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Title: Results of EE4 on ‘Cafe’ Sequence
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1. Introduction

This document reports experimental results of EE4 on 'Cafe' sequence in response to N11274 [1]. Since we generated the depth video using DERS 5.1 and manual operation described in M17788 [2], we conducted EE4 experiments. According to the recommended target bitrates, we selected four combinations of QP of 'Cafe' sequence. We prepared the viewing materials for each rate point.

Table 1. Coding conditions

Reference software		JMVC 7.0
GOP size		15
Number of frames		200
Search range		96
View number	2-view	39, 41
	3-view	37, 39, 41

2. 2-view Configuration

We selected the best combinations of QPs for color and depth sequences based on the target bit rates; 0.6, 0.8, 1.0, 1.5 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. Figure 1 shows the synthesis results for the best combinations of QPs. 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)		
0.6	44	430.30	47	159.68	589.98	30.52
0.8	41	550.90	44	212.65	763.55	32.00
1.0	38	733.88	41	291.20	1025.08	33.16
1.5	34	1113.94	36	480.66	1594.60	34.94



(a) R1-0.6M: color QP 34, depth QP 36



(b) R2-0.8M: color QP 38, depth QP 41



(c) R3-1.0M: color QP 41, depth QP 44



(d) R3-1.5M: color QP 44, depth QP 47

Fig. 1. Synthesis results at view3 (2-view)

3. 3-view Configuration

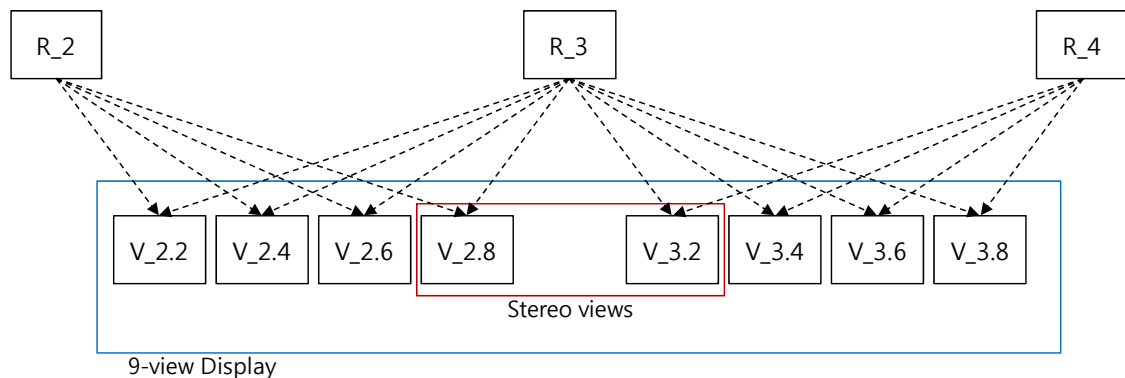
In the case of 3-view configuration, coding experiments are performed based on the target bit rates; 0.75, 0.9, 1.25, 2 Mbps for 'Cafe'. The total bit rate is obtained by

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

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 2 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	47	520.66	49	233.00	753.66	30.52
0.90	44	605.89	46	269.71	875.60	32.00
1.25	40	818.66	42	404.85	1223.51	33.16
2.00	35	1330.09	37	652.06	1982.15	34.94



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. We also reported the synthesis results for the best combinations of QPs. We have confirmed that the quality drop of the synthesized image is clear in visual. We are ready to demonstrate the synthesized video for each target bit rates during 93th Geneva meeting.

5. Acknowledgements

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6. References

- [1] ISO/IEC JTC1/SC29/WG11 “Description of Exploration Experiments in 3D Video Coding,” N11274, April 2010.
- [2] ISO/IEC JTC1/SC29/WG11 “Results of EE1 on ‘Cafe’ Sequence,” M17788, July 2010.