

	9:00-10:00	10:00-10:30	11:30-13:00	14:30-16:00	16:30-18:00
CIVIC AUDITORIUM	Social Impact Award Gary Marsden Doing HCI Differently -Stories from the Developing World Page 48	CHI MADNESS Page 48	Interactive Session "Get Real!" What's Wrong with HCI Prototyping & How Can We Fix It? Page 49	Interactive Session Moving UX Into a Position of Corporate Influence Page 53	Interactive Session Along the Path of Pervasive Computing: GUI & TUI Design Page 57
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▬ = 15 minutes ▬▬▬ = 30 minutes ○ = unscheduled time

COMMONS	SPECIAL EVENTS
Exhibits, Interactivity, & Info Booth 10:30-18:00	Spotlight on Work-in-Progress Posters (#61-104) 10:30-11:30 Concourse
	Job Fair 18:00-20:00 Commons



■ AWARD TALK | CIVIC AUDITORIUM

SOCIAL IMPACT AWARD: GARY MARSDEN

SESSION CHAIR: Ben Shneiderman, *University of Maryland, USA*

Doing HCI Differently – Stories from the Developing World

Gary Marsden, *University of Cape Town, South Africa*

Using case studies and examples, this talk looks at the challenges of applying standard HCI techniques in a developing world context. We look at how HCI can have a fantastic impact on communities in the developing world, but there is still some way to go in understanding how HCI can best benefit the developing world.

■ CHI MADNESS | CIVIC AUDITORIUM

SESSION CHAIRS:

Patrick Baudisch, *Microsoft, USA*

Gonzalo Ramos, *University of Toronto, Canada*

CHI's 30 second Madness, which premiered in Montréal, returns to give everyone a lightning speed overview of the days program.

■ INTERACTIVE SESSION | CIVIC AUDITORIUM

“GET REAL!” WHAT’S WRONG WITH HCI PROTOTYPING AND HOW CAN WE FIX IT?

MODERATOR:

William Jones, *University of Washington, USA*

PANELISTS:

Michael Arent, *SAP, USA*

Victoria Bellotti, *PARC, USA*

Mary Czerwinski, Jonathan Grudin, *Microsoft, USA*

Tom Rodden, *University of Nottingham, UK*

Jared M. Spool, *User Interface Engineering, USA*

A prototype – as a means to evaluate and communicate a good idea – is often an essential step towards useful, shipping products and also towards a deeper understanding of what people really need. Prototyping and user evaluation can be enormously expensive and failure rates are high. Moreover, prototype user evaluations are often far from real with respect to user representatives, tasks, and measures. But to “get real” in HCI prototyping and evaluations risks placing even greater (more unrealistic) demands upon the HCI researcher. Do very real costs and constraints force HCI prototyping to the margins? Can we change acceptable HCI prototyping methods, helping HCI prototyping “get real”, in both its conduct and the implications of its results?

■ SPECIAL INTEREST GROUP | ROOM: A1

SUSTAINABILITY AND INTERACTION

MODERATORS:

Jennifer Mankoff, Susan R. Fussell, *Carnegie Mellon University, USA*

Paul Resnick, *University of Michigan, USA*

Batya Friedman, *University of Washington, USA*

Phoebe Sengers, *Cornell University, USA*

Alan Borning, *University of Washington, USA*

Eli Blevis, *Indiana University, USA*

Jay Hasbrouck, Allison Woodruff, *Intel, USA*

The goal of this SIG is to raise awareness of these issues in the CHI community and to start a conversation about the possibilities and responsibilities we have to address issues of sustainability.

■ PAPERS | ROOM: A2

GAZE & EYE TRACKING

SESSION CHAIR: Chris North, *Virginia Polytechnic Institute and State University, USA*


PAPER | What Are You Looking For? An Eye-Tracking Study of Information Usage in Web Search

Edward Cutrell, *Microsoft, USA*

Zhiwei Guan, *Microsoft & University of Washington, USA*

This paper describes a Web search study using eye-tracking methodologies. The study shows that increasing the amount of contextual information in search results improves performance for informational tasks, but hurts performance on navigational tasks.

NOTE | An Eye Tracking Study on How People Search When the Target is Not Shown on Top of the List

Zhiwei Guan, *University of Washington, Seattle, USA*

Edward Cutrell, *Microsoft, USA*

An empirical study showing inefficiency of ordered result display for people’s search when the best result isn’t shown on top. Provide evidence invoking future redesign of search result interface.

NOTE | A Minimal Model for Predicting Visual Search

Tim Halverson, Anthony J. Hornof, *University of Oregon, USA*

This research extends a rich lineage of computational models designed specifically with HCI tasks in mind. A minimal visual search model is presented that will benefit automated interface analysis tools.

PAPER | EyePoint: Practical Pointing and Selection Using Gaze and Keyboard

Manu Kumar, Andreas Paepcke, Terry Winograd, *Stanford University, USA*

We present the first practical and universally-applicable (for disabled and able-bodied users) solution for gaze-based pointing and selection for everyday computing tasks. Users preferred EyePoint over pointing with a mouse.



■ PAPERS | ROOM: A3

ONLINE REPRESENTATION OF SELF

SESSION CHAIR: A. J. Bernheim Brush, *Microsoft*, USA

PAPER | A Familiar Face(book): Profile Elements as Signals in an Online Social Network

Cliff Lampe, Nicole Ellison, Charles Steinfield, *Michigan State University*, USA

This study shows that different elements in a user profile have different effects on participation outcomes. Profile fields that enable common points of reference are associated with more “friend” links.

NOTE | Constructing My Online Self: Avatars that Increase Self-Focused Attention

Asimina Vasalou, *Imperial College London*, UK
Adam Joinson, *Open University*, UK
Jeremy Pitt, *Imperial College London*, UK

We show that the individuating properties emitted by online avatars to their owners can increase self-focused attention. In computer-mediated communication, self-focused attention has the ability to effect online behavior.



NOTE | The Truth about Lying in Online Dating Profiles

Jeffrey T. Hancock, Catalina Toma, *Cornell University*, USA
Nicole Ellison, *Michigan State University*, USA

By cross-validating profile information with observed personal characteristics, this study is the first to gauge actual practices of deception in online dating profiles, revealing deceptions to be frequent but small.

PAPER | He Says, She Says: Conflict and Coordination in Wikipedia

Aniket Kittur, *University of California, Los Angeles*, USA
Bongwon Suh, Bryan A. Pendleton, Ed H. Chi, *PARC*, USA

Characterizes growing conflict and interference costs in Wikipedia and presents machine learning and visualization tools to support continued growth. Can assist designers in developing and improving collaborative knowledge systems.

■ PAPERS | ROOM: A4 & A5

INNOVATIVE INTERACTIONS

SESSION CHAIR: Kellogg S. Booth, *University of British Columbia*, Canada

PAPER | Modeling Pointing at Targets of Arbitrary Shapes

Tovi Grossman, Nicholas Kong, Ravin Balakrishnan, *University of Toronto*, Canada

Empirically investigates user ability to point at graphical targets of arbitrary shapes. Contributes empirical data and a validated model which was shown to accurately predict movement times for the task.

PAPER | Perception of Elementary Graphical Elements in Tabletop and Multi-Surface Environments

Daniel Wigdor, *Mitsubishi Electric Research Labs & University of Toronto*, USA & Canada
Chia Shen, Clifton Forlines, *Mitsubishi Electric Research Labs*, USA
Ravin Balakrishnan, *University of Toronto*, Canada

Empirically investigates user ability to accurately perceive information graphics under perspective distortion inherent in tabletop and multi-surface environments. Contributes empirical data, design guidelines, and recommendations for visualization design.

PAPER | Exploring and Reducing the Effects of Orientation on Text Readability in Volumetric Displays

Tovi Grossman, Daniel Wigdor, Ravin Balakrishnan, *University of Toronto*, Canada

Empirically investigates user ability to read text in a 3D volumetric display from different viewing angles. Contributes empirical data and evaluated design solutions for improving the text readability.

■ EXPERIENCE REPORTS | ROOM: A8

USABILITY

SESSION CHAIR: Bonnie E. John, *Carnegie Mellon University*, USA

Coming to Terms: Comparing and Combining the Results of Multiple Evaluators Performing Heuristic Evaluation

Hanna Yehuda, *EMC Corp.*, USA
Jennifer McGinn, *Sun Microsystems, Inc.*, USA

We describe a new way to perform heuristic evaluations which allows multiple evaluators to easily compare and combine the results of their reviews. This method was developed to provide a single, reliable, result to the client, but it also allowed us to easily negotiate differences in our findings and to prioritize usability problems. An unexpected side effect of this evaluation method is the measure and predictability of the effect of usability improvements.

When Two Methods Are Better Than One: Combining User Study with Cognitive Modeling

Andrea Knight, *Google, USA*
Guy Pyrzak, *Collin Green, SJSU Foundation & NASA, USA*

We discuss the benefits of combining user studies and cognitive modeling in the context of Firefox tabbed browsing. We studied new users' ability to use tabbed browsing without assistance, and then evaluated alternatives. In general, our experience highlights the advantages of using user studies and modeling together to do user interface evaluation.

Persona Based Rapid Usability Kick-Off

Nina Khalayli, *Telenor Research & Innovation, Norway*
Tone Terum, *Telenor Nordic Mobile, Norway*
Silja Nyhus, *Kari Hamnes, Telenor Research & Innovation, Norway*

The paper reports on the evaluation of a rapid usability kick-off technique (RUKO), designed for non-usability experts (NUEs), to enable them to perform usability work. The effect was that usability awareness and end user focus in projects increased. However, so did the need for usability expertise in latter phases.

Usability On Patrol

Maria Callander, *Carlsbad Police Department, USA*
Lorna Zorman, *California State University, San Marcos, USA*

The introduction of computers into police patrol cars comes with an increase in driver distraction issues. We will describe the usability process and techniques we adapted to study computers in law enforcement patrol cars based on a combination of a National Highway Traffic Safety Administration (NHTSA) workload assessment protocol and cognitive modeling. Using cognitive modeling, we could identify the potential problems for certain tasks, such as running a license plate with typical mouse-keyboard interface compared with doing the same task via radio contact with dispatcher.

■ PAPERS | ROOM: B1–B4

PROGRAMMING BY PROFESSIONALS

SESSION CHAIR: Margaret Burnett, *Oregon State University, USA*

PAPER | Let's Go to the Whiteboard: How and Why Software Developers Use Drawings

Mauro Cherubini, *Swiss Federal Institute of Technology, Switzerland*
Gina Venolia, *Rob DeLine, Microsoft, USA*
Andrew J. Ko, *Carnegie Mellon University, USA*

How and why developers draw code? Informal notation was often used to support face-to-face communication, so standards don't help. Software engineering differs from other engineering disciplines, which can affect tool design.

PAPER | Aligning Development Tools with the Way Programmers Think About Code Changes

Marat Boshernitsan, *Agitar Software, Inc, USA*
Susan L. Graham, *Marti A. Hearst, University of California, Berkeley, USA*

We present a novel visual language and interaction model for performing structural transformations in source code. The language matches programmer intuitions and performs well on objective and subjective usability measures.



PAPER | Task and Social Visualization in Software Development: Evaluation of a Prototype

Jason B. Ellis, *IBM, USA*
Shahtab Wahid, *Virginia Polytechnic Institute and State University, USA*
Catalina Danis, *Wendy A. Kellogg, IBM, USA*

An empirical evaluation of an interactive visualization tool supporting distributed development based on interviews and a comparison of tasks carried out in the tool vs. a traditional bug tracking system.

■ INTERACTIVITY | ROOM: C2

PLAY & EXERCISE

SESSION CHAIR: Elizabeth Goodman, *University of California, Berkeley, USA*

Learning Shape Writing by Game Playing

Per Ola Kristensson, *Linköpings universitet, Sweden*
Shumin Zhai, *IBM, USA*

We present a computer game demonstration designed to efficiently and playfully teach users shape writing – a new text entry method for pen-based devices.

Building Upon Everyday Play

Haiyan Zhang, *IDEO, USA*
Bjoern Hartmann, *Stanford University, USA*

Building Upon Everyday Play is the result of a collaboration of Control Freaks, a pervasive gaming experience project, and Exemplar, a toolkit that uses programming-by-demonstration to map continuous sensor data to high-level events. The project consists of a combination of a portable, wireless game controller that can be attached to everyday objects and a programming-by-demonstration system that turns sensor data reported by the controller into suitable game events.



REXplorer: A Mobile, Pervasive Spell-Casting Game for Tourists

Rafael Ballagas, *RWTH Aachen University, Germany*
Steffen Walz, *ETH Zurich, Germany*
Sven Kratz, *RWTH Aachen University, Germany*
Claudia Fuhr, *ETH Zurich, Germany*
Eugen Yu, *RWTH Aachen University, Germany*
Martin Tann, *ETH Zurich, Germany*
Jan Borchers, *RWTH Aachen University, Germany*
Ludger Hovestadt, *ETH Zurich, Germany*

REXplorer is a mobile, pervasive spell-casting game designed for tourists of Regensburg, Germany. Uses location sensing to create player encounters with spirits (historical figures) that are associated with historical buildings in an urban setting and a novel mobile interaction mechanism of “casting a spell” (making a gesture by waving a mobile phone through the air) allows the player to awaken and communicate with a spirit to continue playing the game. The game is designed to make learning history fun for young (and young at heart) tourists and influence their path through the city.

NOTE | Jogging the Distance

Shannon O'Brien, *Commonwealth Scientific Industrial Research Organisation, Australia*
Florian 'Floyd' Mueller, *Georgia Institute of Technology, USA*

“Jogging over a Distance” allows joggers to socialize and motivate each other while jogging in geographically distant locations through the use of spatially distributed audio. We hope our approach encourages active and future joggers to jog more often, while simultaneously supporting their social friendships.

Jogging Over a Distance

Florian 'Floyd' Mueller, *Georgia Institute of Technology, USA*
Shannon O'Brien, Alex Thorogood, *CSIRO & Connecting People Group \ ICT Centre, Australia*

Jogging is a healthy activity and many people enjoy jogging with others for social and motivational reasons. However, it was found through surveying, that jogging partners might not always live in the same location and it may be difficult to find a local jogger who runs at the same pace. “Jogging over a Distance” allows joggers to socialize and motivate each other while jogging in geographically distant locations through the use of spatially distributed audio.

BodySpace: Inferring Body Pose for Natural Control of a Music Player

Steven Strachan, *Hamilton Institute, UK*
Roderick Murray-Smith, *University of Glasgow & Hamilton Institute, UK*
Sile O'Modhrain, *Queens University, UK*

We describe the BodySpace system, which uses inertial sensing and pattern recognition to allow the gestural control of a music player by placing the device at different parts of the body. We demonstrate a new approach to the segmentation and recognition of gestures for this kind of application and show how simulated physical model-based techniques can shape gestural interaction.

■ SPECIAL INTEREST GROUP | ROOM: C4

BEYOND USABILITY FOR SAFETY CRITICAL SYSTEMS

MODERATORS:

Philippe Palanque, Sandra Basnyat, *University Toulouse, France*
Regina Bernhaupt, *Universität Salzburg, Austria*
Ronald Boring, *Idaho National Laboratory, USA*
Chris Johnson, *University of Glasgow, UK*
Peter Johnson, *University of Bath, UK*

The aim of this SIG is to provide a forum for both researchers and practitioners interested in safety critical interactive systems. Our goal is to define a roadmap of activities to cross fertilize usability, reliability and safety for these kinds of systems to minimize duplicate efforts and reuse knowledge in all the communities involved.

■ INTERACTIVE SESSION | CIVIC AUDITORIUM

MOVING UX INTO A POSITION OF CORPORATE INFLUENCE: WHOSE ADVICE REALLY WORKS?
MODERATOR:

 Richard Anderson, *Riander, USA*
PANELISTS:

 Jeremy Ashley, *Oracle, USA*

 Tobias Herrmann, *mobilkom austria, Austria*

 Justin Miller, *eBay, Switzerland*

 James Nieters, *Cisco Systems, USA*

 Shauna Sampson Eves, *Blue Shield of California, USA*

 Cecil Watson, *Wells Fargo, USA*

Professionals working to move user experience (UX) into a position of corporate influence are impeded by conflicting recommendations, including those regarding the roles of documenting and evangelizing UX work, ownership of UX, organizational positioning, calculating return on investment, and conducting “ethnographic” research. In this interactive session, a group of senior UX management personnel who have moved UX into positions of rapidly increasing influence in their varied places of work debate.

■ EXPERIENCE REPORTS | ROOM: A1

EDUCATION & CULTURE
SESSION CHAIR: Charles van der Mast, *Delft University of Technology, the Netherlands*
Mandala: Supporting Social Presence and Interaction in the Chinese Home

 Neema Moraveji, *Microsoft, China*

 A.R.D. Rajan, *National Institute of Design, India*

 Liu Like, *Sichuan University, China*

Multiple factors lead social software to be unevenly adopted by differing age segments in urban China. This paper presents user research to understand the discrepancy between parents and their children and attempts to address them with the design of an information appliance. The appliance attempts to support interaction ranging from peripheral awareness to real-time conversation.

A Theory-Based Approach to Designing Student Learning Context

 Jarinee J. Chattratchart, *Kingston University London, USA*

This paper describes how educational research findings were deployed to address the issues of engaging students of different levels of technical ability across four semesters in an HCI module at a UK university. Kolb’s experiential learning cycle was successfully applied to the design and scheduling of course content and learning activities to enhance students’ learning outcomes.

Education, Entertainment, and Authenticity: Lessons Learned from Designing an Interactive Exhibit about Medieval Music

 Marius Wolf, Eric Lee, Jan Borchers, *RWTH Aachen, Germany*

We describe the design experience gathered from creating an interactive exhibit about medieval music. We focused our work on three major goals: educational value, entertainment aspects, and historic authenticity. We present insight into the challenges in designing a system with these goals and how they could be solved.

Establishing Relationships For Designing Rural Information Systems

 Yael Schwartzman, Tapan S. Parikh, *University of Washington, USA*

Designing for the developing world presents unique challenges. Establishing rapport with local partners is important to overcome contextual unfamiliarity and ensure the relevance of proposed solutions. We discuss our experiences designing CAM is a camera-based mobile application framework design and how we used a system based on this design to do data capture for Asobagri, a rural coffee cooperative in Barillas, Guatemala.

A Bridging Design Prototype for Investigating Concept Mapping in the Preschool Community

 Gloria Gomez, *Swinburne University of Technology, Australia*

We report on pilot studies where teachers from two different preschools incorporated a bridging design prototype (BDP) for concept mapping into classroom activities. Designed under inclusive, participatory, user-centered principles, the BDP was used to perform observations assessing an interaction problem and in familiarizing the researcher with the user community. Results showed voice-input devices promote illiterate children’s authoring and self-regulation skills when adding meaning to symbols.

■ PAPERS | ROOM: A2

TANGIBILITY
SESSION CHAIR: Chia Shen, *Mitsubishi Electric Research Labs, USA*
NOTE | Senspectra: A Computationally Augmented Physical Modeling Toolkit for Sensing and Visualization of Structural Strain

 Vincent LeClerc, Amanda Parkes, Hiroshi Ishii, *MIT, USA*

Senspectra is a computationally augmented physical modeling toolkit for sensing and visualization of structural strain, incorporating the material quality of malleable elements of an interface into its digital control structure.



NOTE | Tangible User Interface for Chemistry Education: Comparative Evaluation and Re-Design

Morten Fjeld, Jonas Fredriksson, Martin Ejdestig, Florin Duca, *Chalmers TH, Sweden*
Kristina Bötschi, *University of Zurich, Switzerland*
Benedikt Voegtli, Patrick Juchli, *HyperWerk, FHBB, Switzerland*

Augmented Chemistry (AC) is a tangible application to learn organic chemistry. The evaluation presented compared learning effectiveness and user acceptance of AC versus ball-and-stick model. The AC system was then re-designed, which gave improved subjective opinions on use.

PAPER | Mechanical Constraints as Computational Constraints in Tabletop Tangible Interfaces

James Patten, Hiroshi Ishii, *MIT, USA*

Describes a new tabletop tangible interface and series of interaction techniques that use mechanical constraints to aid problem solving. This may expand the roles readers consider for tangibles in UIs.

■ PAPERS | ROOM: A3

DESIGN THEORY

SESSION CHAIR: Jon Kolko, *Savannah College of Art & Design, USA*

PAPER | Research Through Design as a Method for Interaction Design Research in HCI

John Zimmerman, Jodi Forlizzi, Shelley Evenson, *Carnegie Mellon University, USA*

Contributes a model for design research that allows the HCI research community to engage “wicked problems”. Benefits HCI by employing design thinking in research and improved research transfer to practice.



PAPER | Sustainable Interaction Design: Invention & Disposal, Renewal, & Reuse

Eli Bleviss, *Indiana University, Bloomington, USA*

Describes and defends the perspective that sustainability can and should be a central focus of interaction design. Provides a rubric and principles for designing interactivity sustainably and illustrates their application.

PAPER | Computational Composite

Anna Vallgård, *IT University of Copenhagen, Denmark*
Johan Redström, *Danish Royal Academy of Fine Arts, Denmark*

Presents a theoretical contribution on how to understand computers as a design material. People involved with technology development for interaction design and designers can benefit from the proposed perspective.

■ PAPERS | ROOM: A4 & A5

WEB USABILITY

SESSION CHAIR: Ed H. Chi, *PARC, USA*

PAPER | Presenting Web Image Search Results in Semantic Clusters

Shuo Wang, Feng Jing, *Microsoft, China*
Jibo He, *Peking University, China*
Qixing Du, *Tsinghua University, China*
Lei Zhang, *Microsoft, China*

The paper addresses an evaluative exploration of interface using image clustering for web image searches. Users prefer this organized result UI over traditional list views.



PAPER | Web Page Revisitation Revisited: Implications of a Long-Term, Click-Stream Study of Browser Usage

Hartmut Obendorf, Harald Weinreich, *University of Hamburg, Germany*
Eelco Herder, *University of Hannover, Germany*
Matthias Mayer, *University of Hamburg, Germany*

Updates findings concerning revisitation behavior based on an extensive long-term click-stream study of Web usage. Differentiates types of revisits and suggests implications for support by Web designers and Web browsers.

PAPER | Noticing Notice: A Large Scale Experiment on the Timing of Software License Agreements

Nathaniel S. Good, Jens Grossklags, Deirdre K. Mulligan, *University of California, Berkeley, USA*
Joseph A. Konstan, *University of Minnesota, USA*

A large scale experiment of the timing of software license agreements demonstrating the applicability of HCI techniques to fundamental legal questions regarding notice and consent.

■ PAPERS | ROOM: A8

EMPIRICAL MODELS

SESSION CHAIR: Ann Blandford, *University College London, UK*



PAPER | Meta-Analysis of Correlations Among Usability Measures

Kasper Hornbæk, *University of Copenhagen, Denmark*
 Effie Lai-Chong Law, *Eidgenössische Technische Hochschule, Zürich, Switzerland*

Investigates how usability measures are correlated and which factors that shapes the correlations. Provides extensive empirical evidence about correlations and uses it to discuss models of usability and usability studies.

PAPER | A Predictive Model of Menu Performance

Andy Cockburn, *University of Canterbury, New Zealand*
 Carl Gutwin, *University of Saskatchewan, Canada*
 Saul Greenberg, *University of Calgary, Canada*

Presents a model predicting efficiency of menu designs, incorporating components for Fitts' pointing time, visual search time when novice, Hick-Hyman decision time when expert, and for novice to expert transition.

PAPER | Endpoint Prediction Using Motion Kinematics

Edward Lank, *University of Waterloo, Canada*
 Nikko Cheng, *San Francisco State University, USA*
 Jaime Ruiz, *University of Waterloo, Canada*

Develops a model of endpoint prediction based on kinematic laws of human motion. Enhances our understanding of motion in interfaces and its use in prediction-based interaction techniques.

■ PAPERS | ROOM: B1-B4

MOBILE INTERACTION TECHNIQUES I

SESSION CHAIR: Stephen Brewster, *University of Glasgow, UK*

PAPER | Direct-Touch vs. Mouse Input for Tabletop Displays

Clifton Forlines, *Mitsubishi Electric Research Laboratories & University of Toronto, USA & Canada*
 Chia Shen, *Mitsubishi Electric Research Laboratories, USA*
 Daniel Wigdor, *Mitsubishi Electric Research Laboratories & University of Toronto, USA & Canada*
 Ravin Balakrishnan, *University of Toronto, Canada*

Presents empirical data investigating differences between direct-touch and mouse input for unimanual and bimanual tasks on tabletop displays. Results can help guide the design of tabletop interfaces.



PAPER | Shift: A Technique for Operating Pen-Based Interfaces Using Touch

Daniel Vogel, *University of Toronto, Canada*
 Patrick Baudisch, *Microsoft, USA*

Describes a technique for operating pen-based devices using touch by preventing targets from getting occluded by the user's finger. User study finds performance benefits over existing offset cursor technique.

PAPER | An Alternative to Push, Press, and Tap-Tap-Tap: Gesturing on an Isometric Joystick for Mobile Phone Text Entry

Jacob O. Wobbrock, *University of Washington, USA*
 Duen Horng Chau, Brad A. Myers, *Carnegie Mellon University, USA*

Presents a novel input strategy involving the use of isometric joysticks on mobile phones. Describes a gestural text entry method competitive with Multitap and T9 but preferred by users.

■ ALT.CHI | ROOM: C2

RE-THINKING HUMANS, COMPUTERS, INTERACTION, AND DESIGN

SESSION CHAIR: Louise Barkhuus, *Glasgow University, UK*

The Three Paradigms of HCI (30 min)

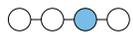
Steve Harrison, Deborah Tatar, *Virginia Polytechnic Institute and State University, USA*
 Phoebe Sengers, *Cornell University, USA*

Informal histories of HCI commonly document two major intellectual waves that have formed the field: the first orienting from engineering/human factors with its focus on optimizing man-machine fit and the second stemming from cognitive science, with an increased emphasis on theory and on what is happening not only in the computer but, simultaneously, in the human mind. In this paper, we document underlying forces that constitute a third wave in HCI and suggest systemic consequences for the CHI community.

Questioning the Technological Panacea: Three Reflective Questions for Designers (20 min)

Eric Baumer, Bill Tomlinson, *University of California, Irvine, USA*

This paper argues that asking whether or not a technological solution is appropriate should be an explicit and exposed part of the design process. It raises three questions that should be addressed during the design process: Are there other, possibly non-technological, solutions that could address the problem equally well, if not better? Are designers creating solutions to problems that users themselves do not need to have? Are these technological solutions treating a problem rather than its cause?



Uptake of Situationism Considered Harmful (20 min)

Lucian Leahu, Claudia Pederson, Jennifer Thom-Santelli,
Pavel Dmitriev, Phoebe Sengers, *Cornell University, USA*

We examine Situationist art practice as an inspiration for HCI design. We argue that methods from Situationist art practice have often been picked up without regard for their underlying sensibility. We describe an experiment in incorporating Situationist sensibility in design and use it to elucidate the challenges that face HCI in truly integrating the arts.

Imagination as Holographic Processor for Text Animation (20 min)

Adim Astakhov, Tamara Astakhova, Brian Sanders, *University of California San Diego, USA*

Imagination is the critical point in developing of realistic artificial intelligence (AI) systems. One way to approach imagination would be simulation of its properties and operations. We developed two models “Brain Network Hierarchy of Languages” and “Semantical Holographic Calculus” and simulation system ScriptWriter that emulate the process of imagination through an automatic animation of English texts.

■ SPECIAL INTEREST GROUP | ROOM: C4

TRUST 2.1 ADVANCING THE TRUST DEBATE

MODERATORS:

Jens Riegelsberger, *Google, UK*
Asimina Vasalou, *Imperial College London, UK*

Our aim is to provide a basis for the discussion of trust research at a this SIG, but also to give researchers and practitioners with an interest in the field an entry point to existing work. More importantly we hope that the SIG and this abstract will help in driving and structuring future trust research.

■ INTERACTIVE SESSION | CIVIC AUDITORIUM

ALONG THE PATH OF PERVASIVE COMPUTING: SELECTED WORKS IN GUI AND TUI DESIGN

MODERATOR:

Bill Lucas, *Maya Design, USA*

PANELISTS:

Hiroshi Ishii, *MIT, USA*

Jake Kolojejchick, *General Dynamics, USA*

Peter Lucas, *MAYA Design, USA*

David Rose, *Ambient Devices, USA*

This invited session discusses two bodies of research. Both continuously oriented toward pervasive computing since the early '90s. In 1995, MAYA Design introduced the notion of an "information-centric" GUI – where displays are arrangements of elements that can be broken apart by users and directly manipulated, giving people the sense of "getting their hands on the data". Today, General Dynamics is working with the US Army to deploy collaborative, "infocentric" systems all over the world. Similarly, in 1995, the Tangible Media Group at the MIT Media Lab started to design seamless interfaces between humans, digital information, and the physical environment. Their notion of "Tangible Bits," giving physical form to digital information, sparked the formation of a company, Ambient Devices, that has sold over 200,000 simple, glanceable information objects and a nationwide bit-tricking network to power them.

■ PAPERS | ROOM: A1

TASKS

SESSION CHAIR: Scott R. Klemmer, *Stanford University, USA*

PAPER | Disruption and Recovery of Computing Tasks: Field Study, Analysis, and Directions

Shamsi T. Iqbal, *University of Illinois, Urbana-Champaign, USA*

Eric Horvitz, *Microsoft, USA*

Presents results from a field study investigating user behavioral patterns during disruption and recovery from notifications in computing environments. Based on the findings, design implications for recovery tools are discussed.

PAPER | CAAD: An Automatic Task Support System

Tye Rattenbury, John Canny, *University of California, Berkeley, USA*

We present a system that automatically discovers and displays task representations. Through a feasibility study, we demonstrate that automation is a viable direction for future task support and management applications.

PAPER | Understanding and Developing Models for Detecting and Differentiating Breakpoints During Interactive Tasks

Shamsi T. Iqbal, Brian P. Bailey, *University of Illinois, Urbana-Champaign, USA*

Demonstrates the feasibility of building models that are able to detect and differentiate breakpoints during free-form tasks. These models can enable interruption management systems to realize defer-to-breakpoint policies in practice.

■ PAPERS | ROOM: A2

EMERGENCY ACTION

SESSION CHAIR: John M. Carroll, *The Pennsylvania State University, USA*

PAPER | Implicit Coordination in Firefighting Practice: Design Implications for Teaching Fire Emergency Responders

Zachary O. Touns, Andruid Kerne, *Texas A&M University, USA*

Investigates how information flows through teams of fire emergency responders and develops design recommendations for training systems to teach coordination and communication capabilities.



PAPER | Back Stage on the Front Lines: Perspectives and Performance in the Combat Information Center

Paul M. Aoki, *Intel, USA*

Presents a view of naval command and control as CSCW, focusing on social interaction and self-presentation issues. Provides designers of future systems with considerations beyond task analysis and human factors

PAPER | Citizen Communications in Crisis: Anticipating a Future of ICT-Supported Public Participation

Leysia Palen, Sophia B. Liu, *University of Colorado, Boulder, USA*

Information science can help understand, design for, and support an emerging, large-scale arena for computer-mediated interaction: public participation in crisis events.



■ PAPERS | ROOM: A3

DESIGN METHODS

SESSION CHAIR: Steve Harrison, *Virginia Polytechnic Institute and State University, USA*

PAPER | Transfer Scenarios: Grounding Innovation with Marginal Practices

Sara Ljungblad, *Viktoria Institute, Sweden*
Lars Erik Holmquist, *Swedish Institute of Computer Science, Sweden*

Transfer scenarios is a method that supports the design of innovative technology. It involves groups that are not the intended users in the design process to encourage a changed mindset.

PAPER | Work-Centered Design of a Mixed-Initiative Scheduler

Keith A. Butler, *Microsoft, USA*
Chris Esposito, *The Boeing Co., USA*
Jiajie Zhang, *University of Texas, USA*
Ron Hebron, Ali Bahrami, *The Boeing Co., USA*
David Kieras, *University of Michigan, USA*

A new design method for HCI where the information work requires technical problem-solving; A break-through application that integrates aircraft scheduling for missions and maintenance.

EXPERIENCE REPORT | Making Personas Memorable

James Nieters, Subbarao Ivaturi, Iftikhar Ahmed, *Cisco, USA*

Although Cisco's tag line for fiscal year 2007 is "Lead the Experience", not all Cisco product teams have historically focused on designing products that facilitate user success and delight. The Cisco User Experience Design (UXD) Group provides tools that stimulate a UXD culture, one of which is personas to catalyze a common understanding of users and a centralized persona database. The challenge has been that engineers at Cisco could opt out of using personas. In November 2005, the UXD team won an award for developing best practices in product development for creating these personas by vice presidents from across Cisco.

■ PAPERS | ROOM: A4 & A5

MOBILE INTERACTION TECHNIQUES II

SESSION CHAIR: Shumin Zhai, *IBM, USA*

PAPER | Pointing Lenses

Gonzalo Ramos, *University of Toronto, Canada*
Andy Cockburn, *University of Canterbury, New Zealand*
Ravin Balakrishnan, *University of Toronto, Canada*
Michel Beaudouin-Lafon, *Université Paris-Sud & CNRS, INRIA, France*

Presented three Pointing Lenses, which improve stylus-based input. Our studies show that lenses are beneficial for targets smaller than five pixels, and that this benefit may extend to larger targets.

PAPER | Comparing Physical, Automatic, and Manual Map Rotation for Pedestrian Navigation

Will P. J. Seager, *University College London, UK*
Danae Stanton-Fraser, *University of Bath, UK*

This paper presents findings concerning the effectiveness of different means of maintaining track-up alignment on map-based mobile navigation assistants. The findings suggests design improvements to facilitate more effective track-up alignment.

PAPER | Intimate Interfaces in Action: Assessing the Usability and Subtlety of EMG-Based Motionless Gestures

Enrico Costanza, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*
Samuel A. Inverso, *The Australian National University, Australia*
Rebecca Allen, *University of California, Los Angeles, USA*
Pattie Maes, *MIT, USA*

This paper expands the research on "subtle, intimate interfaces" for mobile HCI. Use of motionless gestures in a realistic multimodal interface and their noticeability are examined through a user study.

■ PAPERS | ROOM: A8

HOME SPIRITUALITY

SESSION CHAIR: Michael J. Muller, *IBM, USA*



PAPER | Sabbath Day Home Automation: "It's Like Mixing Technology and Religion"

Allison Woodruff, *Intel, USA*
Sally Augustin, *PlaceCoach, Inc., USA*
Brooke Foucault, *Intel, USA*

Presents a qualitative study of the use of home automation by 20 Orthodox Jewish families. Offers insights and design implications for user experience with smart home technology and religious technology.

PAPER | Enhancing Ubiquitous Computing with User Interpretation: Field Testing the Home Health Horoscope

William Gaver, *Goldsmiths College, UK*
 Phoebe Sengers, *Cornell University, USA*
 Tobie Kerridge, *Goldsmiths College, UK*
 Joseph 'Jofish' Kaye, *Cornell University, UK*
 John Bowers, *Goldsmiths College, UK*

The paper illustrates how designing to encourage user interpretation may supplement sensor-based inferencing in a home environment. Offers a new approach to those interested in developing domestic ubiquitous computing applications.

PAPER | Home Networking and HCI: What Hath God Wrought?

Erika Shehan, W. Keith Edwards, *Georgia Institute of Technology, USA*

We analyze why home networking is difficult, argue that the HCI community needs to be involved in resolving these problems, and discuss potential research efforts in home network usability.

■ PAPERS | ROOM: B1-B4

GAMES

SESSION CHAIR: Carl Gutwin, *University of Saskatchewan, Canada*

PAPER | Project Massive: Self-Regulation and Problematic Use of Online Gaming

A. Fleming Seay, *University of Texas, USA*
 Robert E. Kraut, *Carnegie Mellon University, USA*

This work contributes longitudinal analysis and examination of the concept of self-regulation to the ongoing discussion of problematic use of online video games.



PAPER | The Life and Death of Online Gaming Communities: A Look at Guilds in World of Warcraft

Nicolas Ducheneaut, *PARC, USA*
 Nicholas Yee, *Stanford University, USA*
 Eric Nickell, Robert J. Moore, *PARC, USA*

Using longitudinal data from more than 300,000 characters, identifies some of the factors linked to group survival and performance in massively multiplayer online games.

NOTE | Testing the Technology: Playing Games with Video Conferencing

Archer L. Batcheller, Brian Hilligoss, Kevin Nam, Emilee Rader, Marta Rey-Babarro, Xiaomu Zhou, *University of Michigan, USA*

Experimental results suggest playing games over video is as enjoyable as playing while collocated, despite video users developing artificial alliances. Implies that video can be successfully used in casual situations.

NOTE | Using Heart Rate to Control an Interactive Game

Ville Nenonen, Aleksi Lindblad, Ville Häkkinen, Toni Laitinen, Mikko Jouhtio, Perttu Hämäläinen, *Helsinki University of Technology, Finland*

Describes a exercise game where heart rate is used for user interaction with any training form. Shows that heart rate can be used for user interaction with positive results.

■ SPECIAL INTEREST GROUP | ROOM: C2

CAPTURING LONGITUDINAL USABILITY

MODERATORS:

Misha Vaughn, *Oracle, USA*
 Catherine Courage, *Salesforce.com, USA*

In this SIG the attendees will discuss methods for capturing usability data over time. Specifically, we will share industry best practices, brainstorm alternative solutions, as well as compare and contrast usability engineering methods for capturing usability problems that persist over time. We will also explore why longitudinal research is not a more common UCD practice.

■ SPECIAL INTEREST GROUP | ROOM: C4

END USER SOFTWARE ENGINEERING

MODERATORS:

Brad A. Myers, *Carnegie Mellon University, USA*
 Margaret Burnett, *Oregon State University, USA*
 Susan Wiedenbeck, *Drexel University, USA*
 Andrew J. Ko, *Carnegie Mellon University, USA*

This SIG meeting has three purposes: to bring the results of a recent (February 2007) week-long "Dagstuhl" meeting on end-user software engineering to interested researchers at CHI, to incorporate attendees' ideas and feedback into an emerging survey of the state of this interesting new subarea; and generally to bring together the community of researchers who are addressing this topic, with the companies that are creating end-user programming tools.

COURSE 21 | ROOM: A6

Web Usability for Assistive Technology

9:00–13:00

INSTRUCTORS:

Caroline Boyden, *University of California, Berkeley, USA*
Lucy Greco, *University of California, Berkeley, USA*

Benefits: Is your website accessible to users of assistive technology? How do you know? This course will provide you with practical knowledge and techniques to understand accessibility, evaluate your sites and applications, and improve user experience.

Intended Audience: Web designers and developers. Usability and HCI professionals. This is an introductory course; no specialized skills or knowledge are required. However, a familiarity with commonly-accepted accessibility standards is helpful.

COURSE 22 | ROOM: A6

Rapid Prototyping and Evaluation with Web Mashups

14:30–18:00

INSTRUCTORS:

M. Cameron Jones, *University of Illinois, Urbana-Champaign, USA*
Michael B. Twidale, *University of Illinois, Urbana-Champaign, USA*
Richard J. Urban, *University of Illinois, Urbana-Champaign, USA*

Benefits: This course is intended to appeal to a number of different kinds of CHI attendees: people who are intrigued by the mash-up concept and want to learn more, people interested in rapid lightweight development methods, people looking for ways to explore a possibility space, people interested in Web2.0 issues, people interested in ways to encourage development creativity and people who want a quick way of trying out a research concept.

Intended Audience: Participants should have previous programming experience and be comfortable with reading and writing code. Participants should also be familiar with HTML and CSS and be able to quickly and easily generate simple web pages. It is recommended, although not strictly required, that participants have some background in web programming. A strong background in general programming languages and practices can compensate for a lack of web-specific programming experience.

COURSE 19 | ROOM: A7

Information Foraging Theory

9:00–13:00

INSTRUCTOR:

Peter Pirolli, *PARC, USA*

Benefits: This course aims to explain and predict how people will best shape themselves to their information environments, and how information environments can best be shaped to people. The approach involves a kind of reverse engineering in which the analyst asks (a) what is the nature of the task and information environments, (b) why is a given system a good solution to the problem, and (c) how is that solution realized (approximated) by mechanism. Typically, the key steps in developing a model of information foraging involve: (a) a rational analysis of the task and information environment (often drawing on optimal foraging theory from biology) and (b) a computational production system model of the cognitive structure of task. This course provides an introduction and overview of Information Foraging Theory, detailed examples, an overview of applications of the theory to the formulation of usability guidelines and cognitive engineering models, and discussion of new opportunities for research. Participants should have sufficient background by the end of the course to perform exercise analyses in information foraging and to have gained resources for research, design and development, and teaching.

Intended Audience: The course is aimed primarily at researchers, although practitioners will definitely be welcomed to participate and learn from the course. It is assumed that participants will not faint if confronted with a few equations or raw code samples during the course.

COURSE 17 | ROOM: A7

An Introduction to Designing for the Scent of Information

14:30–16:00

INSTRUCTOR:

Jared M. Spool, *User Interface Engineering, USA*

Benefits: If your users can't find the content they are seeking, your site will fail. One of the biggest secrets of successful web sites is that they design for Scent.

In recent research, we've uncovered that users know when they are on the right track to finding their content – they follow the Scent of Information. By understanding how users pick up and keep the scent, you can design more usable web sites. We'll demonstrate how the successful sites provide a strong scent, and what happens when they don't. Using the results of hundreds of usability tests, we'll show you how users follow a scent trail and the different ways your design could be blocking scent. We'll also discuss how the quality of links, page length, page density, and graphics affect whether users find the content they're looking for.

Intended Audience: Web Designers & Usability Practitioners

 COURSE 18 | ROOM: A7

Designing for the Scent of Information: Advanced Concepts
16:30–18:00
INSTRUCTOR:

 Jared M. Spool, *User Interface Engineering*, USA

Benefits: You work hard providing top-notch content on your site. Will your users find it? If they don't find it, all that effort is for nothing. Our research has uncovered three ways to predict when users will fail finding the content they desire. We'll show you what these three predictors are and how to counter the effects in your design.

We will share the secrets behind successful designs including Lands' End, the Bureau of Labor and Statistics, CNN, and the BBC. You'll learn why trigger words are critical to users successfully finding their content, why the best sites prevent users from using Search, how exposing a site's hierarchy can increase the success of the user, how designing longer pages helps users find what they seek, and how to best use lateral links and breadcrumbs.

Intended Audience: Web designers & usability practitioners who have had experience designing web sites. Attendance at the introductory course will provide the necessary background needed to understand this course but is not required.

 COURSE 16 | ROOM: C3

Design of Spatial Applications
9:00–13:00
INSTRUCTOR:

 Matthew Hockenberry, *MIT*, USA

Benefits: The course offers a practical, focused but detailed overview of traditional approaches to spatial representation. The course provides a review of the state of the art regarding technologies and designs for presenting spatial information and the user goals which necessitate this support. It provides a detailed set of resources for further exploration into each of these areas. The course additionally offers applied practical experience in formulating successful design goals and approaches that produce efficient, effective, and novel spatial applications that satisfy practical user needs. Inspiration, something we always need more of, also comes included.

Intended Audience: For all attendees with interest in the roles of spatial information in application development.

 COURSE 20 | ROOM: C3

Building Affinity Diagrams to Reveal User Needs and Engage Developers
14:30–18:00
INSTRUCTOR:

 Shelley Wood, *InContext Enterprises*, USA

Benefits: Affinity diagramming is fairly well known in the CHI community and used as a technique for organizing large amounts of information, especially qualitative data. However, the full potential of affinity diagramming – both as a technique for revealing design implications and as a powerful communication tool – is not being fully exploited.

This course teaches how to build more powerful affinities, offers a process for managing organizational issues, and provides a mechanism for using the affinity as a communication tool across the organization.

Intended Audience: No specific background is required. It is appropriate for all roles.

 COURSE 14 | ALMADEN BALLROOM I

Card Sorting & Cluster Analysis for Information Architecture Design
9:00–18:00
INSTRUCTORS:

 Jianming Dong, *PayPal.com*, USA

 Janice James, *Simply Usable Through Design*, USA

 Carol Righi, *Perficient, Inc.*, USA

 Larry Wood, *Parallax, LLC*, USA

Benefits: This course will provide user researchers with practical guidance and hands-on experience in the use of card sorting and cluster analysis methods and tools. After attending the course, attendees are expected to be able to: 1. Practice at a basic level the skills of planning and conducting card sorting and cluster analysis. 2. Determine the most appropriate methods and tools to fit the needs of specific projects. 3. Interpret card sort data to provide clear recommendations on architectural design.

Intended Audience: This course is designed for both those new to the field of usability/UCD/information architecture, as well as for advanced practitioners who are very familiar with the concept, but wish to learn a new tool and method. Attendees should have some background and familiarity with the concept of information architecture.

COURSE 15 | ALMADEN BALLROOM II

Understanding Users in Context: An In-Depth Introduction to Fieldwork

9:00–18:00

INSTRUCTORS:

Susan M. Dray, *Dray & Associates, Inc., USA*
David A. Siegel, *Dray & Associates, Inc., USA*

Benefits: You will learn how to plan for and carry out studies of users in the field. Rather than teaching a single methodology to do field research, we provide you with the tools to think critically and make informed decisions about the many planning and methodological choices you will have to make. For each technique, we identify its key challenges, while helping you learn how to get its benefits. You will have the chance to practice skills for several fieldwork techniques.

Intended Audience: This hands-on session is aimed at practitioners planning, doing, and leading observational field research projects, including developers, designers, and managers who are responsible for user experience or user requirements identification. This is an introductory to intermediate level tutorial. It will be useful for beginners in fieldwork, as well as those with some experience who want to broaden their knowledge of a range of approaches.