
Designing Interactive Olfactory Experience in Real Context and Applications

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Abstract

Olfactory experience has become a popular topic in TEI community as its novelty in inviting new type of storytelling and new dimension of medium in embodied interaction. This studio focuses on the experiential approach of designing interactive olfactory experience in real world contexts. We will show two case studies on how to adapt contextual inquiry into designing olfactory interactions. We will also demo prototypes and introduce a set of basic digital tools for creating olfactory interactions. Based on the tools and demo, the participants will work in groups to design olfactory experience for their proposed contexts and applications. The aim of the studio is to establish a community in discussion of a new perspective in designing and evaluating interactive olfactory experience in real contexts and applications.

Author Keywords

Olfactory experience, interaction design; smell; odor.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

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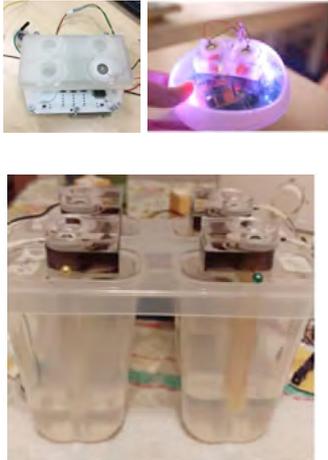


Figure 1. Digital diffusers integrated in different contexts and applications, to be shown at the TEI studio. Top left: Diffuser control module with digital control unit driving digital piezo diffuser and liquid container. Top right: Digital diffuser control module used in a prototype. Bottom: multiple digital diffuser sets.

Introduction

Interactive olfactory experience has drawn considerable attention in TEI community in recent years, especially its potential in embodied interaction and multisensory engagement. Many studies address olfactory technologies and its new form of interactions. For example, retrieving scent combination through manipulating malleable clay [1], using olfaction with other modalities to evoke mental imageries [2], engaging users with an artifact's historical contexts through scents [3]. These researches showed the proof-of-concepts to explore the boundaries between bodies and environments through the sense of smell. Among wider HCI communities, researchers have also shown interests in multisensory interactions and held a series of workshops [4][5] to address how to integrate multisensory design experience with smell.

In addition to experiments and mechanism of new forms of interactions, the focus of olfactory experience design also expands from supporting conventional audiovisual entertainment [6] to real world experience, such as reading [7], car driving [8], cocktail drinking [9] and funeral rituals [10]. Obrist et al [11] are calling for new ways to design meaningful interactive olfactory experience instead of enhancing task performance only.

Based on our recent research in olfactory interactions, we believe the next step is to integrate interactive olfactory in real contexts and applications. In our approach, we have used ethnographic research method i.e.: fieldwork or customer journey mapping to analyze the experience. We have also brought proof-of concepts to real contexts and gained insights from users' experience directly. As shown by earlier research,

olfaction is a subjective experience based on early encountered experience [12] compared to other modalities. The role of odours in daily life mainly is to link the people to the affective appreciation of surrounding and the episodic memories [13]. Each scent has its own meaning toward different people under different culture contexts. Therefore, we think we can discover more opportunities and values of interactive olfactory experience by applying them in real contexts.

In this studio, we would like to present preliminary findings from our case studies, in which we create specific contexts and potential value for interactive olfactory experience. We provide two case studies where the design process is ethnographic and experience-based. In the first case study, interaction with smells is used explicitly to enhance family bonding through smells that are related to family events and memories. In the second case study, it attempts to opens up opportunities of building interactive ambience of smell as part of service design.

We aim to open discussion on new contexts and scenarios where interactive olfactory experiences can be applied. We will provide hands-on design session to stimulate their thinking on how to design for specific contexts and applications.

Detailed Proposal Discussions

In this studio, we will recruit 12-18 participants from academic or industry background. Our studio will include four sessions: introduction with case studies, brainstorming on contexts and applications, sketching interactions, final group presentation and discussions.



Figure 2: Examples of integrating interactive olfactory experience into real contexts and applications. Top: Creating interaction scenario in hotel lounge by using digital diffusers, sensors, props and everyday items. Bottom: Early sketching of integrating interactive olfactory experience into everyday bathing environment.

The case studies and introduction will give participants an overview of how we have used experiential approach in our own work. What kind of considerations we have given and challenges we have met while designing for specific contexts. In the brainstorming session, participants will work in groups of 3-4 people. They are encouraged to bring in contexts related to the fields they are familiar with, or from their own background and studies.

Organizers will introduce a set of digital tools for quick prototyping of olfactory interaction. Based on proposed context in the brainstorming session, participants will sketch interactions using combination of digital tools and general prototyping materials. The main purpose is for them to think through the realistic scenarios and think about the challenges of integrating the experience and actual interactions. In the final presentation, participants are encouraged to use a combination of image collages, videos and skits to present the holistic experience they will bring about, and discuss the value and opportunities it brings for the interactive olfactory experience design.

Topics to be Covered

- Challenges and Opportunities of Interactive Olfactory Experience
- Experience-based Approach for Olfactory Interactions
- Role of Interaction Designer in Interactive Olfactory Design
- Evaluation Framework for Interactive Olfactory Design

The studio will provide a platform to show participants the unique challenges and characteristics of olfactory

interactions. We will explore its future contexts and applications. We will present our contextual inquiry approach used in two case studies and discuss on how it can be applied in other contexts and applications.

By sharing of how we practice the research and conduct field tests in real contexts, we hope to highlight the role of interaction designer in discovering value of interactive olfactory experience. We are calling on interaction designers to create future scenarios, to build into real contexts, to bring the interactive olfactory experience closer to reality. We would like to see if forming a structured experiential method for olfactory interactions is possible and will create a structured evaluation framework for future research.

Learning Goals & Discussion Objectives

- Learning about the interactive olfactory technologies and how to integrate them into applications
- Designing the potential new contexts and application areas through toolkit and interaction methods
- Learning how to use experiential approach in interactive olfactory design: mainly two case studies as well as hands-on group work
- Discuss the evaluation of value in interactive olfactory experience

Participants will learn both through case studies and hands-on group work how to integrate interactive olfactory experience design into real contexts and applications. Through this studio, we would also like to engage with the wider community of interaction designers and researchers and enable further exploration and integrations.

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