Preliminary Study on Haptic Footstep Sharing System for Remote Museum Viewing

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Abstract. We design a remote museum viewing system that aims to provide the sharing of the sensation of stepping for a remote person operating an avatar robot. As a result, several issues were found, such as the need to match the timing of the footsteps with the video images. It was also found that there is a need to re-design the tour experience itself.

Keywords: Sharing Experience, Vibrotactile, Remote Communication, Footstep

1 Introduction

It is becoming more expensive for families who live far away to meet each other because of lifestyle changes and the impact of Covid-19. And it is especially difficult for elderly people living in nursing homes to meet with young family members.
Systems and services are emerging that allow people to travel to remote locations without having to move [1-2]. However, there are still challenges in sharing physical sensations such as the sensation of walking together. Therefore, this study is to design a remote museum viewing system that aims to provide the sharing of the sensation of stepping for a remote person operating an avatar robot.

2 System Design

Figure 1 shows the system configuration. First, a microphone was placed on the sole of the shoes to sense the footsteps of the person who walks with the avatar robot "Ori-Hime" together. The acquired footstep sensory data is amplified by a pre-amplifier. The audio data is then transmitted to a PC using a Bluetooth transmitter. The sensation of the footsteps is transmitted to a remote person using a video communication system. The sensory presentation was made using a haptic cushion [3].

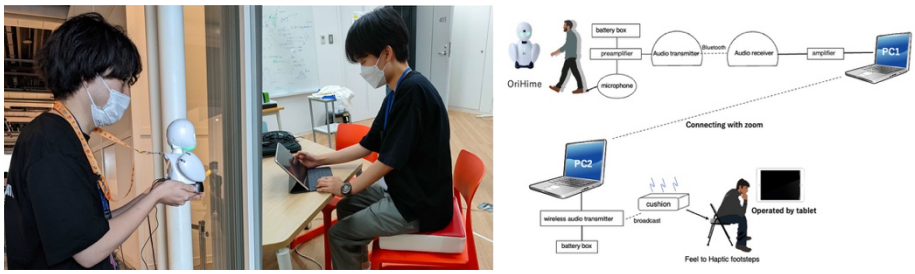

Fig. 1. System Design

3 Conclusion

We studied a remote museum viewing system that aims to provide the sharing of the sensation of stepping to a remote person operating an avatar robot. As a result, several issues were found, such as the need to match the timing of the footsteps with the video images. It was also found that there is a need to redesign the tour experience itself. In the future, we aim to use Wi-Fi to enable the system to communicate with multiple people and other sensations in addition to just footsteps.

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