News from the Field

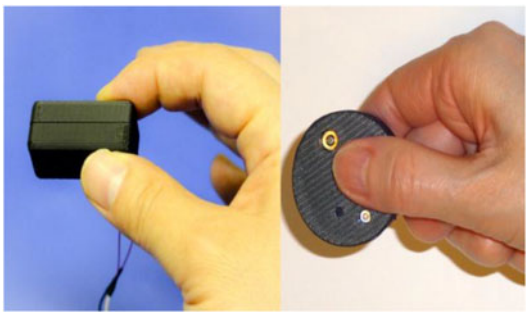
Lynette Jones

In this issue's "News from the Field" we present the three finalists for the "Best Demo" award at the Eurohaptics conference held in Versailles, France, in June 2014. There were 30 demos displayed at the conference and these three demos were selected as finalists by the Awards Committee. The winner of the "Best Demo" award was "Distinct pseudo-attraction force sensation by a thumb-sized vibrator that oscillates asymmetrically" by Tomohiro Amemiya and Hiroaki Gomi.

Lynette Jones
Editor-in-Chief

Distinct Pseudo-Attraction Force Sensation by a Thumb-Sized Vibrator that Oscillates Asymmetrically
Tomohiro Amemiya and Hiroaki Gomi

The authors are with NTT Communication Science Laboratories, Kanagawa, Japan.



We present a thumb-sized force display for experiencing a kinesthetic illusory sensation of being continuously pushed or pulled. We previously succeeded in creating a sensation of being pulled with a bulky prototype based on a crank-slider mechanism, but recently we did so with a thumb-sized actuator that oscillates asymmetrically in a frequency range which non-Pacinian channels are sensitive to. As almost all participants at the Eurohaptics conference who experienced the force display agreed, the directed force sensation is perceived strongly and clearly with this tiny and light force display. We also showed two applications in the hands-on demo. In a fishing game, participants felt a nibbling sensation on the hook and a sensation of being pulled with no fishing lines. In a dog walking application, a virtual dog pulled on the leash with various intensities and in various directions depending on the spatial relationship between the virtual hand and dog, both of which were movable on the screen.

Diminished Haptics: Towards Digital Transformation of Real World Textures
Yoichi Ochiai, Takayuki Hoshi, Jun Rekimoto, and Masaya Takasaki

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In this study, we develop and implement a method for transforming real-world textures. By applying a squeeze film effect to real-world textures, we make haptic textures reduced. This method could transform real-world textures, e.g., from paper-like to metal-like, from wood-like to paper-like, and so on. The textures provided by this system are inherently high resolution because real-world textures are used instead of synthesized data. Because the ultrasonic transducer is directly touched, frequency tracking is needed to maintain the squeeze film effect. We implemented a system using a 28-kHz transducer and showed the frequency tracking system in the demo.

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Haptic Music Player

Alfonso Balandra, Hironori Mitake and Shoichi Hasegawa
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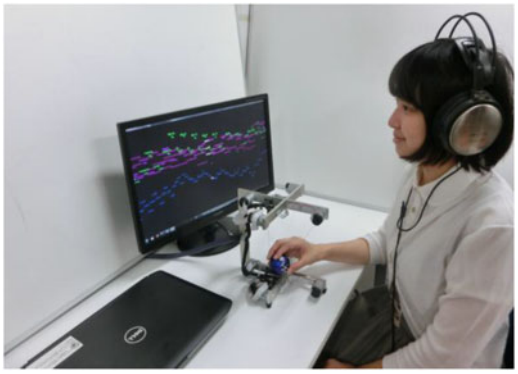

This project aims to translate the basic structure of music into a representative haptic vibration, in order to help the user focus and have an active listening experience. In addition, we want to aid people who have little experience with music to understand the basic structure of music in a simple and natural way. In order to achieve this, the note's pitch, timing, and duration are translated into a coherent haptic vibration, by using a linear relation between the note's properties and the frequency and damping of a damped-sine function.

The complete virtual environment consists of three synchronized modules: a MIDI player, a simple music structure animation and the haptic vibration. Therefore, users can feel haptic vibration at the same time they hear the music and see the animation. This combination of music, animation, and vibration helps the user in understanding the general music structure and the role of a specific instrument in the complete song.