

## 1 HaXD: Workshop on Haptic Experience Design

Workshops and Tutorials will take place on Monday, June 22, 2015 during the IEEE World Haptics Conference 2015 in Chicago, USA.

### General Information:

Website: <http://oliverschneider.ca/HaXD>

### Type of Activity:

Please select:

- Panel Workshop<sup>1</sup>
- Open Workshop<sup>2</sup>
- Tutorial<sup>3</sup>

### Proposed Duration:

Please select:

- Half day
- Full day

### Preferred time:

Please select:

- Morning
- Afternoon

## 2 ABSTRACT

How can we create engaging haptics? A good design process is essential for user experience, but haptic experience design lags behind other modalities, lacking established processes, tools, and common vocabulary. At the 2015 Workshop on Haptic Experience Design (HaXD'15), we propose to explore community interest on supporting the design of convincing, captivating haptic experiences.

This hands-on workshop will focus on three topics:

- **Existing practices** designers use to solve haptic experience design problems. How are people creating haptics with current tools?
- **Challenges** faced by haptic designers, from prototyping techniques to barriers of collaboration. What problems exist?

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<sup>1</sup> The organizer proposes a topic, panel of speakers who have agreed to participate, a schedule and description

<sup>2</sup> The organizer proposes a topic, which (after approval) is disseminated openly; interested speakers apply to the organizer to participate. This style of workshop is ideal for exploring the degree of interest and activity in a new area.

<sup>3</sup> Tutorials are self-contained seminars of established research areas that should provide training within and perhaps on periphery of traditional haptic related topics They should be focused on the proposed topic and should be presented by two or three experts in the field.



- **Future steps** to tackle these problems, including potential design tools, research studies, and methods of evaluating haptic experiences. What can we do?

Four invited speakers from academia and industry will present their experience designing haptics. Workshop participants will provide input through a breakout activity, where we can identify challenges as a community and develop a unified approach to progressing on those challenges. The intended outcome is a set of use cases, examples, goals, and methodological approaches suitable for future research.

### 3 AUDIENCE

Researchers, engineers, designers, artists, and anyone else interested in how we can apply design thinking to haptics. This includes existing and potential haptic designers, who create technological experiences that leverage the sense of touch, members of industry, such as those creating commercial haptic games, apps, and other products, and academic researchers interested in the experience of touch.

### 4 Program

We have 4 panelists speaking on workshop themes, and a breakout activity we've piloted to elicit community feedback. Our schedule (timed for a morning session):

9:00 Organizers introduce the workshop and outline goals

9:15 Design Tools for Haptic Media

**Ali Israr**, Senior Research Engineer, Disney Research Pittsburgh

*Haptic experience is a composition of many factors, such as the hardware technology, context and content, and synchronicity of haptics with other media types. A haptic designer must account these components, as well as meeting the expectations of intended users, for successful use of haptic feedback. Here, I highlight design tools developed in our lab to explore haptic feedback in entertainment settings.*

9:30 Prototyping Haptic Experiences with Haptic Video

**David Birnbaum**, Director, UX Design, Immersion

*Designers and researchers face challenges as they set out to experiment with haptics. Haptic interactions can be difficult to prototype because they cannot be roughly approximated by wireframes and other sketching aids used for visual interface design of mobile applications and web pages. Additionally, a core value of haptics is its use as a feedback modality within an interaction loop, meaning that any "quick and dirty" haptic prototype needs to account for an interactive component. This is no easy task since interactive software development is resource intensive for both software developers and interaction designers.*

*We propose haptic video prototypes as an inexpensive and flexible solution to experiment with haptic interaction concepts. A haptic video prototype plays haptic effects in synchrony with a pre-recorded video of an*

*interaction, allowing the viewer to experience a haptic use case without a fully-realized interactive system. We have used this approach across a wide range of applications, including mobile devices, automotive interfaces, wearables, and affective displays. Through describing our process and experiences, we hope that others can use haptic video to speed up development and iteration of haptic experiences.*

9:45

Designing Touchless Tactile Interactions

**Sriram Subramanian**, Professor, University of Bristol

*This talk will cover the challenges of creating tactile feedback for touchless gesture systems. There is a growing demand to provide mid-air tactile feedback for a range of touchless applications, yet there is limited understanding of how to design tactile experiences for even basic actions like selecting a touchless light-switch. The talk will explore some of the solutions Ultrahaptics is exploring to provide both functional and affective tactile experiences.*

10:00

What and How: Meaningful Haptic Experience Design

**Marianna Obrist**, Lecturer in Interaction Design, Department of Informatics, University of Sussex

*With the proliferation of haptic devices there is a demand for designers to create content that includes tactile feedback. This demand has pushed to the forefront the lack of a vocabulary that allows one to describe and communicate about tactile experiences when designing such systems. Our understanding of how haptic technologies match the experiences with touch that people have or want to have is surprisingly limited. We are facing two main challenges: first we need to understand what tactile experiences we want to design for (requires methods to help participants verbalize their tactile experiences) and second how we can design for such experiences (requires tools/toolkits for designers to systematically explore the design spectrum around haptics).*

10:15

Coffee break

10:30

**Group Activity** (piloted for engagement and time length of less than 1 hour. See accompanying breakout activity handout for details)

*Participants separate into four groups, each lead by a panelist.*

1. Design stories and challenges – 30min

*Group members volunteer brief stories of haptic design they've experienced or they hypothesize. After each story, the group identifies challenges, and one group member writes them down.*

2. Design Charrette – 20min

*Individually, each group member chooses a challenge and sketches solutions (design tools, processes, user studies) on a pad of paper for five minutes (strictly timed), then shares their designs with each other.*



11:30 **Panel Discussion** - *The entire workshop comes back together and has a discussion based on the design activities. Panelists lead the discussion, beginning by describing the challenges and sketches they developed. Organizers moderate.*

12:00 **Workshop Conclusion** – contact information, photo, lunch

## 5 ORGANIZERS

- Oliver Schneider, UBC
- Oliver (Computer Science BSc'10, MSc'12) is a PhD Student who has worked with Karon MacLean at the University of British Columbia since 2010. Drawing inspiration from other fields of design, he builds tools and guidelines for supporting haptic experience design, and uses those tools to understand the underlying design process, combining both quantitative and qualitative methodologies. Recently returned from an internship at Disney Research Pittsburgh, he has published papers and demos on this topic at Haptics'14, CHI'14 workshops, UIST'14, and AsiaHaptics'14. His previous work involves ubiquitous sensing through commercial smartphones (Pervasive and Mobile Computing '14, IUI'13), exploring shape-changing mobile phones through physical sketching (GI'13), and using procedurally generated sound to support workspace awareness in groupware (CSCW'11). He holds an Alexander Graham Bell Canada Graduate Scholarship (CGS D) from the Natural Science and Engineering Research Council of Canada (NSERC).
- Dr Karon MacLean, UBC
- Karon MacLean is Professor of Computer Science at the University of British Columbia, Canada, with a B.Sc. in Biology and Mech. Eng. (Stanford) and a M.Sc. and Ph.D. (Mech. Eng., MIT) and time spent as professional robotics engineer (Center for Engineering Design, University of Utah) and interaction researcher (Interval Research, Palo Alto). At UBC since 2000, her research specializes in haptic interaction: cognitive, sensory and affective design for people interacting with the computation we touch, emote and move with, whether robots, touchscreens or mobile activity sensors. She has innovated in human computer interaction curriculum design and teaching practices. Throughout her career MacLean has aspired to bridge the HCI, robotics and haptics communities, for example in helping to create the IEEE Transactions on Haptics (2008), reinventing the IEEE Haptics Symposium during 2010-2012, and offering many courses and journal special issues targeted at broad audiences.

## 6 CALL FOR CONTRIBUTIONS (OPTIONAL, Compulsory for Open Workshop)

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Organizers can foresee a call for contributions, to allow participants to introduce their own research either in the form of a poster (this might allow some attendees to claim for cost reimbursement at their institutions if they are attending a Workshop/Tutorial only without presenting papers at the conference), or to solicit contributions for an oral presentation for Open Workshop.

Can participants submit abstracts related to their research for presentation at the Workshop/Tutorial?           **YES/NO**

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*If YES to the above question, please provide the following information:*

**SUBMISSION INSTRUCTIONS:**

- Type of submission (**abstract**, other type, etc.)
- Type of foreseen presentation (**talk**, poster)
- Timeline for internal revision and acceptance of abstracts
- Abstract submission deadline:           Insert here tentative date mm/dd/yyyy
- Notification of acceptance:            Insert here tentative date mm/dd/yyyy

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*For further info: please contact WHC2015 Workshop/Tutorial chairs at [Workshops@haptics2015.org](mailto:Workshops@haptics2015.org)*

**Workshops and Tutorials Chairs**

Rob Gray (Arizona State University Polytechnic, USA)  
Mounia Ziat (Northern Michigan University, USA)  
Antonio Frisoli (Scuola Superiore Sant'Anna, Italy)