Damonstration of Shaping Compliance: Haptic Illusion of Compliance using Electrotactile Grains

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Abstract. Our demo showcases a compliance illusion using electrotactile stimuli, simulating varying levels and *shapes* of compliance on a finger-worn interface with 9 stimulation points [1]. During the demo, participants will go through a calibration phase. Then, they will be able to experience changes in compliance at different regions of the fingertip despite pushing into the same surface. Further, participants will also experience the change in the strength of compliance based on the number of electrotactile pulses. Finally, we will bring mock illustrations of physical objects to experience the changes in compliance during exploration. The demo will take two to five minutes per participant. Participants will get hands-on experience of virtual compliance elicited using electrotactile stimulation and an understanding of how different parameters change the perceived compliance strength and distribution.

Keywords: Electrotactile stimulation · wearable interface · compliance illusion.

Fig. 1. A mockup of the demo with the organizer and the participant sitting next to each other (left) with the interface (right).

1 Hands-on demonstration setup

The entire setup with an organizer and a participant trying out the demo is shown Figure 1. The demo showcases a grain-based electrotactile compliance illusion that makes a rigid surface feel more compliant when pressed. Using a thin and flexible finger-worn interface, comprising a 3×3 electrode array and a force-sensitive resistor Figure 2-(a), the system renders compliance by generating a set of short pulses (= electrotactile grain) in response to finger force changes Figure 2-(b). The overall system followed the implementation of [1] except adopting Electro-Tactile Display Kit [2] as a control circuit. A short video presentation of the system can be found at the following link: `https://kingsx.cs.uni-saarland.de/index.php/s/ibbBArZFNjHnq75`.

1.1 Technical requirements

- A table, with 2 chairs, for the visitor and the organizer
- 2 power outlets
- Space for poster

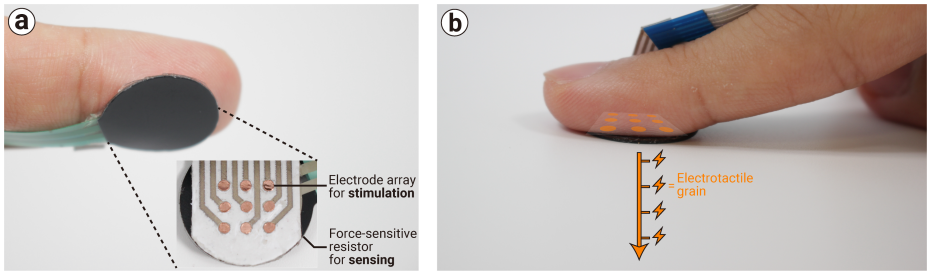

Fig. 2. (a) The finger worn interface to sense the pressure and provide electrotactile pulses. (b) Visualization of electrotactile pulses when a user is pushing into a table.

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References

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