

Multi-user three-dimensional display with 120Hz liquid crystal panels

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Currently, three-dimensional(3D) display receives large attention and lots of techniques have been applied[1]. Among them, parallax barrier and lenticular lens are considered as practical methods since these can be realized using devices popularly developed for flat panel displays. These are multiview displays to provide several views dependent on the position of the observer. However, even these displays also have two critical problems that multiview displays have. One is the narrow field of view and the other is the large amount of data in comparison of 2D contents. In the multiview display, angular resolution is important to provide binocular disparity[2,3]. Then in order to increase the field of view, lots of views are needed.

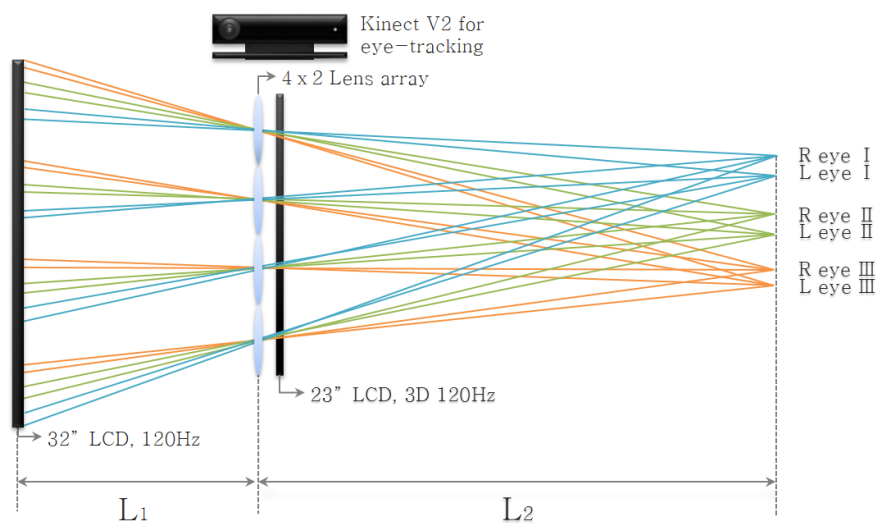


Fig. 1. A top view of multi-user 3D display with 120Hz LC panels and Kinect for eye-tracking.

We devised a novel 3D display for multiple users by solving the typical problems of multiview display. Our system is composed of two 120Hz liquid crystal(LC) panels, 2 by 4 lens array, and an eye-tracking unit. The LC panel at the back side is used as the light-source array as shown in Fig. 1. The directions of rays are defined by lens array and they are assigned to desirable positions according to a characteristic mapping function. The LC panel at the front side displays the image for right eyes and the image for left eyes alternatively. Kinect V2 is used for measuring the every positions of the eyes of the users.

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References

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