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VISUALIZATION METHODS IN VIRTUAL REALITY ENVIRONMENT

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Virtual Reality (VR) is now in fashion, especially in the entertainment and game field, thanks to the development and popularization of head mounted display (HMD), such as Oculus Rift, HTC Vive and Playstation VR. There some attempts [1][2] were made in the literature to utilize VR technology for visualization but the advantage and necessity of VR were very limited. In their approach, they used the same three-dimensional computer graphics (3DCG) object in VR as on the standard two-dimensional (2D) display.

In the present paper, we propose a different approach that 3DCG objects not commonly used in 2D display are intentionally used for enhancing the advantage of VR. VR includes stereoscopy that is not in 2D display and because of this, overlap of objects (technically called hidden surface removal) is important in 2D display but not in VR. Figure 1 shows iso-surfaces of total pressure on a delta wing. In 2D display, many iso-surfaces are not preferred because of the confusion of surfaces that are separable in VR with stereoscopy. In Fig. 2, an experimental 2D video is overlapped with a 3D computed result of flow around an elastic cylinder. The computed result and the 2D video coincide each other. In VR, two data are clearly separated and we can compare them.

More detail of the present idea and examples will be presented at the conference.

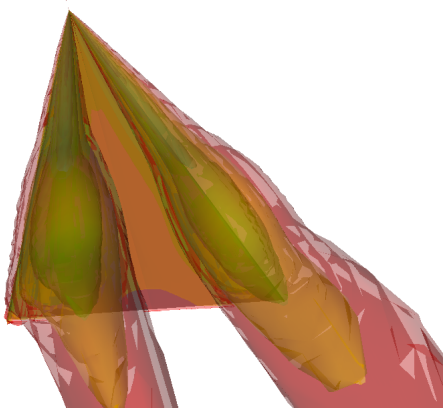

Figure 1. Flow around a delta wing. (four iso-surfaces)

Figure 2. Flow around a cylinder. (computed and experimental results)

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