

A(touch)ment: a smartphone extension for instantly sharing visual and tactile experience.

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Figure 1. Recorded image thumbnails and tactile wave table



Figure 2. An iPhone with the a(touch)ment haptic device in use. Right: Examples of experiences that may be captured and shared by recording video with accompanying tactile sensation using a(touch)ment.

ABSTRACT

Using social networks, users are able to share visual, audial and audio-visual information by making use of their smartphone's built-in camera and microphone. However, up until now, the sharing of corresponding haptic experiences has not been possible. Here we present a haptic-information recording and displaying attachment for smartphone, or 'a(touch)ment', that allows the user to instantly record, as shown in fig.1, and share haptic experiences, for example, in situations illustrated in fig. 2.

Author Keywords

Haptic interface; haptic experience; haptic communication; TECHTILE;

ACM Classification Keywords

H.5.2: User Interfaces: Haptic I/O, Theory and methods,

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Interaction styles.

INTRODUCTION

The ability to record and share our experience via photographs and video instantly over social networks has become commonplace and easy. For example, a user on holiday can instantly share their holiday photos and experiences at the touch of a button. The instant nature and ease of sharing has proven to be an important feature of such technologies, however up until now, what is able to be shared has been limited to audio and video content.

However, it has been found that our subjective experience is greatly influenced by the active-haptic exploration of our environment [1]. Therefore, including the ability to record and share those haptic experiences via social network platforms may change and enrich our interactions on such services.

With this in mind, our group has developed TECHTILE toolkit [2]. The device uses a microphone to record vibro-tactile wave data. The data can be stored and shared in any standard audio format, and can therefore be shared using conventional social media platforms such as YouTube. In a previous project, TouchCast, in which a pen-shaped device was used to record and playback 2D images of tactile texture

information, we identified that the body of tactile information shared and available through online platforms would increase [4]. Therefore, we made the device convenient for instant recording and sharing, by creating a mobile attachment-type device. The experience can then be uploaded to services such as Youtube in addition to visual data, and shared with others.

EXPERIENCE DESIGN

In our life experience, should we find a nice haptic experience that we would like to remember or share, then users of our device can conveniently use their mobile phone with a(touch)ment to record such haptic experiences along with visual information. New possibilities of shared experience become possible through the recording and sharing of haptic information. Although our friends, for example, were not in the same place with us at the time, they can experience the feeling of touch.

IMPLEMENTATION

A(touch)ment is a smartphone extension for sharing visual and tactile experience. As shown in Fig.3, the device consists of a DCDC converter (LM2735), an audio amplifier (AMP15W-8006), a tactile microphone (PRIMO MX-M4758) that is able to capture frequencies as low as approximately 10Hz, a voltage divider and a haptic actuator (Tactile Lab Haptuator Mark-II).

To record a visual and tactile experience using a(touch)ment, the user attaches an audio jack into a smartphone's audio terminal. The user can then record a visual and tactile experience by simultaneously capturing the haptic data while using the phone as normal to record video. The headphone terminal is used both for microphone recording and earphone sound playback. Therefore, in order to re-experience the haptic recording, the user can keep the device in the same configuration as for recording. The haptic actuator in the back of the a(touch)ment device responds to the haptic-vibration data from the headphone terminal. The configuration is shown in

fig. 4 and 5, the haptic information corresponding to the video can be experienced.



Figure 3: Appearance of a(touch)ment

CONCLUSION

We presented a(touch)ment; a smartphone extension that allows the instant sharing of visual and tactile experience. The device enhances the experience of content shared on social media platforms by enabling the recording and sharing of tactile and visual information. For example, a user can record the haptic data at the same time as recording a video of scratching a rough surface. We intend to develop a sharing and search platform, in which users can upload and find similar recorded haptic experiences.

ACKNOWLEDGEMENT

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Figure 4: A recorded visual and tactile experience: an electric fan cover

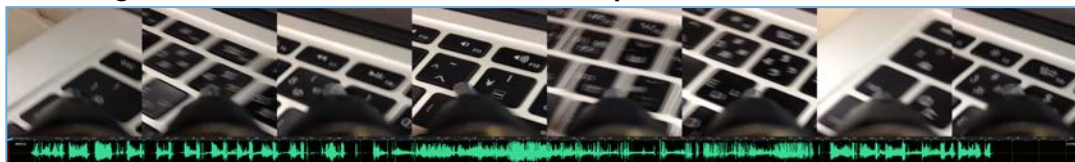


Figure 5: A recorded visual and tactile experience: a keyboard