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Title	**3D-AVC-CE3 cross-check of adaptive depth quantization**
Sub group	**Video**
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1 Introduction

This documents presents results attained by Poznan University of Technology in experiments on Adaptive Depth Quantization [1] as a cross-check part of core experiment CE defined in [2].

2 Experiment conditions

The experiment has been performed with respect to Common Test Conditions [3].
Unfortunately, some detailed concerning the view synthesis methodology have not been strictly settled.
Therefore, apart from experimental results we provide anchor results attained with the same synthesis scheme.
In particular:

- the whole experiment was performed on Windows platform,
- default VSRS software (special version for dynamic z_{near}-z_{far} range by Nokia, the same for all sequences)
- default configuration files, same as on your SVN (with exception for 1920x1080 to 1920x1088 change)
    - original sequences (color-corrected version of newspaper, as in coding)
      original full resolution depth maps
    - left reference view ("LeftViewImageName") was always set to the "base view" (center one in C3), and Right reference view ("RightViewImageName") was set to the other view, the nearest one to the currently being synthesized.

Such approach provides slightly better quality, because "LeftViewImageName" is the primary view in VSRS. This scheme has been identified during the last Geneva meeting as the best one by many companies participating in CfP.

The coding were performed with a software package attained from Samsung.

It is worth to notice that flag #define IVMP was set to 1. Due to announcement from Samsung this should have no impact on results, because this tools is anyways disabled in configuration file.

2.1 - Adaptive depth quantization

This tool adjusts quantization of depth depending on the corresponding texture. It has been tested in EHP and HP configurations.
In HP configuration there is no change (the tool is off).
In EHP configuration, the tool provides average gains presented in the following table:

	C2 - 2 view-case	**C3 - 3 view-case**
Texture Coding	-0,02%, +0,00dB	-0,03%, 0,00dB
Depth Coding	+8,97%, -0,46dB	+6,48%, -0,34dB
Total (Coded+Synthesed)	-0,79%, +0,03dB	-0,75%, +0,03dB

The results show that the complexity of encoder is from 10% to 30% more complex than the anchor encoder. Because the higher bound (30%) was achieved only in a single run of encoding script pass, it is likely that this big impact results from current overhead of computing cluster.
The most probable complexity gain of the encoder is thus 10%.
The complexity of the decoder seems to be the same as of anchor decoder.

3 Conclusions and recommendations

Experiments show gain of about 0,75% of bitrate and 0,03dB of PSNR.

4 References

[1] Jaejoon Lee, Byung Tae Oh, Ilsoon Lim, Kwan-Jung Oh, Jin Young Lee, HoCheon Wey, Seungsin Lee, Seok Lee, Du Sik Park, and ChangYeong Kim, “Description of AVC compatible 3D video coding technology by Samsung” , ISO/IEC JTC1/SC29/WG11 document M22632, Geneva, Switzerland, November 2011.

[2] “Description of Core Experiments for 3D-AVC ", ISO/IEC JTC1/SC29/WG11 N12353, December 2011, Geneva, Switzerland.

[3] Heiko Schwarz, Dmytro Rusanovskyy, "Common Test Conditions for HEVC- and AVC-based 3DV", ISO/IEC JTC1/SC29/WG11 MPEG2011/N12352, December 2011, Geneva, Switzerland.