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| *Title:* | **3DV SEI messages on depth perception** | | |
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# Abstract

In this proposal, 3DV SEI messages are proposed based on 3DV-ATM and 3DV-HTM. The proposal includes the following: 1) a picture/frame level SEI message for baseline distance; 2) a picture/frame level SEI message for zero parallax.

# Proposed SEI messages

A baseline is distance between the left and right camera. By adjusting the baseline distance between cameras, we are able to dynamically increase and decrease the depth perception in a scene. In the 3DV, we can adjust the baseline distance by changing the view point. It will be especially more useful for realistic stereo services. The proposed SEI message for baseline distance will be useful for it. Fig. 1 shows the relation between the baseline distance and object appearance to the screen.

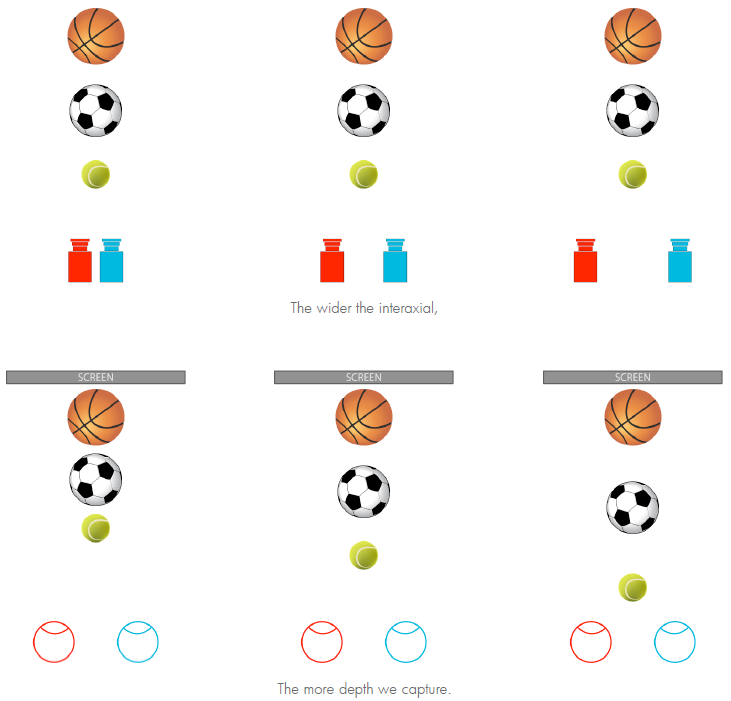


Fig. 1. Relation between the baseline distance and object appearance to the screen.

A zero parallax is a point of convergence for a left and right stereo pair. In current 3DV standard only considers 1D parallel camera arrangement. In that case, zero parallax value indicates the farthest background. Thus, all objects are always seen as located in front of screen. The current 3D displays calculate the proper zero-parallax a given scene for better 3D feeling. However, we can enjoy better 3D contents if we know the best zero-parallax intended by manufactures. The proposed SEI message for zero parallax will be useful for it. Fig. 2 shows the relation between the zero parallax and object appearance to the screen.

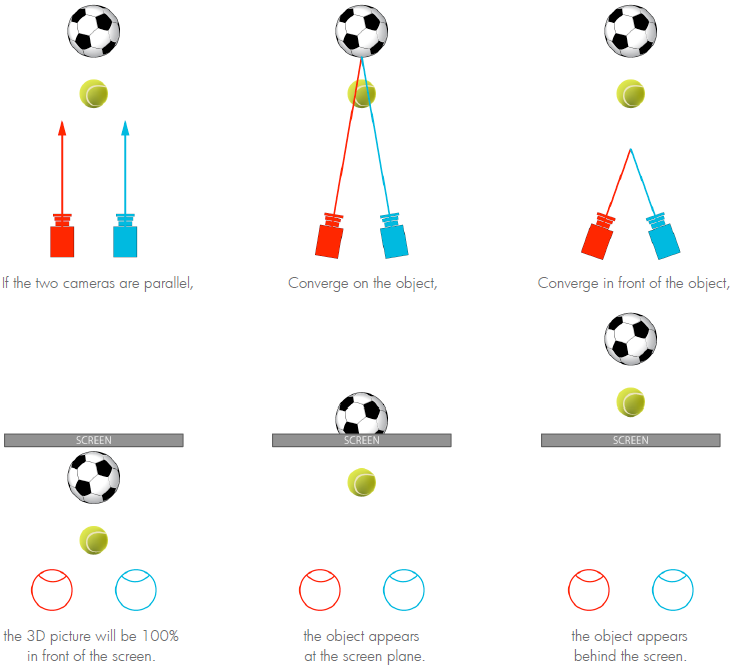


Fig. 2. Relation between the zero parallax and object appearance to the screen.

# Syntax on depth perception

|  |  |  |
| --- | --- | --- |
| 3dv\_depth\_perception\_info( payload) { | C | Descriptor |
| **baseline\_ratio** | 5 | ue(1) |
| **zero\_parallax** | 5 | ue(1) |
| } |  |  |

**baseline\_ratio** specifies the ratio value of 1 IPD baseline. The value of zero\_parallax shall be in the range of 0 to 255, inclusive for 8 bit-level data. The value 0 means that the baseline distance equals to 0 and 255 means that the baseline distance equals to 2 IPD.

**zero\_parallax** specifies the intensity value of zero parallax. The value of zero\_parallax shall be in the range of 0 to 255, inclusive for 8 bit-level data. It can be converted to disparity value using the following equation.

 (1)

 (2)

Focal length, baseline distance, Znear, and Zfar are available. If dzero\_parallax is calculated, then left and right views are shifted by dzero\_parallax /2.

# Conclusion

The picture/frame level SEI messages for baseline distance and zero parallax are proposed. The proposed SEI messages will be useful for content dependent depth perception.

# Patent right declaration(s)

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