

Development of a High Immersive Tele-directing system Using CyberDome

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Abstract: In this study, we have constructed a prototype tele-directing system for remote cooperative work, in order for an instructor to give intuitive directions to workers at a remote site. In this system, an instructor can direct remote workers by simply pointing at the live video image of a remote site with a laser pointer in his/her hand, which is projected on a hemispherical dome screen to give a sense of immersion of the instructor. As the result, ease of use caused by the intuitiveness of directing with the system was confirmed.

Keywords: Tele-direction, Wide Field of View, Immersive Projection Display

1 Introduction

In a tele-directing system for remote cooperative work, it is important that workers at a remote site can intuitively grasp the intention of a director at the other end, while the director can intuitively give directions to the workers. For such a system, indications of directions directly shown on the targets will be useful. Moreover, in order for the instructor to give intuitive directions, it is necessary to let him/her feel as if he/she were colocated with workers at remote site.

2 Overview of the System

We have implemented a prototype of tele-directing system (Figure 1), in which an instructor can direct remote workers by simply pointing at the live video image of a remote site with a laser pointer in his/her hand. The live video image is projected on a hemispherical dome screen, Cyberdome (Shibano, 2001) that gives a sense of immersion to the instructor. The system detects where on the screen is pointed by the instructor, and then calculates where to point in the remote scene. Based on this calculation, instructor's directions are projected on a target by using a remotely controlled LCD projector located at the remote site.

3 Result

Preliminary evaluation of the system is conducted. Although the directable range is relatively small due to the narrow field of view of the LCD projector, ease of use caused by the intuitiveness of directing with the system was confirmed by subjective evaluation.

As future work, we will expand the system to make the directable range wide, and to improve processing speed, and so on.

Reference

Shibano, N., Kashiwagi, M., Sawada, K. & Takemura, H. (2001), Development of Immersive Visual Display with Compact Size Hemi-Spherical Screen, The Virtual Reality Society of Japan.

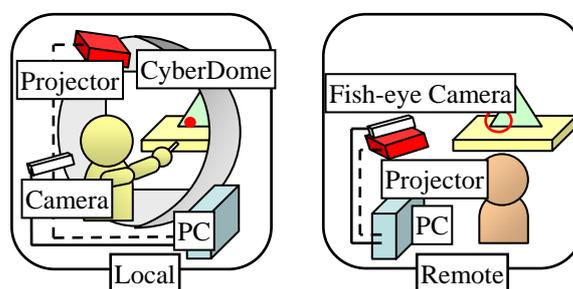


Figure 1: a High Immersive Tele-directing System