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Title **3D-CE2a cross check of Samsung proposal on Adaptive Depth Quantization by Poznan University of Technology**
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1 Introduction

This documents presents Core Experiment 2 for Advanced Video Coding (AVC) based 3D Video Coding [1] cross check attained by Poznan University of Technology. The tools that was investigated was proposed by Samsung in [2] and further improved in [3, 4]. Tool was evaluated according to the common test conditions [5]. Documents provides results in terms of rate and distortion both coded and synthesized views for EHP configuration only.

2 Adaptive Depth Quantization tools description

Depth information is for view rendering, and it is important to note that depth distortion would not linearly affect the synthesized view distortion. For example, smooth texture regions would be more tolerate for depth distortion, while complex texture region would be more sensitive for depth distortion.

In the proposed tools, Samsung introduce the two approaches to set the block-adaptive QP values, say ΔQP with texture information, and dQP with multiple tries. Details are described in [3,4]

3 Test Platform

The simulations results was generated on a ~80 core cluster system. This cluster platform's processing units have the following specifications:

- Processor: Intel Xeon X5675
- Clock Speed: 3.06 GHz
- Memory: approx. 4 GB per Core
- OS: 64-bit Windows Server 2008
- Compiler: Microsoft Visual Studio 2008 (64 bit)

4 Results

Samsung provide too version of their tool. Second one containing some improvement was delivered late and thus it was not enough time to complete simulation. Following results was attained with first delivered version.

Table 1. Simulation results in term of BD-rate for texture and depth component.

	Texture Coding		Depth Coding	
	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB
S01	0,21	0,00	2,04	-0,12
S02	0,10	0,00	9,52	-0,36
S03	0,31	-0,01	4,47	-0,34
S04	0,19	-0,01	6,42	-0,34
S05	0,01	0,00	-5,51	0,29
S06	0,27	-0,01	-0,84	0,04
S08	-0,01	0,00	6,76	-0,26
Average	0,15	-0,01	3,27	-0,16

Table 2. Simulation results in term of BD-rate.

	Total (Coded PSNR)		Total (Synthesed PSNR)		Complexity estimate (ratio to anchor)		
	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB	Encoder Time, %	Decoder Time, %	Rendering Time, %
S01	-0,34	0,00	34,86	34,51	115,00	102,00	100,00
S02	-0,34	0,00	37,65	37,49	112,00	102,00	100,00
S03	0,29	0,00	42,01	41,65	113,00	99,00	100,00
S04	0,04	0,00	41,23	41,03	115,00	97,00	100,00
S05	-0,26	0,00	38,31	38,34	119,00	113,00	100,00
S06	0,00	0,00	0,00	0,00	113,00	102,00	100,00
S08	0,00	0,00	0,00	0,00	115,00	101,00	100,00
Average	-0,09	0,00	27,72	27,57	114,57	102,29	100,00

Detailed results can be found in attached Excel file.

5 Conclusions

Attained result match first received version of the proposed tools.

6 References

[1] Anthony Vetro, Karsten Müller, “Description of Core experiments in 3D video coding”, ISO/IEC JTC1/SC29/WG11 MPEG, N12561 2012.

[2] “Description of AVC compatible 3D video coding technology by Samsung,” ISO/IEC JTC1/SC29/WG11 MPEG, M22632, November 2011.

[2] Byung Tae Oh, Jaejoon Lee, Du Sik Park, “3D-AVC-CE3 results on Samsung's adaptive depth quantizatio”, ISO/IEC JTC1/SC29/WG!! MPEG, M23659, San Jose, USA, February 2012

[3] Byung Tae Oh, Jaejoon Lee, Du Sik Park, “3D-CE2.a results on adaptive depth quantization by Samsung”, ISO/IEC JTC1/SC29/WG!! MPEG, M24820, Geneva, Switzerland, May 2012

[4] Dmytro Rusanovskyy Heiko Schwarz, "Common Test Conditions for HEVC- and AVC-based 3DV," ISO/IEC JTC1/SC29/WG11 MPEG, N12560 2012.

[5] M. Domański, T. Grajek, K. Klimaszewski, M. Kurc, O. Stankiewicz, J. Stankowski, K. Wegner, "Poznań Multiview Video Test Sequences and Camera Parameters", ISO/IEC JTC1/SC29/WG11 MPEG 2009/M17050, Xian, China, October 2009.