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CODING OF MOVING PICTURES AND AUDIO**

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Title: 3DV EE4 Results on Cafe

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1. Introduction

This document reports experimental results of EE4 on 'Cafe' sequence in response to N11477 [1]. Since we generated the depth video using the manual operation and post-processing using a bilateral filter described in M18512 [2], we newly a conducted EE4 experiment with the depth video where a new common-hole filling method is used for view synthesis described in M18514 [3]. According to the recommended target bitrates, we selected four combinations of QP of 'Cafe' sequence, and we prepared the viewing materials for each rate point.

Table 1. Coding conditions

Reference software		JMVC 7.0
GOP size		15
Number of frames		300
Search range		96
View number	2-view	2, 4
	3-view	2, 3, 4

2. 2-view Configuration

We selected the best combinations of QPs for color and depth sequences based on the target bit rates; 0.4, 0.6, 0.8, 1.0 Mbps for 'Cafe'. In the case of 2-view configuration, the total bit rate is calculated by

$$\text{Total bit rate} = \text{Rate}(L_color) + \text{Rate}(R_color) + \text{Rate}(L_depth) + \text{Rate}(R_depth)$$

Table 2 shows the total bit rates and PSNR of synthesized images for 2-view configuration. The synthesis results for View3 are obtained by the decoded pairs of reconstructed color and depth files. We allowed 5% margin for each target bitrates.

Table 2. Total bit rates and PSNR of synthesized images for 2-view configuration

Target Bit rates (Mbps)	Color		Depth		Total bit rate (kbps)	PSNR of syn. for View3 (dB)
	QP	Bit rate (kbps)	QP	Bit rate (kbps)		
0.4	N/A (TB is too low)					
0.6	43	468.56	47	161.71	630.27	30.77
0.8	40	601.84	44	218.26	820.10	31.95
1.0	38	733.88	41	309.72	1043.60	32.22

3. 3-view Configuration

In the case of 3-view configuration, coding experiments are performed based on the target bit rates; 0.75, 0.9, 1.25, 2 Mbps for 'Cafe'. The total bit rate is obtained by

$$\text{Total bit rate} = \text{Rate}(L_color) + \text{Rate}(C_color) + \text{Rate}(R_color) + \text{Rate}(L_depth) + \text{Rate}(C_depth) + \text{Rate}(R_depth)$$

Table 3 describes the total bit rates and PSNR of synthesized images for 3-view configuration. The synthesis results for View3 are obtained by the decoded pairs of reconstructed color and depth files. Figure 1 explains the generation of intermediate views for both stereo and 9-view displays.

Table 3. Total bit rates and PSNR of synthesized images for 3-view configuration

Target Bit rates (Mbps)	Color		Depth		Total bit rate (kbps)	PSNR of syn. for View3 (dB)
	QP	Bit rate (kbps)	QP	Bit rate (kbps)		
0.75	46	542.25	49	230.67	772.92	29.75
0.90	43	652.46	47	250.02	902.48	30.77
1.25	39	912.74	44	336.22	1248.96	32.13
2.00	34	1479.81	39	587.16	2066.97	32.31

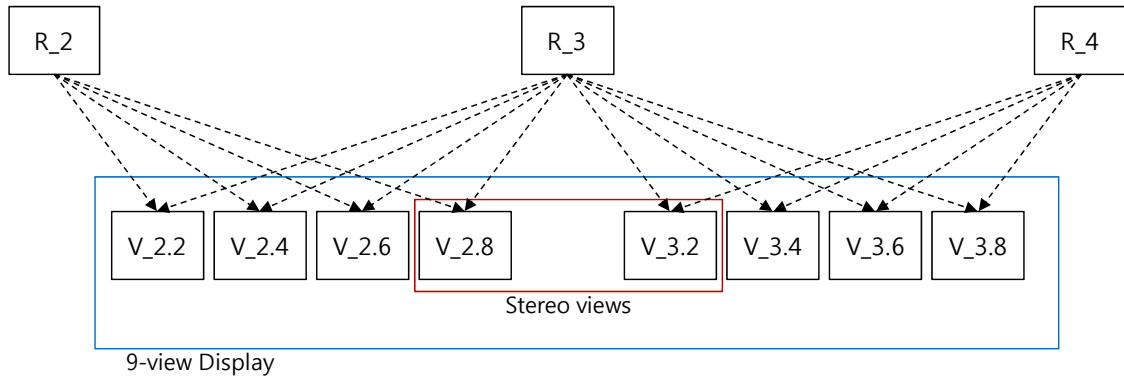


Fig. 1. Generation of intermediate views for both stereo and 9-view displays

4. Conclusion

In this contribution, we have reported the coding results on ‘Café’ sequence for the 3D video coding. According to the target bitrates, we selected proper QP sets showing best rendering quality, but we could not find proper QP sets of the lowest bit rate for 2-view configuration. Therefore, the target bitrates of ‘Cafe’ sequence needs to be rearranged. We are ready to demonstrate the synthesized video for each target bit rates during 94th Guangzhou meeting.

5. Acknowledgements

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6. References

- [1] ISO/IEC JTC1/SC29/WG11 “Description of Exploration Experiments in 3D Video Coding,” N114777, July 2010.
- [2] ISO/IEC JTC1/SC29/WG11 “3DV EE1 Results on Café,” M18512, October 2010.
- [3] ISO/IEC JTC1/SC29/WG11 “Common-hole Filling for Boundary Noise Removal in VSRS,” M18514, October 2010.