

# HCI Goes to the Zoo

## [Workshop Proposal]

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**Abstract**

This workshop will explore research into interactive and digital technologies in zoos, aquariums and wildlife parks. Such sites are making increasing use of technology in their work to foster educational, emotional and entertaining connections between visitors and animals, with the goal of transforming attitudes to wildlife and conservation. Bringing together HCI researchers with interests in zoos (as a design context) and animals (as a design user), as well as animal welfare and behavior experts, this workshop will further our understanding of what it means to design and use technology in this space at the intersection of the human and animal worlds.

**Author Keywords**

Zoos; wildlife; aquariums; animals; interpretations; ACI; informal learning institutions.

**ACM Classification Keywords**

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

**Introduction**

Zoos are making increasing use of interactive technologies to achieve their conservation and educational goals, to support animal welfare [1, 12] and to provide novel experiences for visitors [2, 4-12]. This workshop will further our understanding of what it

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means to design and use technology in this unique space at the intersection of human and animal worlds.

### **Rationale for Workshop**

Zoos and other conservation organizations are beginning to explore limited applications of interactive technologies to transform attitudes, behaviors and public policy related to conservation and sustainability. Information kiosks, digital signage, specialized technologies and mobile apps are increasingly used as part of zoos' work to foster visitors' sense of connection with animals and, through this, inspire pro-conservation and sustainability attitudes and behaviors. Various animal industries are also turning to digital technology as a means of cognitive enrichment for animals; this provides new opportunities for computer-mediated experiences which enhance animal welfare as well as connecting visitors with captive animals.

Despite this, HCI research in this context has been limited. Prior work has looked at interactive technologies for zoo visitor education and conservation messaging, including the social dimensions of learning about zoo animals [6], and guides' use of information systems [8]. Research indicates that digital interpretations have a greater impact than static signage [9], and are attractive to young people [6,8] [7, 11]. This research has highlighted the challenge of designing systems which do not detract from the broader goals of the zoo, such as maintaining visual connection with animals [4, 5, 10] and work with the established paradigm of portraying captive animals in harmony with their 'natural' environment [3]. Other challenges need to be identified in order for HCI research to contribute to this unique context.

Zoos and wildlife-oriented experiences have yet to receive the level of attention from HCI researchers accorded to museums and culture-oriented informal learning institutions (ILIs). However, early research and the body of work summarized above indicates that this context is one which provides rich opportunities but unique challenges for designers of interactive experiences. However, the setting of the zoo as an outdoor, naturalistic space, the presence of animals and their relationship with human visitors, the forms of social interaction and patterns of technology use amongst groups of zoo visitors differentiate this context substantially from other ILIs, necessitating this workshop to draw together inter-disciplinary experts to advance this field of work.

### **Issues and Goals**

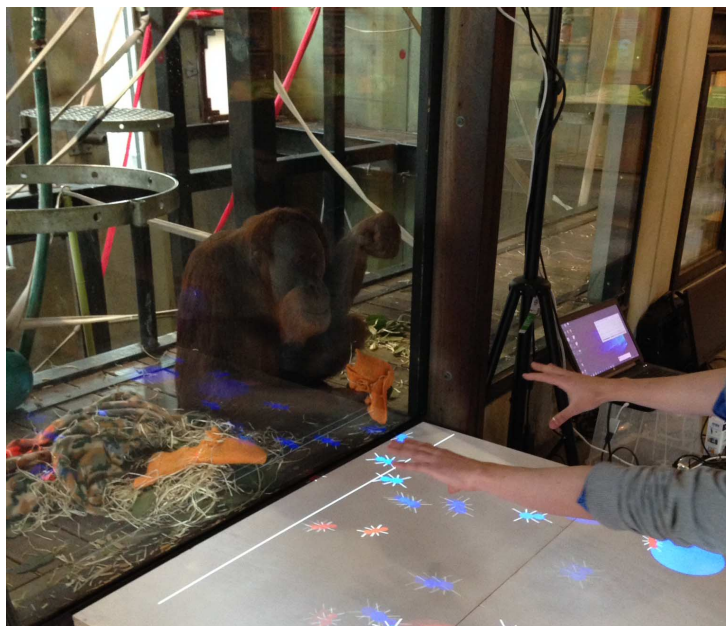
Through this workshop, we aim to bring together researchers from HCI, zoos and animal welfare science investigating the design of technology for zoos and wildlife-based experiences. Through discussing and interrogating real case-studies of technology in zoo, this workshop will clearly identify and disseminate the key challenges and questions that a program of HCI research can answer.

We envisage that this workshop will allow us to explore topics such as

- opportunities and challenges for the design of technology to support wildlife-oriented experiences
- designing to address the educational and recreational goals of family visitor groups
- design of technology to encourage animal play, stimulation and enhance animal welfare

- attitudes to technology use with and by animals, and in outdoors & naturalistic settings
- the potential role of affective and immersive technologies in influencing conservation and sustainability attitudes.
- how technology affects the relationship between humans, animals and the environment
- the design of interactive techniques for animals not bound by text, language or culture

Technology is already impacting the relationship between animals and humans, and the consequences of this relationship change for the welfare of captive animals, for the role of zoos in contemporary society



**Figure 1:** Co-organizers Webber, Carter and Sherwen's project exploring co-play between visitors and Orang-utans at Melbourne Zoo.

and the relationship between humans, technology and the environment need to be further interrogated. The zoo, as an intersection of these actors, presents an ideal opportunity for interrogating these issues further, and a CHI workshop will provide the ideal context.

### Organizers

**Sarah Webber** is a PhD candidate at the Microsoft Research Centre for Social Natural User Interfaces at the University of Melbourne. Her PhD research examines the use, design and evaluation of digital technology for animal-human encounters at the zoo. She has a professional and academic background in interaction design, user research and user-oriented technology evaluation.

**Marcus Carter** is a research fellow at the Microsoft Research Centre for Social Natural User Interfaces (NUI), leading a program of research into how technology can support the conservational and educational aims of zoos, such as by providing primates control over their environment through animal interfaces and the use of machine learning to monitor and support captive animal welfare.

**Sally Sherwen** is the animal welfare specialist at Zoos Victoria and a researcher at the University of Melbourne's Animal Welfare Science Centre. Her particular area of expertise is around human-animal relationships in zoos.

**Jason Watters** is the Vice President of Wellness and Animal Behavior at San Francisco Zoo. There, he leads a research program aimed at studying and applying techniques to ensure that animals thrive. He received his PhD in animal behavior from University of California,

Davis, where he also performed post-doctoral studies. Watters has fashioned a 'non-traditional' research career in the zoo and aquarium world. He has studied numerous species and the foci of his work are animal personalities, behavioral indicators of welfare, a general theory of environmental enrichment and what makes animals good teachers. Dr. Watters serves on the Research and Technology Committee of the Association of Zoos and Aquariums and is also the executive editor of the journal Zoo Biology.

**Bethany Krebs** is the Behavioral Wellness Research Coordinator at the San Francisco Zoo. As part the Behavioral Wellness research team, she designs, builds, and studies the impact of novel enrichments. She recently spearheaded a successful crowdfunding campaign to build new high-tech puzzle feeders for the zoo's rhinos. Krebs received her PhD. from the University of Illinois studying behavioral ecology. A



**Figure 2:** Co-organizers Watters and Krebs's smart-toys for Rhinos at San Francisco Zoo. Foobler toys intermittently dispense food over time.

relative newcomer to the world of animal enrichment, her interests include using technology to improve animal well-being and the role of zoos in promoting scientific literacy in the general public.

**Clara Mancini** is a senior lecturer in Multispecies Interaction Design at The Open University and head of the Animal-Computer Interaction Lab, investigating animal-technology interactions 'in the wild', designing technology to support animals in different contexts and developing user-centered approaches to design technology for and with animals.

**Fiona French** is a senior lecturer in the Faculty of Life Sciences and Computing at London Metropolitan University. She is course leader for BSc Computer Games Programming and her research interests include Animal Computer Interaction, physical computing, toy and game development. Fiona is currently investigating the design of interactive toys for elephants.

**Kenton O'Hara** is a Social Scientist at Microsoft Research, Cambridge and a Visiting Professor in the Interaction and Graphics Group at the University of Bristol. His work explores everyday social practices and experiences with mobile and ubiquitous technology. In particular he has worked with the BBC and the Zoological Society of London to develop and understand technology mediated visitor experiences at the zoo. More recently he has worked with ecologists and computer scientists to understand the scientific practices of Species Distribution Modeling and conservation.



**Figure 3:** Co-organizer Mancini & French's digital enrichment for Elephants at Skanda Vale.

### Website

The URL for the workshop website will be <http://www.zootech.info/>. The website will be used to publish the Call for Papers, and communicate during the planning phase and after the workshop.

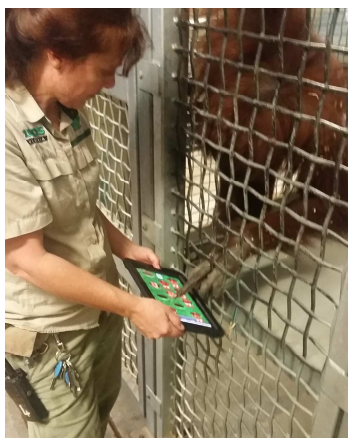
### Pre-Workshop Plans

The workshop will be publicised to HCI researchers through existing networks and mailing lists, and directly to researchers known to have interests in this domain of use. Co-organisers and collaborators in affiliated fields will promote the workshop to zoo and animal welfare specialists, and San Francisco Zoo's networks in the bay area.

The website will be used to disseminate relevant prior research and solicit questions and comments from potential participants, and to communicate with prospective participants.

All attendees will have to apply to attend. Those who would like to present will have to submit 4 page (ACM format) position papers describing real case studies of technology in the zoo, or real problems that have the potential to be solved by technology interventions. These will be peer-reviewed by the workshop organizing committee.

Those not affiliated with a paper presentation but interested in attending will have to submit a short bio (200 words) identifying their interest and background with the workshop topic to ensure interdisciplinarity in the workshop discussions.



**Figure 4:** Malu the Orang-utan playing iPad games designed for humans at Melbourne Zoo.

### Workshop Structure

The aim of this workshop is to further our understanding of what it means to design and use technology in this unique space at the intersection of human and animal worlds. This will be accomplished by facilitating discussions between zoo industry professionals, HCI researchers and animal welfare experts around real case studies and in the group design of technology solutions to existing problems.

#### *CHI Goes to the Zoo*

Participants will be invited join in an optional group tour of San Francisco Zoo on Friday 6 May, the day before the workshop. The organizing committee will arrange group transport (a minibus) from the CHI venue. The trip will highlight how technology is being integrated into the zoo's existing activities, with regard to both animal welfare and visitor experience. This will generate material for identifying challenges and domains relevant to the topic of the workshop. Participants will not be required to attend the zoo trip to present or attend the workshop. The visit will be documented through notes, photos and videos, so that this can benefit participants unable to join the trip.

#### *Workshop Day*

The workshop day is loosely structured into two sessions, ideally morning and afternoon.

The first will involve around 6-10 presentations of real-case studies on technology in the zoo. Each presentation will be followed by small-group discussion, structured around identifying key issues and opportunities for technology in the zoo. It is not expected that everyone attending the workshop will

present. Rather, the workshop will focus on creating dialogue between experts from different areas.

The second session of the workshop will then involve these small groups presenting their syntheses of common themes, strategies and opportunities that they generated in response to the presentations. Groups will then be asked to apply these ideas to specific known problems or domains within the zoo, which will be solicited from attendees before the conference. For example, Melbourne Zoo's Gorilla population often experiences stress during busy holiday periods; what role can technology play in monitoring or enriching animal welfare, or managing guest behavior?

### **Post Workshop Plans**

Following the workshop, organizers will publish a full, rich workshop report describing the outcomes and topics for further research. This will be directly disseminated to researchers known to have interests in this area who did not attend the workshop (for example, authors of unaccepted submissions). By acting as a platform for identifying the key issues and opportunities for HCI in the zoo, we aim to encourage future work in this context and raise the profile of HCI within animal welfare, animal behavior studies and the zoos industry. Consequently, we will publish articles on the current state of play in zoo technology in both HCI and zoo industry periodicals (e.g. Interactions) and create publically accessible mailing lists and Facebook groups.

### **Call for Participation**

HCI Goes to the Zoo: CHI 2016 Workshop  
San Jose, CA, USA.  
Optional Zoo Tour: 6 May 2016  
Workshop: 7 May 2016  
Website: <http://www.zootech.info>  
Contact: Sarah Webber, University of Melbourne  
[s.webber@unimelb.edu.au](mailto:s.webber@unimelb.edu.au)

===== IMPORTANT DATES =====

Position Paper Deadline: 11 January 2016  
(If you require notification before end of 2015, see note below)\*

Final Submissions: 12 February 2016

===== TECHNOLOGY AT THE ZOO =====

Zoos and other conservation organizations are increasingly exploring the application of interactive technologies to transform attitudes, behaviors and public policy related to conservation and sustainability; to support animal welfare and enrichment; and to provide novel experiences for visitors.

Despite this, HCI research in this context has been limited. Early work has highlighted the challenge of designing systems that do not detract from the existing aims of the zoo experience. While zoos are similar to other informal learning institutions such as museums, the setting of the zoo as an outdoor, naturalistic space, the presence of animals and their relationship with human visitors, the forms of social interaction and patterns of technology use amongst groups of zoo visitors differentiate this context substantially necessitating this workshop to draw together interdisciplinary experts to advance this field of work.

Consequently we invite HCI researchers, animal welfare and behavioral scientists and Zoo industry professionals to attend a 1 day workshop at CHI 2016 on the topic of Technology in the Zoo. Through this workshop, we aim to bring together those investigating the design of technology for zoos and wildlife-based experiences. Through discussing and interrogating real case-studies of technology in zoo, this workshop will clearly identify and disseminate the key challenges and questions that a program of HCI research can answer.

Participants will be invited join in an optional group tour of San Francisco Zoo on Friday 6 May, the day before the workshop. The trip will provide opportunities to discuss and explore how technology is being integrated into the Zoo's programs and activities.

===== HOW TO PARTICIPATE =====

Participants interested in presenting should submit a short position paper (1-4 pages) describing:

- real case studies of technology in the zoo
- or existing problems that have the potential to be solved by technology interventions.

Papers will be selected for presentation at the workshop on the basis of interdisciplinary breadth, project maturity and to reflect the variety of opportunities for technology at the zoo.

Papers should be submitted via EasyChair:  
<https://easychair.org/conferences/?conf=zootech2016>  
 in the SIGCHI Extended Abstracts format:  
<http://chi2016.acm.org/wp/guide-to-submission-formats>

Accepted papers will need to be finalised and submitted by 12 February 2015.

Those not affiliated with a paper presentation but interested in attending should submit a short bio (200 words) identifying their interest and background

relevant to the workshop topic. We aim to ensure interdisciplinarity in the workshop discussions. Bios should be submitted by 15 January 2015:

via EasyChair:  
<https://easychair.org/conferences/?conf=zootech2016>  
 using the 'Abstract' submission field (no file needs to be submitted).

A prospective workshop schedule will be made available before this date.

At least one author of each accepted paper must attend the workshop, and all participants must register for both the workshop and for at least one day of the conference.

===== ORGANIZING COMMITTEE =====

Sarah Webber - Microsoft Research Centre for Social NUI, The University of Melbourne  
 Marcus Carter - Microsoft Research Centre for Social NUI, The University of Melbourne  
 Sally Sherwen - Zoos Victoria  
 Jason Watters - San Francisco Zoo  
 Bethany Krebs - San Francisco Zoo  
 Clara Mancini - Animal Computer Interaction Lab, The Open University  
 Fiona French - London Metropolitan University  
 Kenton O'Hara - Microsoft Research

===== DATES =====

Position Papers

Deadline: 11 January 2016

Notification: 15 January 2016\*

Attendee Bios

Deadline: 15 January 2016

Final Submissions

Deadline: 12 February 2016

\*If you require notification before end of 2015 please contact workshop organisers as soon as possible to discuss early submission.

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