

Accepted Manuscript

Special Issue: Multisensory Human-Computer Interaction

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PII: S1071-5819(17)30087-3
DOI: [10.1016/j.ijhcs.2017.06.002](https://doi.org/10.1016/j.ijhcs.2017.06.002)
Reference: YIJHC 2130

To appear in: *International Journal of Human-Computer Studies*



Please cite this article as: Marianna Obrist , Nimesha Ranasinghe , Charles Spence , Special Issue: Multisensory Human-Computer Interaction, *International Journal of Human-Computer Studies* (2017), doi: [10.1016/j.ijhcs.2017.06.002](https://doi.org/10.1016/j.ijhcs.2017.06.002)

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PREFACE

Special Issue: Multisensory Human-Computer Interaction

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Every day, in their real-world interactions, people utilize their senses (all of them) and various facial and bodily expressions. For example, even a simple experience such as having a coffee with a friend involve multiple sensory information and input/output (I/O) channels such as smell, taste, vision, haptics, and sound. Thus, information from these very different sensory channels is combined in order to create compelling experiences and memories.

However, currently, our interactions with technology are dominated by visual, auditory, and, to a lesser extent, tactile interfaces. The chemical senses (i.e., smell, taste, and the trigeminal sense) are still mostly neglected, often treated as ‘lower’, or somehow more primitive, senses with seemingly little to add to the field of human-computer interaction. However, given the immediacy of touch and the ubiquity of taste and smell, not to mention their importance to health, safety, work, leisure, pleasure, and a person’s sense of emotional well-being, future multisensory experiences with interactive technologies could potentially have a major impact on society and consumer markets, creating entirely new product, technology, and service opportunities. More importantly, multisensory experience research promises to deliver a step-change in our understanding of the human senses as interaction modalities and potentially also revolutionize existing interaction paradigms within the field of Human-Computer Interaction (HCI).

This special issue is dedicated to research that goes beyond audio-visual interfaces, focusing instead on touch, smell, and taste for multisensory HCI (inspired by a workshop on Multisensory HCI organised at ACM CHI’16, see Obrist et al., 2016b). We set our original focus in understanding what tactile, gustatory, and olfactory experiences we can design for, and how we can meaningfully stimulate such experiences when interacting with technology. Apart from designing HCI applications and understanding digital multisensory experiences in consumer applications, we also highlight the importance of understanding the limitations that come into play when users need to use, or engage, more than one sense at a time.

Editorial overview for this special issue

In this issue, we present four articles that will hopefully help to promote thinking beyond mainstream HCI. Below, we provide an overview of the content of the special issue and relevant opportunities for multisensory HCI that have been interwoven with expert statements from both academia and industry.

In their article entitled, “**Haptic Experience Design: What Hapticians Do**”, Oliver Schneider, Karon MacLean, Colin Swindells, and Kellogg Booth describe the evolution from simple vibrotactile stimulation using haptic technology through to a more complex ecosystem of multisensory and multimodal systems, defining the design space for haptic experience. They present insights from interviews with professional haptic designers and experts, allowing them to identify key challenges, but also design opportunities around the underutilized sense of touch (see Gallace & Spence, 2014, for a review).

Meanwhile, Franceli Cibrian, Oscar Pena, Deysi Ortega, and Monica Tentori present some of their recent work on “**BendableSound: Designing an Elastic Surface to Support Neurologic Music Therapy sessions of Children with Severe Autism**”. In their article, the

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