Saarbrücken HCI
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At CHI 2013, Saarbrücken HCI is contributing 14 papers and notes, three work-in-progress papers, six interactivity demos, and two videos. We are also co-organizing three workshops and one SIG meeting, contributing eight workshop papers, and presenting one half-day course. One of our papers received a "best of CHI" award, and three papers were given honorable mention. One of our students is attending the student research competition. Two of us were subcommittee chairs, two were associate chairs, a number of others served as reviewers, and a few are student volunteers.

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http://hci.uni-saarland.de
Flexpad: Highly Flexible Bending Interactions for Projected Handheld Displays

Introduces highly flexible handheld displays as user interfaces. Contributes a novel real-time method for capturing complex deformations of flexible surfaces and novel interactions that leverage highly flexible deformations of displays.

Keywords: Flexible display, handheld display, tracking, projection, depth camera, deformation, bending, volumetric data

Session: Flexible Displays // 1st presentation
Monday: 14:00-15:20 // Room: 352AB

Authors: Jürgen Steimle // MIT Media Lab / MPI
Andreas Jorå
Pattie Maes
Morphees: Toward High „Shape Resolution“ in Self-Actuated Flexible Mobile Devices

We introduce the term shape resolution in 10 features, which adds to the existing definitions of screen and touch resolution and helps the design of shape-shifting mobile devices.

Keywords........Shape resolution, organic user interface, shape changing, flexible touchscreen, haptic feedback

Session........Flexible Displays // 3rd presentation
Monday: 14:00-15:20 // Room: 352AB

Authors..........Anne Roudaut
Abhijit Karnik
Markus Löchtfeld // DFKI
Sriram Subramanian
Métamorphe: Augmenting Hotkey Usage with Actuated Keys

Demonstrate the advantages of shape-changing keyboards for command selection. The Metamorphe keyboard offers a novel height-changing mechanism that provides haptic feedback and enables new key gestures.

Keywords: Augmented keyboard, height-changing keys, hotkeys, shape-changing interfaces, user-defined gestures

Session: Keyboards and Hotkeys // 3rd presentation
Monday: 14:00-15:20 // Room: 351

Authors: Gilles Bailly // MPI
Thomas Pietrzak
Jonathan Deber
Daniel Wigdor
EyeContext: Recognition of High-level Contextual Cues from Human Visual Behaviour

We present EyeContext, a system to automatically infer high-level contextual cues from visual behaviour. We demonstrate the large information content available in long-term visual behaviour that’s potentially useful for eye-based behavioural monitoring or life logging.

Keywords........Context recognition, eye movement analysis, visual behaviour, electrooculography

Session..........Gaze // 4th presentation
Monday: 14:00-15:20 // Room: 241

Authors..........Andreas Bulling // MPI
Christian Weichel
Hans Gellersen
Promoting Hotkey Use through Rehearsal with ExposeHK

Introduces ExposeHK, a new interface that promotes hotkey selection. Presents results of three studies showing that ExposeHK increases hotkey use, improves performance and was strongly preferred.

Keywords

Hotkeys, keyboard shortcuts, rehearsal, menus, command selection, novice mode, expert mode

Session

Keyboards and Hotkeys // 4th presentation

Monday: 14:00-15:20 // Room: 351

Authors

Sylvain Malacria
Gilles Bailly // MPI
Joel Harrison
Andy Cockburn
Carl Gutwin
StrikeAPose: Revealing Mid-Air Gestures on Public Displays

Proposes three strategies to reveal mid-air gestures on interactive public displays and introduces the Teapot gesture as a novel initial mid-air gesture. Shows that users naturally explore gesture variations.

Keywords........Public displays, initial gesture, revelation, field study

Session........Large and Public Displays // 3rd presentation
            Monday: 16:00-17:20 // Room: 351

Authors.........Robert Walter
                Gilles Bailly // MPI
                Jörg Müller
SideWays: A Gaze Interface for Spontaneous Interaction with Situated Displays

Presents a system that uses lightweight computer vision techniques for calibration-free eye tracking. The system enables hands-free spontaneous interaction with situated displays using eye gaze.

Keywords........Eye-based interaction, eye tracking, spontaneous interaction, situated display, calibration-free

Session............Large and Public Displays // 4th presentation
  Monday: 16:00-17:20 // Room: 351

Authors..........Yanxia Zhang
   Andreas Bulling // MPI
   Hans Gellersen
Pass the iPad: Collaborative Creating and Sharing in Family Groups

Reports two studies of a tablet app to support co-creation in family groups. Relates findings to use of tablets as ‘scrap computers’.

Keywords...........Tables, shareable interfaces, scrap computers, families, group working, collaboration

Session............Design for the Home // 4th presentation
Tuesday: 9:00-10:20 // Room: 242AB

Authors............Nicola Yuill
Yvonne Rogers
Jochen Rick // EduTech
Information Capacity of Full-Body Movements

Presents a novel metric for the information capacity of full-body movements.

Keywords: Information capacity, full-body movement, measurement, throughput, gesture-based interfaces, information theory

Session: Full-Body Interaction // 2nd presentation
Tuesday: 11:00-12:20 // Room: Bordeaux

Authors: Antti Oulasvirta // MPI
Teemu Roos
Arttu Modig
Laura Leppänen
MotionMA: Motion Modelling and Analysis by Demonstration

This work describes MotionMA, a system that extracts a quantitative model of movements and generates an analysis and feedback interface for helping other users perform them.

Keywords: Activity assessment, weight lifting, motion modeling, real-time user feedback, learning by demonstration

Session: Full-Body Interaction // 4th presentation
Tuesday: 11:00-12:20 // Room: Bordeaux

Authors: Eduardo Velloso
Andreas Bulling // MPI
Hans Gellersen
Screenfinity: Extending the Perception Area of Content on Very Large Public Displays

Presents a model for the perception area of visual interfaces, and a novel public display increasing the perception area and allowing interaction while walking. Useful for designers of large displays.

Keywords........Large public displays, perception area, visual acuity

Session..........Public Displays // 3rd presentation
   Tuesday: 16:00-17:20 // Room: Blue

Authors..........Constantin Schmidt
   Jörg Müller
   Gilles Bailly // MPI
A Study on Icon Arrangement by Smartphone Users

This paper studies peoples’ arrangements of icons in smartphone menus. From 1,400+ menu screenshots we distill five fundamental concepts for arranging icons. Implications are useful for designing mobile launcher menus.

Keywords........Mobile applications, icon arrangement, user behavior

Session..........Mobile Interaction // 1st presentation
Wednesday: 9:00-10:20 // Room: Bordeaux

Authors..........Matthias Böhmer // DFKI
Antonio Krüger // DFKI
Improving Two-thumb Text Entry on Touchscreen Devices

We designed a split keyboard to improve two-thumb text entry on tablet devices. KALQ’s design considers grip, coordinated performance of the two thumbs, and linguistic and motor errors.

Keywords.......Soft keyboards, keyboard optimization, two-thumb text entry, touchscreen devices, bimanual performance

Session..........Mobile Text Entry // 1st presentation
               Wednesday:14:00-15:20 // Room: 352AB

Authors ..........Antti Oulasvirta // MPI
                 Anna Reichel // MPI
                 Wenbin Li
                 Yan Zhang
                 Myroslav Bachynskyi // MPI
                 Keith Vertanen
                 Per Ola Kristensson
Multi-Touch Rotation Gestures: Performance and Ergonomics

Studies performance and ergonomics characteristics of multi-touch rotations. Presents findings concerning the effects of angle, diameter, and position.

Keywords .......Rotation, multi-touch interaction, gestures, ergonomics

Session.........Mobile Gestures // 4th presentation
  Wednesday: 16:00-17:20 // Room: 352AB

Authors.........Eve Hoggan
  John Williamson
  Antti Oulasvirta // MPI
  Muguel Nacenta
  Per Ola Kristensson
  Anu Lehtiö
Workshop and SIG Organization

Workshop on Displays Take New Shape: An Agenda for Future Interactive Surfaces
Organizers ......Jürgen Steimle, Hrvoje Benko, Alvaro Cassinelli, Hiroshi Ishii, Daniel Leithinger, Pattie Maes, Ivan Poupyrev
Website...........http://displayworkshop.media.mit.edu/

Workshop on Grand Challenges in Text Entry
Organizers ......Per Ola Kristensson, Stephen Brewster, James Clawson, Mark Dunlop, Leah Findlater, Poika Isokoski, Benoît Martin, Antti Oulasvirta, Keith Vertanen, Annalu Waller
Website...........http://textentry.org/chi2013/

Workshop on Gaze Interaction in the Post-WIMP World
Organizers ......Andreas Bulling, Raimund Dachselt, Andrew Duchowski, Robert Jacob, Sophie Stellmach, Veronica Sundstedt
Website...........http://gaze-interaction.net/chi13-workshop

SIG on Visions and Visioning in CHI
Organizers ......Aaron Quigley, Alan Dix, Wendy Mackay, Hiroshi Ishii, Jürgen Steimle
Date.................TH: 14:00-15:20 // Room: 362/363
Works in Progress (WIP)

Biomechanical Simulation in the Analysis of Aimed Movements
Myroslav Bachynskyi, Antti Oulasvirta, G. Palmas, T. Weinkauf

BouldAR – Using Augmented Reality
to Support Collaborative Boulder Training
Florian Daiber, Felix Kosmalla, Antonio Krüger

Permulin: Collaboration on
Interactive Surfaces with Personal In- and Output
Roman Lissermann, Jochen Huber, Jürgen Steimle, Max Mühlhäuser
Student Research Competition

HandSonor: A Customizable Vision-based Control Interface for Musical Expression
Srinath Sridhar

Interactivity

Parallel faceted browsing
Sven Buschbeck, Anthony Jameson, Adrian Spirescu, Tanja Schneeberger, Raphaël Troncy, Houda Khrouf, Osma Suominen, Eero Hyvönen

PianoText: Transferring Musical Expertise to Text Entry
Anna Feit, Antti Oulasvirta

Information Capacity of Full-Body Movements
Antti Oulasvirta, Teemu Roos, Arttu Modig, Laura Leppanen
Course

Choice and Decision Making for HCI
Instructor .......Anthony Jameson
Date / time ......Tuesday, April 30th, 2013, 9:00-12:20
Benefits ..........People are constantly making small choices and larger decisions about their use of computing technology. This course offers a synthesis of relevant research in psychology and HCI that will enable you to analyse systematically the choices made by the users that you are interested in - and to generate new ways of helping them to make better choices.

Video Track

Permulin: Collaboration on Interactive Surfaces with Personal In- and Output
Roman Lissermann, Jochen Huber, Jürgen Steimle, Max Mühlhäuser

Pursuits: Eye-Based Interaction with Moving Targets
Melodie Vidal, Ken Pfeuffer, Andreas Bulling, Hans Gellersen

SideWays: A Gaze Interface for Spontaneous Interaction with Public Displays
Yanxia Zhang, Andreas Bulling, Hans Gellersen

Flexpad: A Highly Flexible Handheld Display
Jürgen Steimle, Andreas Jordt, and Pattie Maes

MetaSolid – On Flexibility and Rigidity in Future User Interfaces
Clemens Winkler, Jürgen Steimle, and Pattie Maes
Workshop Papers

Workshop on Displays Take New Shape: An Agenda for Future Interactive Surfaces

Display Stickers: Enhance Your Environment with Tiny Interactive Stickers
Simon Olberding, Jürgen Steimle

Fingernail Displays: Handy Displays at your Fingertips
Martin Weigel, Jürgen Steimle

Media Façades: Turning buildings into large-scale interactive surfaces
Sven Gehring

Workshop on Gaze Interaction in the Post-WIMP World

Combining Touch and Gaze for Distant Selection in a Tabletop Setting
Michael Mauderer, Florian Daiber and Antonio Krüger

Workshop on Grand Challenges in Text Entry

Do we need a standard for evaluating text entry methods?
Antti Oulasvirta, Per-Ola Kristensson

Eype – Using Eye-Traces for Eye-Typing
Sabrina Hoppe, Markus Löchtefeld and Florian Daiber

Interactive City Lighting

Digital Light Installations - Connecting people through interactive buildings
Sven Gehring, Alexander Wiethoff

Workshop on Organic Experiences:
(Re-)Shaping Interactions with Deformable Displays

Towards Real Organic User Interfaces –
Using Non-Newtonian Fluids for Self-Actuated Displays
Markus Löchtefeld
HCI Groups in Saarbrücken

The research of EduTech lies at the intersection of HCI and Learning Sciences. They develop innovative, pedagogically-sound learning environments to simultaneously investigate and design the future of educational technology.

The research of the Embodied Interaction Group focuses on seamlessly integrating digital media with the physical world. The group reinvents computer interfaces by making objects responsive, rendering surfaces and spaces interactive, and augmenting the human body itself.

The HCI Group develops models of human-computer interaction that capture well-studied aspects of interaction and use them for optimizing interface designs. They use the outcomes to build novel text entry, menu selection, multimodal and mixed reality interfaces.

The Chair of Information and Service Systems investigates how intelligent Information Systems lead to adaptive real-world environments, called Ubiquitous Information Systems. This research is conducted by basic and applied research projects in cooperation with leading research and industry partners.

The Perceptual User Interfaces Group develops novel on-body sensing and computer vision systems as well as computational methods to analyse and model human visual and physical behaviour. They use these systems and methods for computational behaviour analysis and pervasive eye-based human-computer interaction.

The Ubiquitous Media Technologies Lab investigates HCI mainly in the fields of Intelligent User Interfaces and Ubiquitous Computing (e.g. media facades, mobile projection, 3D touch, mobile AR, and mobile app usage). The group has tight bounds to industry and is well known for running the Innovative Retail Laboratory.

http://hci.uni-saarland.de