Demo: Hand-to-Hand Communication Using Smartphones

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ABSTRACT

We study an instant messaging system between two smartphones, without the need of visually following the screen of the smartphones. In the sending side, a Morse-code-type touchscreen input is used to encode the message and a vibration in the receiver side to perceive the message.

Categories and Subject Descriptors

H.4 [**Information Systems Application**]: Miscellaneous

General Terms

Design, Experimentation

Keywords

hand-to-hand communication; messaging with vibration; Bluetooth

1. INTRODUCTION

We propose an instant messaging system for smartphones called Hand-to-Hand-on-Bluetooth Communication (H2BCom), which relies on haptic interface as a tool for exchanging information. Among many issues in the design, the largest decision we have made is encoding of messages. Since we aim at sending any kind of message, we have chosen to use the Morse code, created by the touching behavior of a finger on a smartphone touchscreen and perceived by vibration at the receiver.

The related work includes ComTouch, trying to to enrich the inter-personal communication by complementing voice with a tactile channel [1]. The remote voice communication is

augmented by converting touching hand pressure into vibrational intensity between users in real-time. Pressages [2] is a mobile haptic communication system that aims to augment phone calls in which a user squeezes the side of the device and the pressure level is mapped to vibrations on the recipient's device. Vinteraction [3] leverages a combination of vibrator and accelerometer to send information from a smart device to another. Our work differs from the above in that any kind of message can be transferred.

2. Design of H2BCom

The messages are encoded into Morse-type codes. The symbols of 'dot' and 'dash' are decided corresponding on the length of touching the screen, as a 'short' on 'long'. Unlike normal Morse code, the boundaries between words are separated by the action of fling. Both smartphones can take turns as a sender by using abbreviation "AR" as indication of willingness to stop messaging, thus a half-duplex bidirectional communication is achieved. The receiver recognizes the message by the vibration of the above gestures. As the receiver may not keep up with the vibration rate, the user can either store the message into the phone memory to be played out later, or it can be played out immediately with his personal preferred vibration rate.

3. Demonstrations and Video Clip

In our demonstration, the participants can use the provided Android smartphones to send and receive messages by this method. Additionally, a video of application use can be found from http://rcl-aoyama.jp/mobisys14-demo.mp4.

4. REFERENCES

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