Islamic Art University Tabriz
Postgraduate's Thesis Information & Abstract

Thesis Title: Analysis of Body Gesture as a Nonverbal Communication in Metaverse

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Abstract:

Communication refers to the utilization of human interactions for the purpose of conveying thoughts, ideas, and emotions. With the recent surge of COVID-19, computer-mediated communication has seen a significant rise, as people have resorted to digital platforms to maintain their social connections and meet their social needs. Despite the privacy concerns associated with video conferences, virtual meetings have not yet been widely adopted. These virtual interactions often suffer from poor communication quality, with less attention given to conveying essential nonverbal communication and body language, such as posture and gestures. Moreover, participating in these meetings often necessitates costly equipment like virtual reality glasses and specialized sensors. The forthcoming research aims to address these limitations by exploring the development of virtual reality environments that enables the transmission and reception of hand gestures (as a subset of nonverbal communication) through normal webcams. Furthermore, it investigates the contribution of hand gestures in enhancing communication quality and users' understanding of hand gestures within the virtual reality environment.

After reviewing the findings and methods of previous studies, a virtual reality environment capable of transmitting and receiving hand gestures through a webcam was implemented. A total of 33 students from Tabriz Islamic Art University participated as subjects in the research, engaging in two designed experiments conducted in a within-subject design. In the experiment tasks, the researcher and a participant interacted once with hand gestures present and once without hand gestures. At the end of each experiment, data were collected using system logs and multiple questionnaires.

Findings: The results of significance levels and the analysis of research findings indicate that in the metaverse environment, users are well able to recognize each other's hand gestures, and transferring hand gestures increases the sense of social presence and social richness.

Keywords: Metaverse, Communication, body language, virtual meetings, Avatar, Computer Vision, body gesture, nonverbal communication, Social VR