

Title: **3D-CE7.a Cross check of Improved Nonlinear Depth Representation performed by Poznan University of Technology**

Status: Input Document

Purpose: Proposal

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Abstract

This contribution reports an cross-check result of Improved Nonlinear Depth Representation proposal by Samsung described in JCT3V-C0094 [1] for 3D-ATM. The cross check has been performed by Poznan University of Technology.

1 Introduction

We have evaluated Samsung's proposal described in JCT3V-C0094 [1] with respect to Common Test Conditions [2] in HP and EHP profile as a cross-check part of core experiment CE 7 defined in [3]. We have tested two variants of the proposed tool called: SH and DPS.

2 Cross-check results

The simulations results were generated on a ~80 core cluster system. The 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)

Overview of the results for EHP and HP profile of proposed tool in two variants is shown in Table 1-4. All simulation results are attached to this document in excel sheets. The obtained coding results are in perfect match with those provided by the proponent in JCT3V-C0094 [1].

Table 1. Simulation results for SH variant - EHP profile

	Texture Coding		Depth Coding		Total (Coded PSNR)		Total (Synthesed PSNR)	
	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB
S01	0,00	0,00	0,08	-0,01	0,01	0,00	0,01	0,00
S02	0,00	0,00	0,04	0,00	0,00	0,00	0,00	0,00
S03	0,00	0,00	0,02	0,00	0,00	0,00	0,00	0,00
S04	-0,82	0,03	-19,37	1,21	0,67	-0,02	-2,03	0,07
S05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S08	0,06	0,00	14,64	-0,61	-6,32	0,27	-0,20	0,01
Average	-0,11	0,00	-0,66	0,08	-0,80	0,04	-0,32	0,01

Table 2. Simulation results for SH variant - HP profile

	Texture Coding		Depth Coding		Total (Coded PSNR)		Total (Synthesed PSNR)	
	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB
S01	0,00	0,00	0,12	-0,01	0,02	0,00	0,02	0,00
S02	0,00	0,00	0,10	0,00	0,01	0,00	0,01	0,00
S03	0,00	0,00	0,08	-0,01	0,01	0,00	0,01	0,00
S04	0,00	0,00	-17,89	1,18	1,63	-0,07	-1,07	0,04
S05	0,00	0,00	0,03	0,00	0,01	0,00	0,01	0,00
S06	0,00	0,00	0,05	0,00	0,01	0,00	0,01	0,00
S08	0,00	0,00	13,25	-0,52	-7,35	0,33	-1,54	0,06
Average	0,00	0,00	-0,61	0,09	-0,81	0,04	-0,36	0,01

Table 3. Simulation results for DPS variant - EHP profile

	Texture Coding		Depth Coding		Total (Coded PSNR)		Total (Synthesed PSNR)	
	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB
S01	0,00	0,00	0,08	-0,01	0,01	0,00	0,01	0,00
S02	0,00	0,00	0,04	0,00	0,00	0,00	0,00	0,00
S03	0,00	0,00	0,02	0,00	0,00	0,00	0,00	0,00
S04	-0,74	0,03	-17,62	1,09	0,66	-0,02	-1,70	0,06
S05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S08	0,06	0,00	14,64	-0,61	-6,32	0,27	-0,20	0,01
Average	-0,10	0,00	-0,41	0,07	-0,81	0,04	-0,27	0,01

Table 4. Simulation results for DPS variant - HP profile

	Texture Coding		Depth Coding		Total (Coded PSNR)		Total (Synthesed PSNR)	
	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB	dBR, %	dPSNR,dB
S01	0,00	0,00	0,12	-0,01	0,02	0,00	0,02	0,00
S02	0,00	0,00	0,10	0,00	0,01	0,00	0,01	0,00
S03	0,00	0,00	0,08	-0,01	0,01	0,00	0,01	0,00
S04	0,00	0,00	-17,89	1,18	1,63	-0,07	-1,07	0,04
S05	0,00	0,00	0,03	0,00	0,01	0,00	0,01	0,00
S06	0,00	0,00	0,05	0,00	0,01	0,00	0,01	0,00
S08	0,00	0,00	13,25	-0,52	-7,35	0,33	-1,54	0,06
Average	0,00	0,00	-0,61	0,09	-0,81	0,04	-0,36	0,01

3 Conclusion

Cross-check results for Improved Nonlinear Depth Representation have been reported in this contribution. The simulation results are in perfect match with those provided in JCT3V-C0094 [1].

4 Patent rights declaration(s)

Poznań University of Technology may have current or pending patent rights relating to the technology described in this contribution and, conditioned on reciprocity, is prepared to grant licenses under reasonable and non-discriminatory terms as necessary for implementation of the resulting ITU-T Recommendation | ISO/IEC International Standard (per box 2 of the ITU-T/ITU-R/ISO/IEC patent statement and licensing declaration form).

5 References

- [1] I. Lim, H.-C. Wey, D.-S. Park, "3D-CE7.a Improved Nonlinear Depth Representation" Joint Collaborative Team on 3D Video Coding Extension Development of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11 Doc. JTC3V-C0094, 3rd Meeting: Geneva, CH, 17–23 Jan. 2013.
- [2] D. Rusanovskyy, K. Mueller, A. Vetro, "Common Test Conditions of 3DV Core Experiments", Joint Collaborative Team on 3D Video Coding Extension Development of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11 Doc. JTC3V-B1100, 2nd Meeting: Shanghai, CN, 13–19 Oct. 2012
- [3] K. Wegner, "Description of Core Experiment 7 (CE7) on Coded Depth Representation" Joint Collaborative Team on 3D Video Coding Extension Development of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11 Doc. JTC3V-B1107, 2nd Meeting: Shanghai, CN, 13–19 Oct. 2012.