Augmented Viewport: An action at a distance technique for outdoor augmented reality using wearable computers

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1 Introduction

This demonstration shows the usage of the augmented viewport technique [1] for interaction with virtual objects at remote locations in the augmented environment. The augmented viewport is an action at a distance technique for outdoor augmented reality using remote or zoom lens camera. The viewport appears as a virtual window displaying the view of the augmented world from a remote location. The contents of the viewport is supplied by a physical camera, which is either a remote or a zoom lens camera.

2 Demonstration

The hardware platform for the demonstration is the Tinmith [2] augmented reality wearable computer system. The system is in a form of a belt-mounted computer, implementing video see-through head mounted display (HMD) helmet. The physical camera used for the demonstration is a zoom lens camera mounted on a tripod. The camera is located near the user, connected to the backpack computer through a USB cable. The camera is aimed at a remote location and the video stream is displayed on a viewport window through the user's HMD.

Figure 1: The setup of the augmented viewport technique with a zoom lens camera mounted on a tripod next to the user

The demonstration is conducted indoors. The remote location is a corner across the demonstration room. The video stream is displayed to the demonstrator through a virtual viewport window located at 5m away and attached to their head's orientation. The location of the viewport could also be changed to be fixed in the augmented world, or attached to a certain direction relative to the demonstrator's location. Through the viewport the user can perform manipulations of virtual objects at the remote location located across the demonstration room . The supported manipulation operations are translation and scale, using the onscreen cursor.

The demonstration is part of a current work in progress of the augmented viewport using remote camera for action at a distance. Currently only the usage of a zoom lens camera is supported. Future work is intended to implement usage of other types of cameras, including remotely located cameras, controllable remote cameras, mobile phones cameras, and head-mounted cameras from other wearable computer users.

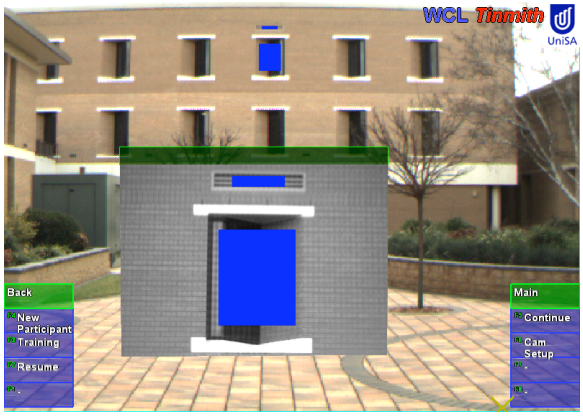

Figure 2: The augmented viewport in a form of the virtual window. This viewport shows the view through a zoom lens camera

The demonstration shows the future directions of the augmented viewport technique for action at a distance for augmented reality wearable computer systems. The demonstration provides the conference attendees an opportunity to experience and interact with the remote parts of the augmented world through the augmented viewport window.

References

[1] T. N. Hoang and B. H. Thomas. Augmented viewport: An action at a distance technique for outdoor ar using distant and zoom lens cameras. In *Proceedings of ISWC 2010*, pages 117–120, 2010.

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