Does Vibrotactile Intercommunication Increase Collaboration?

Victor Adriel de J. Oliveira[1], Wilson J. Sarmiento[2][3], Anderson Maciel[1], Luciana Nedel[1] and Cézar A. Collazos[2]

[1]Universidade Federal do Rio Grande do Sul - UFRGS

[2]Universidad del Cauca - Unicauca & [3]Universidad Militar Nueva Granada - UMNG
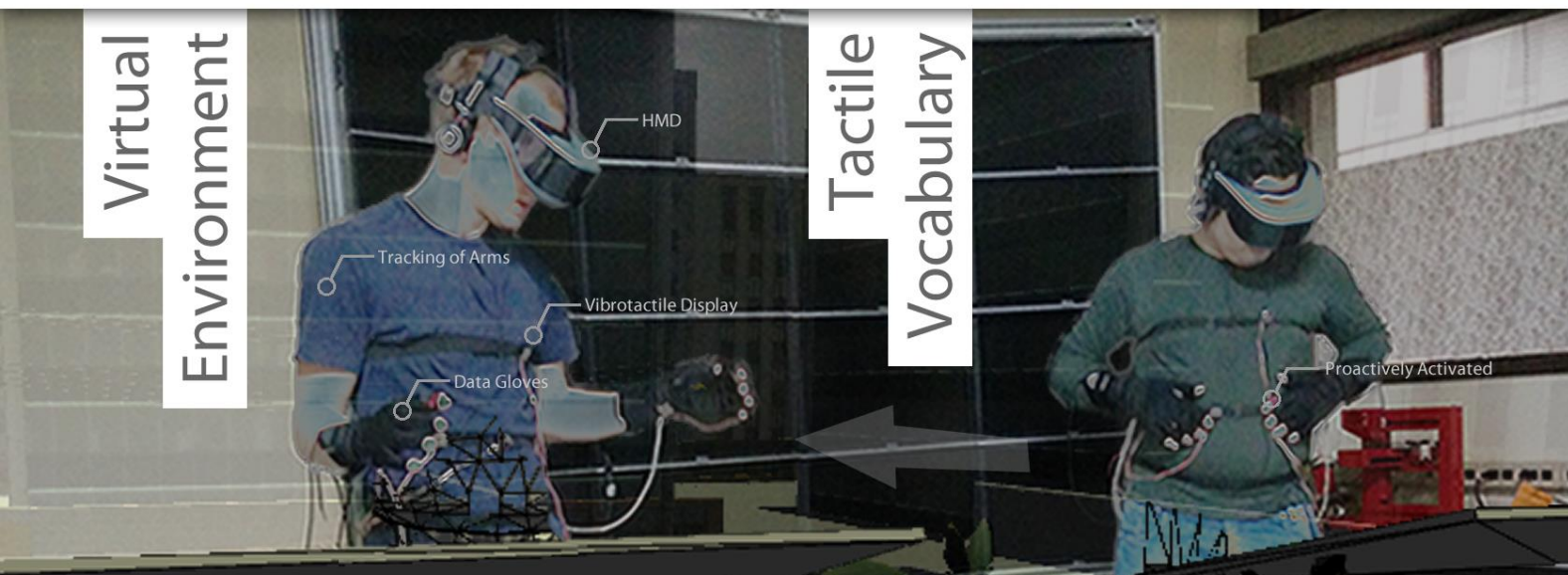
Context

Communication is a fundamental process in collaborative work. In natural conditions, communication between team members is multimodal. This allows for redundancy, adaptation to different contexts, and different levels of focus. In collaborative virtual environments, however, hardware limitations and lack of appropriate interaction metaphors reduce the amount of collaboration.

Objective

We propose the design and use of a vibrotactile language to improve user intercommunication in CVE and, consequently, to increase the amount of effective collaboration.

Questions

- Would the vibrotactile stimulation be spontaneously adopted by users in a collaborative task?
- How much that kind of interaction affects collaboration between the members of a team?
- Would the tactile interaction be affected by the workload of the collaborative task?
- Those who use equitably or predominantly the vibrotactile communication would perform better the collaborative task?
- Would the users proactively invent new tactile patterns or new meanings for given tactile signals?

Virtual Environment

HMD

Tracking of Arms

Vibrotactile Display

Data Gloves

Tactile Vocabulary
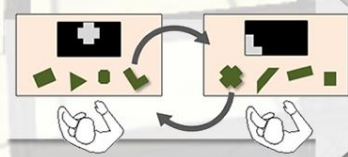
Proactively Activated

Collaborative Assemble of a Puzzle

We propose such task as a generic collaborative application designed to accomplish three basic characteristics: equal participation, individual responsibility and positive interdependence.

Position   Positive Sign   Warning   Wrong Piece

- Simple tactile signals are activated by sensors positioned in different body sites
- The possibility of generating the signals stimulating the area on your body that you want to stimulate on the other gives to the design of the vocabulary an intuitive way to express the tactile cues

VR2015

GRAPHICS VISUALIZATION INTERACTION LAB
.inf UFRGS