# Investigating the Use of Telepresence Methods for Puppetry and Conferencing

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Telepresence technologies have been researched in several contexts such as remote communication, remote collaboration, and teleconference. We implemented an immersive telepresence system that transmits a human user's body and facial movements into a puppet-robot with audiovisual feedback to the user. The cameras carried in place of robot's eyes stream live video to the HMD worn by the user, so that users can see the images from the robot's eyes with their own eyes and have a visual understanding of the puppet's ambience. We investigated the use of the telepresence system in two specific fields: puppetry and remote conferencing. In conventional methods for puppetry (a hand-puppet, a string-puppet, and a rod-puppet), there is a need to practice manipulating puppets, and there is difficulty carrying out interactions with the audience. Moreover, puppeteers must be positioned exactly where the puppet is. On the other hand, in conferences, face-to-face meeting still has advantages over previous conferencing systems in many aspects. Previous research in telepresence systems have been proposed to aim to offer solutions to some of these limitations of videoconferencing. We use a telepresence robot to enhance the presence of a remote person for conferencing. We conducted several user studies with several participants in these two situations. In performance of puppetry, the results show that, unlike the conventional method, the proposed system facilitates the manipulation of puppets especially for beginners. Moreover, this system allows performers to enjoy puppetry and fascinate audiences. The results also suggested that the telepresence system enhance the co-presence of a remote participant and enables participants to enjoy attending a conference.

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