Comado: Communication System for Ambient Connection between Distance Locations

Fuko Yamamura, Taku Tanichi, Yun Suen Pai, Kouta Minamizawa

Abstract— **Current video call systems can facilitate formal conversation, yet they lack the ability to provide users with an informal sense of presence. To this end, we propose Comado, a communication system that creates an ambient connection using online interactive haptic sharing. Outside of face-to-face communication, Comado provides haptic feedback to the desk to convey a sense of presence. From preliminary results, we plan to further improve the design of Comado to be deployed in the wild.**

I. INTRODUCTION

The COVID-19 pandemic has created a society that is lacking physical contact and interaction. This has led to a surge in popularity for online communication tools. There are two types of communication; formal communication, which is based on pre-planned topics, and informal communication, which is spontaneous, interactive and rich [1]. In the case of close family members and partners, it is important to have ambiguous conversations and to naturally convey the actions of the others while feeling the atmosphere and comfort of being in the same physical space. This is an example of informal communication which is severely lacking in today's remote communication tools.

We propose Comado, a device that aim to those two points: 1) To develop a system for informal communication and 2) to explore its effects on co-presence between remote users. To achive those, Comado has been added a blur effect outside of converstation, as well as a transmission of haptic feedback to the desk of the remote participant. This facilitates both forms of communication to preserve the sense of co-presence [2].

II. DESIGN AND IMPLEMENTATION

Comado is designed to be used in pairs as shown in Fig1. In addition to being able to do video chats with conventional video and audio output, we used Lens Studio[1] to detect the facial region. When the user distances themselves or looks away, a blur effect is applied. This is to preserve a certain degree of privacy and to avoid creating a sense of pressure and tension. Additionally,

Fig. 1.   Comado

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[1] https://lensstudio.snapchat.com/

In order to feel the user's presence as they go about their daily activities subtly and spontaneously each other, comes with vibrotactile actuators attached at the bottom that when vibrates, creates an echo around the desk. A low-frequency microphone detects vibration input from the table and delivers them to the other user.

III. PRELIMINARY EXPERIMENT AND RESULTS

We recruited a total of eight participants (females=3; mele=8) aged from 23 to 27 (average age=24.5, SD=1.19) for our within-subject experiment. They were grouped to pairs according to their rating of intimacy with their partner. They were then seated in different rooms. Each pair then experienced session A (Comado) and session B (conventional Zoom) for 30 minutes each in a counterbalanced order. At the end of each session, the subjects were asked to answer the questionnaire and a brief oral interview. This questionnaire is based on the study by Biocca [3]. For the question of "I continued with my other tasks as usual during the interaction", "I felt like I was in the same room as my partner." and "I suddenly started to talk without any context." , "Agree" responses were higher in Session B than in Session A. On the other hand, the question "I was easily distracted from my partner when other things were going on." was answered more "disagree" in Session B. Some participants also mentioned "I felt blocked by the blur effect" in the oral interview.

IV. CONCLUSION AND FUTURE WORKS

We propose Comado, a system to facilitate formal and informal communication for remote users. Based on the preliminary results, we plan to conduct an in-the-wild study and observe its usage in a proper living environment.

V. ACKNOWLEDGEMENT

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