3rd International Workshop on Multisensory Approaches to Human-Food Interaction

Anton Nijholt
Human Media Interaction
University of Twente
Enschede, The Netherlands
a.nijholt@utwente.nl

Carlos Velasco
BI Norwegian Business School
Oslo, Norway
carlos.velasco@bi.no

Marianna Obrist
SCHI Lab
University of Sussex
Brighton, UK
M.Obrist@sussec.ac.uk

Katsunori Okajima
Yokohama National University
Yokohama, Japan
okajima@ynu.ac.jp

Charles Spence
Dept. of Experimental Psychology
University of Oxford, Oxford, UK
Charles.spence@psy.ox.ac.uk

ABSTRACT

This is the introduction paper to the third version of the workshop on 'Multisensory Approaches to Human-Food Interaction' organized at the 20th ACM International Conference on Multimodal Interaction in Boulder, Colorado, on October 16th, 2018. This workshop is a space where the fast growing research on Multisensory Human-Food Interaction is presented. Here we summarize the workshop's key objectives and contributions.

CCS Concepts

• **Human-centered computing** • *Human-centered computing~User interface design* • Human-centered computing~User models

KEYWORDS

Food; Flavor; Food interaction design; Multisensory experiences: Taste-based technology; Gustatory interfaces; Storytelling; Games; Social media; Spoken dialog systems; Art.

1 Introduction

After successfully organizing the development of the 1st and 2nd ICMI workshops on "Multisensory Approaches to Human-Food Interaction" in Tokyo (2016) and Glasgow (2017), we now present the 3rd version of the workshop in Boulder (CO), USA.

The impetus to continue with this workshop series was further inspired by the Research Topic in Frontiers in Psychology, Digital Humanities, Nutrition, and ICT that resulted from the first workshop (see [10]).

As noted in previous versions of the workshop, there has been an increasing interest from the Human-Food Interaction (HFI) community in trying to capitalize on multisensory interactions in order to enhance our food- and drink-related experiences [5,11]. This should perhaps not come as any surprise, given that flavour, for example, is the product of the integration of, at least, gustatory and retronasal olfactory cues, and can be influenced by all our senses [8]. Variables such as the colour, shape, texture, sound, have all been shown to influence our perception and enjoyment of our eating and drinking experiences [9], something that new technologies can capitalize on in order to "hack" food experiences and behaviors, in particular those which might impact the health of consumers in a beneficial manner.

The importance of food and technology in modern society is undeniable [6,14] and has recently been emphasised in the release of a Manifesto on the interwoven relationship between food and computing. While technology has revolutionised how we produce, distribute, and prepare food beyond local boundaries, the field of human-computer interaction (HCI) and HFI are particularly eager to strengthen our understanding of the users' eating and drinking experiences enhanced, changed, and modified by technology.[1]

Hence, in this 3rd workshop, we again called for investigations and applications of systems that create new, or enhance already existing, eating and drinking experiences ('hacking' food experiences). Moreover, we were especially interested in those works that were based on the systematic principles governing the connections that exist between the senses (i.e., multisensory integration). The call also involved the submission of systems that investigate whether it is possible to experience food interactions digitally in remote locations.

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[1] https://acm-fca.org/2018/07/01/future-of-computing-food-manifesto/

Therefore, we were also interested in sensing and actuation interfaces, new communication mediums, and persuasive and retrieving technologies for human food interactions. Enhancing social interactions to augment the eating experience was another issue we would like to see addressed in this workshop.

2   Workshop Contributions

Overall, eight contributions were accepted for the workshop covering a range of topics in MHFI. These included:

- *TasteBud: Bring Taste Back into the Game* by Vi, Arthur, & Obrist [13]. The paper describes an interesting implementation of a gustatory interface applied to a game and it demonstrates a novel approach where the fundamental properties of taste as reward/warning are applied.

- *Towards Multisensory Storytelling with Taste and Flavor* by Velasco, Tu, & Obrist [12]. The paper summarizes the state of art of employing taste, flavour, food and drinks to influence film experiences It especially brings up a salient point of whether the traditional structure of film should be reconsidered so that the chemical senses are not just unessential "add-on" 's to the film itself.

- *Drink-O-Mender: An Adaptive Robotic Drink Adviser* by Ritschel, Seider, Janowski, Aslan, & André [7]. The paper addresses the question of how speech-based food recommendations by a social robot could be ameliorated by dynamically adapting robot- to users-behaviour based on reinforcement learning.

- *"Eat What You Want and Be Healthy!" Comfort Food Effects: Human-Food Interaction in View of Celebratory Technology* by Hwang, Lee, Jeon, Park, Lee, & Lee [4]. The authors study the effect of comfort foods on memory and emotions (as captured in behavioural and neural responses), after exposure to negative emotions.

- *Eliciting User's Food Preference by Asking Taste and Texture in Spoken Dialogue Systems* by Zeng, Nakano, Kobayashi, & Yamaguchi [15]. In this paper a prototype of a dialog system for a humanoid robot is presented that allows the recommendation of dishes by eliciting the user's preferred taste and texture of food. To be able to know the taste and texture of a dish a recipe database was used and dish / ingredients related Twitter messages were analyzed and used as the default knowledge of the system.

- *The Virtual Cafeteria: An Immersive Environment for Interactive Food Portion-Size Education* by Celikcan, Bülbül, Aslan, Buyuktuncer, Isgin, Efe, & Kanbur [1]. This paper introduces a realistic virtual cafeteria system which is a simulation environment for food portion-size education and perception assessment. The cafeteria is meant to help people to regulate their food serving.

- *Introducing Tastemate: A Social Media Platform for Sharing Dish Observations* by Fritzen & Andres [3]. This paper introduces a new social media platform to share food related experiences (sharing dish observations). For the development requirements from general literature, existing systems and user feedback with a mock up were gathered.

- *Tasty Art: 'The Scream' as a Burger...* by Fried, Pain, & Turner [2]. An original approach to teaching art appreciation through workshops in which food is used as an alternate modality of engagement. In the workshops children express their impression of art works and associated feelings through food compositions.

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