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Author: Cheon Lee and Yo-Sung Ho

1. Introduction

This document reports experimental results of the depth estimation on 'Newspaper' sequence in response to EE1 of 3D video coding [1]. According to the request for the extended depth frames for 10 seconds of 'Newspaper' sequence, we conducted the depth estimation processes using DERS and manual operations. In fact, we have provided the modified depth data using the partial modification methods; we used the exact depth data presented in Dresden meeting [2]. In this contribution, we describe the procedure of the depth estimation for 'Newspaper' sequence and the rendering results.

2. Procedure of Depth Estimation

2.1. Configurations for Depth Estimation

Until Xian meeting in June 2009, Samsung had performed EE1 on 'Newspaper' and provided good depth data which are almost acceptable as a reference. They used DERS 5.0 with the automatic depth estimation method [3]. The average PSNR value of synthesized views was 32.42 dB. The detailed configurations on depth estimation are described in Table 1.

Table. 1. Parameter set for the automatic depth estimation

Depth Estimation Mode	Precision	Smoothing Coefficient	Temporal Enhancement		Matching Block	Image Segmentation
Automatic	Half-pel	1.0	On	Threshold: 1.5	3x3	Off

2.2. Visible Artifacts and Depth Modification

Although the depth data generated by Samsung showed good rendering results, those still have visual artifacts in some spots as shown in Fig. 1; there exists doubling effects on the wall. In order to improve the maturity of the depth data, we have modified them

with a depth-mapping-table method as shown in Fig. 2. The detailed procedures of the modification are described in the contribution for Dresden meeting [2].



Fig. 1. Visual artifacts on the synthesized image

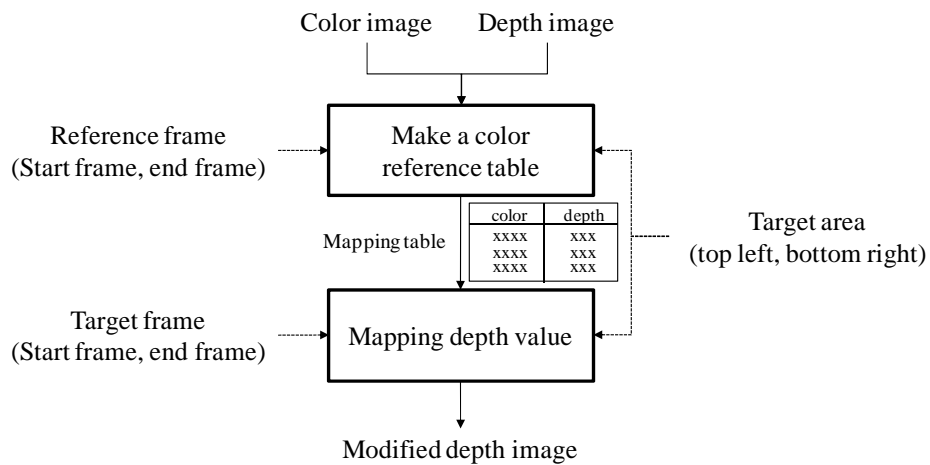


Fig. 2. Depth modification method using the depth-mapping-table

The modified depth data showed clear depth boundaries, and the synthesized images showed better quality as well. Figure 3 shows the modified depth data and the synthesized images.



(a) Previous depth images: view2 (left), view4 (center), view6 (right)



(b) Modified depth images: view2 (left), view4 (center), view6 (right)



(c) Synthesized images using modified depth: view3 (left), view5 (right)

Fig. 3. Comparison of the depth images and synthesized images

Using the resultant data, we conducted EE4 on ‘Newspaper’ sequence for 300 frames (10 sec.). We will bring the modified depth data and the synthesized video in Guangzhou meeting. In addition, we have currently uploaded the resultant depth data on the ftp site.

3. Conclusion

We have modified the depth data of ‘Newspaper’ sequence to remove visual artifacts on the background region. Those data shows better rendering quality, and we used them for EE4. We are ready for 3D viewing.

4. Acknowledgements

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5. References

- [1] ISO/IEC JTC1/SC29/WG11 “Description of Exploration Experiments in 3D Video Coding,” N11477, July 2010.

- [2] ISO/IEC JTC1/SC29/WG11 “Modified Depth Data of ‘Newspaper’ Sequence,” M17490, April 2010.
- [3] ISO/IEC JTC1/SC29/WG11 “3DV EE1 & EE4 Results on Newspaper sequence,” M17028, June 2009.