

Table-top 3-D display using integral imaging technique

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The information's value expects to be maximized if the virtual world in the cyber space can be deployed in front of our eyes in the free-space. Thus, a new type of displaying technology to transform the cyber space inside the 2-D monitor into the real 3-D space has been strongly needed. A table-top, which is an area of the table surface, is a shared space for collaborative work and is useful for varied tasks [1]. For this, a novel table-top 3-D display system is proposed. In the proposed system, users can see and touch the displayed volumetric 3-D images.

Figure 1 shows the overall block diagram of the proposed immersive table-top 3-D display system which largely consists of four steps. First, Intensity and depth images of 3-D scene are captured. Second, depth compensation for table-top 3-D display by using coordinate transform between the pick-up and display is performed. Third, elemental image array (EIA) is generated by using compensated intensity and depth images. Fourth, generated EIA is displayed by using immersive table-top 3-D display system.

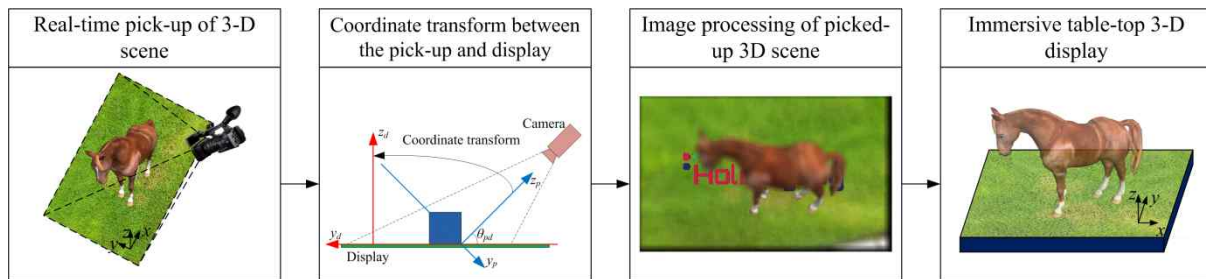


Fig. 1 Overall functional diagram of the proposed table-top 3-D display system

Figure 2 shows a proposed table-top volumetric 3-D display system. In this system, the size and resolution of the display panel are given by 23.8 inch and $3,840 \times 2,160$ pixels, respectively.

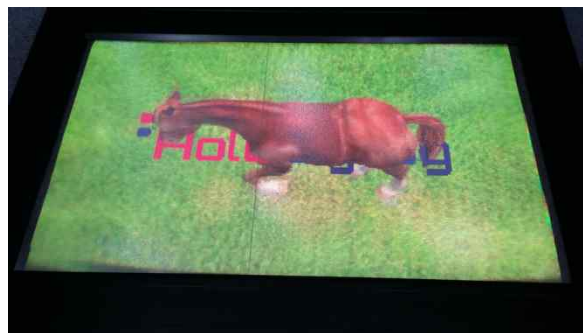


Fig. 2 A prototype of the proposed table-top 3-D display system

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References

1. S. Yoshida, S. Yano, and H. Ando, *SID'10 Technical Digest*, vol. 41, p. 211 (2010).