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**Title** [FTV AHG] View-wise Similarity of Depth Videos  
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## 1. Introduction

This document reports an analysis of view-wise similarity of depth videos of test sequences. The estimated depth videos of test sequences for the draft Call for Evidence (CfE) are used [1]. The main objective is to provide the degree of how depth views are correlated in the test sequences.

## 2. Depth similarity measure

This report measures the similarity between depth views by computing the depth differences between the original depth view and the corresponding warped depth view. The similarity is represented by the average of depth differences as depicted in Figure 1.

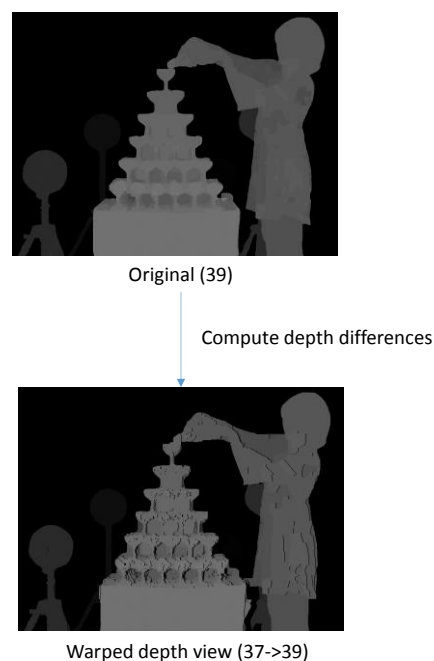


Figure 1. Similarity of depth views (“Champagne Tower”)

By warping the left view to the right view, the sum of depth differences is computed. Similarly, this can be computed by warping the right view to the left view. As a result of 3D warping, occluded areas exist, i.e., depth values are empty. Thus, the differences computed from such regions are not counted. The similarity value is inversely proportional to the sum of depth differences.

$$Similarity = 1 / \frac{\sum |D_{warped ,L}(p) - D_{original ,R}(q)|}{N}$$

$D$  denotes the depth value, while  $p$  and  $q$  are corresponding pixels.  $N$  represents the number of matches disregarding occluded areas. Table 1 show the result similarity values of “Champagne Tower” and “Pantomime” sequences. The depth similarity was highest in “Champagne Tower” test case.

Table 1. View-wise depth similarity values

Test Sequence	Views	Similarity
Champagne Tower	37, 39, 41	37-to-39: 1.02
		39-to-37: 2.31
		39-to-41: 0.45
		41-to-39: 0.40
		37-to-41: 0.34
		41-to-37: 0.35
		<b>Avg.: 0.81</b>
Pantomime	37, 39, 41	37-to-39: 0.21
		39-to-37: 0.21
		39-to-41: 0.15
		41-to-39: 0.15
		37-to-41: 0.16
		41-to-37: 0.16
		<b>Avg.: 0.17</b>
Bee	10, 20, 30	10-to-20: 0.26
		20-to-10: 0.25
		20-to-30: 0.26
		30-to-20: 0.15
		10-to-30: 0.25
		30-to-10: 0.13
		<b>Avg.: 0.22</b>

### 3. Acknowledgment

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### 4. References

[1] Requirements Group, “Draft Call for Evidence on FTV,” ISO/IEC JTC1/SC29/WG11, N15095, Geneva, CH, February 2015.