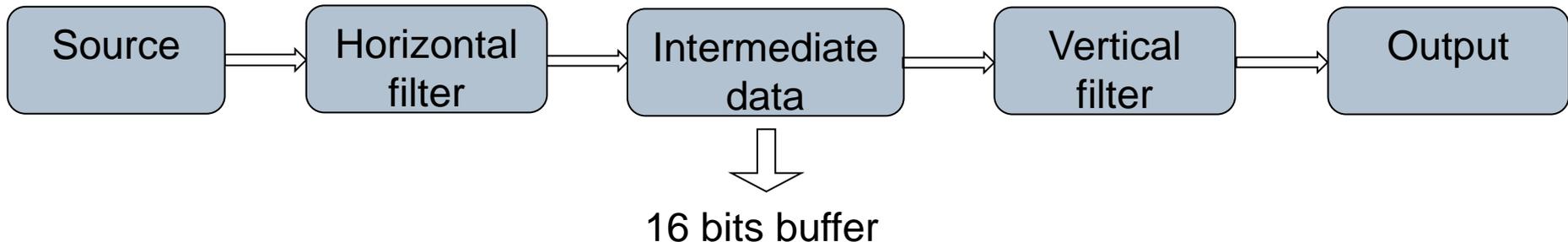
- Problem

- Intermediate data is more than 16 bits range when input is 10 bits or more

- Solution

- MC interpolation filter process downscales the output of horizontal filter

- Apply the same scheme to upsampling filter



Experimental results

■ Test condition

- SHVC common test configuration + 10-bits source
- Test Sequences: Nebuta and SteamLocomotive
 - EL: 2560x1600, BL: 1280x800

■ Test results

- SHM2.0 has overflow on 16 bits intermediate buffer
- 16-bits intermediate buffer with proposed fix shows similar coding performance comparing to 32-bits intermediate buffer

Test methods	BD rate		
	Y	Cb	Cr
SHM2.0	-4.8%	-5.2%	-5.7%
SHM2.0+32bits	-29.05%	-27.37%	-28.73%
SHM2.0+16bits	-29.05%	-27.38%	-28.74%

Simulcast used as anchors

Test methods	BD rate		
	Y	Cb	Cr
AI	0.00%	-0.02%	-0.01%
RA	0.01%	-0.04%	0.02%
LD-B	0.02%	-0.09%	0.01%

32-bits buffer vs 16-bits buffer