Introduction

This document presents additional results of Exploration Experiments (EE1, EE2) performed on “Alt Moabit” sequence [2] and is in response to w10360 "Description of Exploration Experiments in 3D Video Coding" [1]. In particular, segmentation improvements for DERS, which were omitted [4] due to time limitations, are presented.

2 Experiments conditions

Experiments were performed basing on w10360 [1] guidelines (Figure 1):

- **Select stereo pair** from data set, i.e. an original left view OL and an original right view OR (OL=8, OR=9)
- **Estimate depth** corresponding to neighboring original views NL (left) and NR (right) (NL=7, NR=10), using any available camera
- **Synthesize views** (synthesized left SL and synthesized right SR) at positions of OL and OR from NL+D and NR+D
- Bring synthesized video to the meeting
- **Compare OL-OR with SL-SR** subjectively

The test were performed on ‘Alt Moabit’ [2] sequence with following views selected as OL-OR and NL-NR.
Table 1. The specification of view for EE experiment.

<table>
<thead>
<tr>
<th>Data set</th>
<th>OL-OR</th>
<th>NL-NR</th>
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<tbody>
<tr>
<td>Alt-Moabit</td>
<td>8-9</td>
<td>7-10</td>
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Figure 1. Setup of experiments for depth-estimation/view-synthesis software evaluation.

The depth estimation was performed with various Camera Distance (Figure 2) parameters— from distance 1 to distance 5.

Figure 2. Setup of experiments for depth-estimation/view-synthesis software evaluation.
3 Results – EE1 – Depth Estimation segmentation improvement – method 1 - mean shift algorithm.

Figure 3. Results of segmentation depth estimation improvement – method 1 - mean shift algorithm, DERS 3.0, VSRS 3.0, half-pixel-precision, various options.

Figure 4. Results of segmentation depth estimation improvement – method 1 - mean shift algorithm, DERS 3.0, VSRS 3.0, quarter-pixel-precision, various options.
4 Results – EE1 – Depth Estimation segmentation improvement – method 2 - pyramid segmentation.

Figure 5. Results of segmentation depth estimation improvement – method 2 – pyramid segmentation algorithm, DERS 3.0, VSRS 3.0, half-pixel-precision, various options.

Figure 6. Results of segmentation depth estimation improvement – method 2 – pyramid segmentation algorithm, DERS 3.0, VSRS 3.0, quarter-pixel-precision, various options.
5 Results – EE1 – Depth Estimation segmentation improvement – summary

![Graph](image)

**Figure 7.** Summary of the best synthesis results (for the best camera distance), DERS 3.0 – segmentation improvement, VSRS 3.0, half-pixel-precision, various options.

![Graph](image)

**Figure 8.** Summary of the best synthesis results (for the best camera distance), DERS 3.0 – segmentation improvement, VSRS 3.0, quarter-pixel-precision, various options.
6 Results – EE1 – Depth Estimation segmentation improvement – artifacts with Smoothing Coefficient greater that 1.0
7 Conclusions for segmentation improvement

- use of smoothing coefficient greater than 1.0 introduces artifacts in resultant depth map,
- segmentation algorithms don’t bring any PSNR gain,
- the computation time is about 10x longer than in case of regular depth estimation.

8 References