HelsinCHI

Publications CHI

2018

HCI Helsinki is a network of HCI researchers from different research groups in Helsinki, Finland. We are an active and interactive research community conducting cutting-edge research on "hot" HCI topics. We meet on a weekly basis in the HCI seminar, where students, postdoc and professors share their early-stage ideas and ongoing work. We seek intellectual exchange with anyone passionate about HCI. We host talks from internationally renowned researchers and organize international conferences and other HCI-related events. We also provide prospective students with the opportunity to build a strong HCI foundation through the offering of a variety of courses and seminars.

For more information please visit: ***https://hcihelsinki.org/***

RESEARCH GROUPS

Art & Magic
Group Leader: Tassu Takala

Game Research
Group Leader: Perttu Hämäläinen

Embodied Design Group (EDG)
Group Leader: Andrés Lucero

Engaging Co-Design Research (ENCORE)
Group Leader: Tuuli Mattelmäki/ Virpi Roto

Multimodal and Nomadic Group
Group Leader: David McGookin

Social Interaction and Emotion
Group Leader: Niklas Ravaja

STRATUS
Group Leader: Marko Nieminen

Ubiquitous Interaction
Group Leader: Giulio Jacucci

User Interfaces
Group Leader: Antti Oulasvirta

Art & Magic

We develop technology for sound, motion and interactive installations. Our goal is natural interaction—not using computers but living with them. Part of this mission is to build human behavior and capabilities in computers, and also study how humans perceive these virtual agents.

Game Research

Goals: Explore the future of games through creating it. Present focus: human movement, including exergames, procedural animation, animation interfaces. Focus adapts based on who is working in the group – true innovation grows bottom-up.

Working

Storytelling

Playing

Embodied Design Group (EDG)

Things and thoughts, mind and matter, bits and bodies. It is so easy for everybody to talk and think of our reality through these concepts. Designing, however, may be understood and conducted without separating rational thinking from physical construction. Embodied Design looks at reality as a venue for people to interact, communicate and learn though their bodies. Designs are established in and through the bodily dialogue with people, materials, and concepts. It is our job to develop new understandings about this whole.

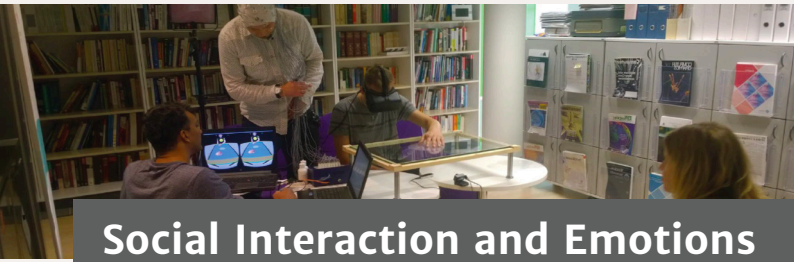
Engaging Co-Design Research (ENCORE)

We believe that open-minded change requires involving people in the design process. Therefore, we share the passion for creative collaborative design. Our research playground consists of service design, organisational change and social design, where we fearlessly but humbly enter with our empathic, human-centred and experience-driven approach (mindset, skills, and tools).

Multimodal and Nomadic Group

We focus on supporting interaction with digital media within the user's immediate physical environment. Through the study of novel technology and their study,

we seek to understand how digital media can be more naturally be integrated into the environment to support engaging, informative and enjoyable experiences that enhance rather than distract from the environment.

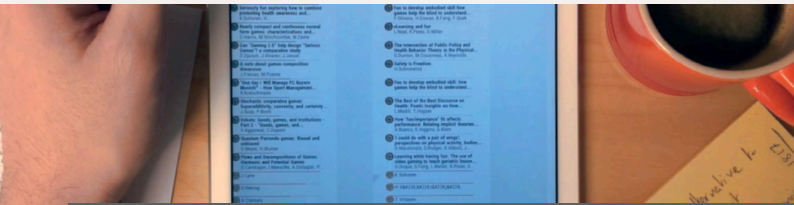


Social Interaction and Emotions

The mission of SIE is to increase our understanding of ICT-mediated social interaction. Our studies focus on: (a) emotional and cognitive processes during mediated social interaction, including mediated touch, interaction with virtual humans, and knowledge work, (b) the neuroscience of social ICT, (c) socially-mediated behavioral phenomena in SNSs, (d) the use of gamication tosupport the adoption of healthier lifestyles, and (e) user experience of ICT.

STRATUS

The Strategic Usability Research Group STRATUS is doing research and providing teaching in usability engineering and user-centred design. The aim in our research is to study and develop methods and tools that are used to uncover user's needs, capabilities, expectations and experiences that aect the usage of products and consumption of services. This information is transformed and used in product and service development.



Ubiquitous Interaction

Our group is interested in the design, development and evaluation of interactivity with users in ubiquitous and mobile computing systems. The research is carried out

coupling in-depth user studies with design in the area of novel interfaces. The goal is to contribute to technology development efforts by deepening understanding of human and design perspectives.

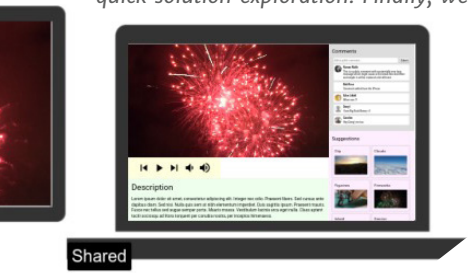
User Interfaces

Our mission is to identify and exploit optima of human-computer performance. We formulate interface design problems as optimization tasks, develop predictive modeling of interaction, and implement computational methods for interface design. Whereas previous work in HCI has been largely based on trial and error, this approach allows aggressive exploration of design spaces and the identication of optimum designs.

AdaM: Adapting Multi-User Interfaces for Collaborative Environments in Real-Time

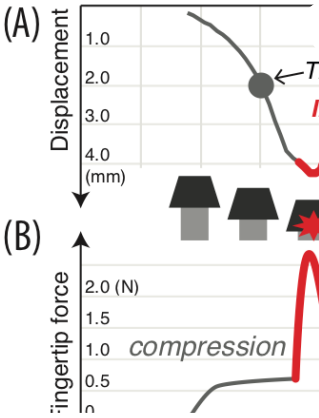
Seonwook Park, Christoph Gebhardt, Roman Rädle, Anna Maria Feit, Hana Vrzakova, Niraj Dayama, Antti Oulasvirta

Developing cross-device multi-user interfaces (UIs) is a challenging problem. There are numerous ways in which content and interactivity can be distributed. However, good solutions must consider multiple users, their roles, their preferences and access rights, as well as device capabilities. Manual and rule-based solutions are tedious to create and do not scale to larger problems nor do they adapt to dynamic changes, such as users leaving or joining an activity. In this paper, we cast the problem of UI distribution as an assignment problem and pro- pose to solve it using combinatorial optimization. We present a mixed integer programming formulation which allows real- time applications in dynamically changing collaborative set- tings. It optimizes the allocation of UI elements based on device capabilities, user roles, preferences, and access rights. We present a proof-of-concept designer-in-the-loop tool, al- lowing for quick solution exploration. Finally, we compare our approach to traditional paper prototyping in a lab study.

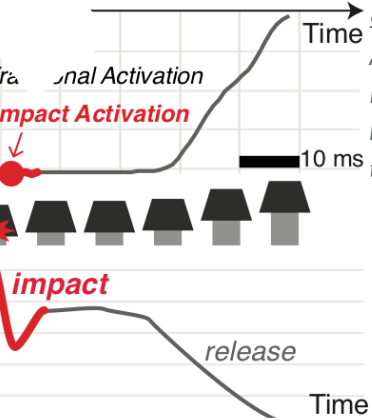


Impact Activation Improves Rapid Button Pressing

Sunjun Kim, Antti Oulasvirta, Byungjoo Lee



The activation point of a button is defined as the depth at which it invokes a make signal. Regular buttons are activated during the downward stroke, which occurs within the first 20 ms of a press. The remaining portion, which can be as long as 80 ms, has not been examined for button activation for reason of mechanical limitations. The paper presents a technique and empirical evidence for an activation technique called Impact Activation, where the button is activated at its maximal impact point. We argue that this technique is advantageous particularly in rapid, repetitive button pressing, which is common in gaming and music applications. We report on a study of rapid button pressing, wherein users' timing accuracy improved significantly with use of Impact Activation. The technique can be implemented for modern push-buttons and capacitive sensors that generate a continuous signal.

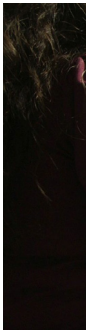


Traces: Studying a Public Reactive Floor-Projection of Walking Trajectories to Support Social Awareness

Beatrice Monastero, David McGookin

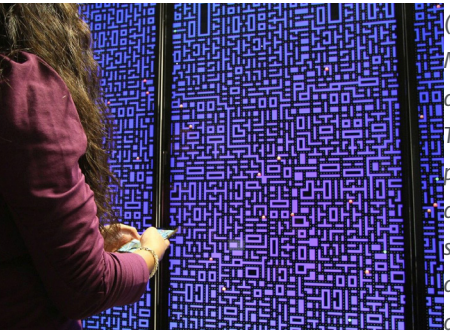
Walking trajectories have been used to understand howusers interact with public displays. However, it has not yet been studied how displaying them in-situ could affect users' awareness about others' presence and activities. We present the study of an interactive public floor-projection called Traces. Traces projects the walking trajectories of individuals as they pass through the lobby of a university building. We investigated Traces through a 6 week in-field study. Our results outline how different uses and understandings of Traces contributed towards its appropriation as a glanceable display for social awareness. We outline design suggestions that future designers should consider to support social awareness with public displays

Pac-Many: Movement Behavior when Playing Collaborative and Competitive Games on Large Displays



Sven Mayer[1] , *Lars Lischke*[1] , *Jens Emil Grønbæk*[2] , *Zhanna Sarsenbayeva*[3] , *Jonas Vogelsang*[1] , *Paweł W. Wo´zniak*[1] , *Niels Henze*[1] , *Giulio Jacucci*[4]

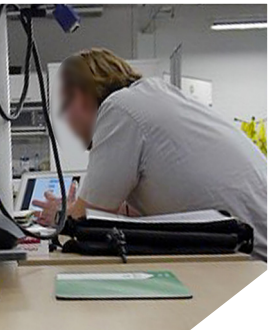
Previous work has showed that large high resolution dis- plays (LHRDs) can enhance collaboration between users. As LHRDs allow free movement in front of the screen, an under- standing of movement behavior is required to build successful interfaces for these devices. This paper presents Pac-Many; a multiplayer version of the classical computer game Pac-Man to study group dynamics when using LHRDs. We utilized smartphones as game controllers to enable free movement while playing the game. In a lab study, using a 4m × 1m LHRD, 24 participants (12 pairs) played Pac-Many in collaborative and competitive conditions. The results show that players in the collaborative condition divided screen space evenly. In contrast, competing players stood closer together to avoid benefits for the other player. We discuss how the nature of the task is important when designing and analyzing collaborative interfaces for LHRDs. Our work shows how to account for the spatial aspects of interaction with LHRDs to build immersive experiences.



On Visual Granularity: Collocated Sales Meeting Interactions in the Machine Industry

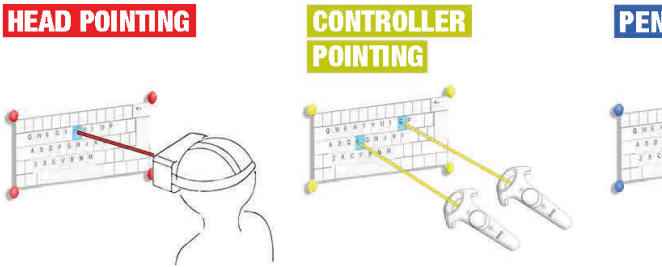
Mikko Illi, Maria Karyda, Andrés Lucero

Visual representations are being used in typical sales meetings of the machine industry to exchange information and support social interactions. In these meetings, sales representatives design for granularity by taking into account verbal and visual details of communication. Our article builds on increasingly occurring collocated interactions in sales meetings investigating the social relevance of mobile devices in face-to-face settings. The article aims to understand the supporting and disturbing role of visual granularity in sales meetings and develops design implications for interaction designers. We conducted an ethnographic study of sales meetings in material handling and paper machine industries, including Conversation Analysis (CA) of video recordings, and involving groups of professional analysts that are seldom used in HCI. Our findings draw evidence from sales meetings and design processes on successful and unsuccessful use of granularity in visual representations. Finally, we propose seven design guidelines for visual granularity striving to understand buyers' perceptions and visual qualities.



Selection-based Text Entry in Virtual Reality

Marco Speicher, Anna Maria Feit,
Pascal Ziegler, Antonio Krüger



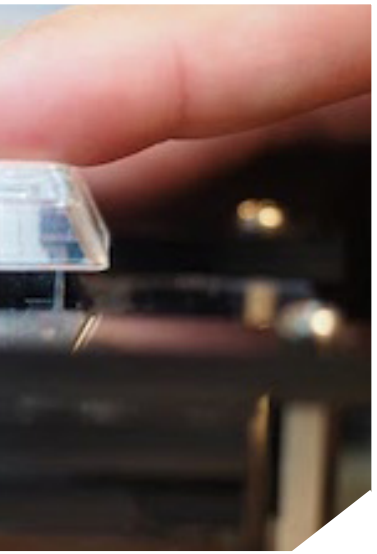
In recent years, Virtual Reality (VR) and 3D User Interfaces (3DUI) have seen a drastic increase in popularity, especially in terms of consumer-ready hardware and software. While the technology for input as well as output devices is market ready, only a few solutions for text input exist, and empirical knowledge about performance and user preferences is lacking. In this paper, we study text entry in VR by selecting characters on a virtual keyboard. We discuss the design space for assessing selection-based text entry in VR. Then, we implement six methods that span different parts of the design space and evaluate their performance and user preferences. Our results show that pointing using tracked hand-held controllers outperforms all other methods. Other methods such as head pointing can be viable alternatives depending on available

resources. We summarize our findings by formulating guidelines for choosing optimal virtual keyboard text entry methods in VR.

Neuromechanics of a Button Press

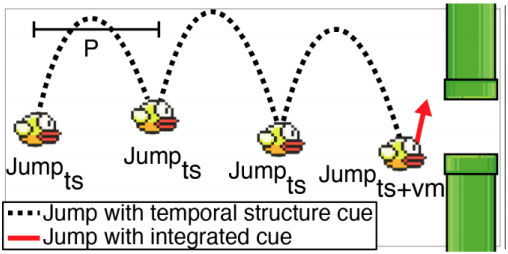
Antti Oulasvirta, Sunjun Kim, Byungjoo Lee

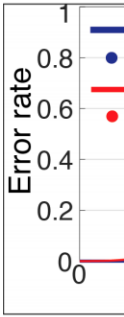
To press a button, a finger must push down and pull up with the right force and timing. How the motor system succeeds in button-pressing, in spite of neural noise and lacking direct access to the mechanism of the button, is poorly understood. This paper investigates a unifying account based on neuromechanics. Mechanics is used to model muscles controlling the finger that contacts the button. Neurocognitive principles are used to model how the motor system learns appropriate muscle activations over repeated strokes though relying on degraded sensory feedback. Neuromechanical simulations yield a rich set of predictions for kinematics, dynamics, and user performance and may aid in understanding and improving input devices. We present a computational implementation and evaluate predictions for common button types.



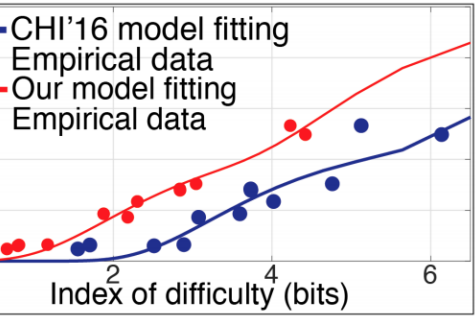
Moving Target Selection: A Cue Integration Model

Byungjoo Lee, Sunjun Kim, Antti Oulasvirta, Jong-In Lee, Eunji Park





This paper investigates a common task requiring temporal precision: the selection of a rapidly moving target on display by invoking an input event when it is within some selection window. Previous work has explored the relationship between accuracy and precision in this task, but the role of visual cues available to users has remained unexplained. To expand mod- eling of timing performance to multimodal settings, common in gaming and music, our model builds on the principle of probabilistic cue integration. Maximum likelihood estimation (MLE) is used to model how different types of cues are inte- grated into a reliable estimate of the temporal task. The model deals with temporal structure (repetition, rhythm) and the perceivable movement of the target on display. It accurately predicts error rate in a range of realistic tasks. Applications include the optimization of difficulty in game-level design.



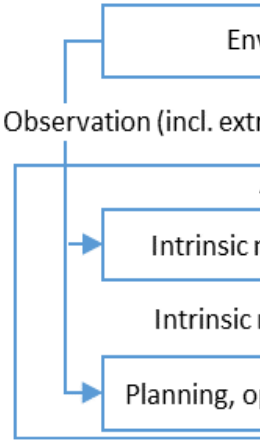
Physical Keyboards in Virtual Reality: Analysis of Typing Performance and Effects of Avatar Hands

Pascal Knierim, Valentin Schwind, Anna Maria Feit, Florian Nieuwenhuizen, Niels Henze

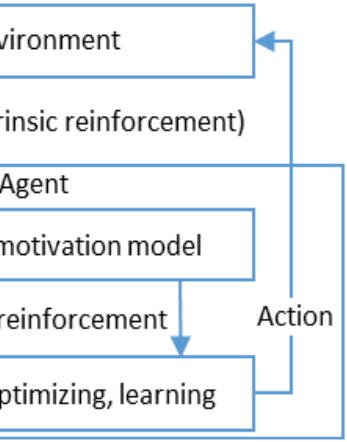
Entering text is one of the most common tasks when interacting with computing systems. Virtual Reality (VR) presents a challenge as neither the user's hands nor the physical input devices are directly visible. Hence, conventional desktop peripherals are very slow, imprecise, and cumbersome. We developed a apparatus that tracks the user's hands, and a physical keyboard, and visualize them in VR. In a text input study with 32 participants, we investigated the achievable text entry speed and the effect of hand representations and transparency on typing performance, workload, and presence. With our apparatus, experienced typists benefited from seeing their hands, and reach almost outside-VR performance. Inexperienced typists profited from semi-transparent hands, which enabled them to type just 5.6 WPM slower than with a regular desktop setup. We conclude that optimizing the visualization of hands in VR is important, especially for inexperienced typists, to enable a high typing performance.

Review of Intrinsic Motivation in Simulation-based Game Testing

Shaghayegh Roohi, Jari Takatalo, Christian Guckelsberger, Perttu Hämäläinen



This paper presents a review of intrinsic motivation in player modeling, with a focus on simulation-based game testing. Modern AI agents can learn to win many games; from a game testing perspective, a remaining research problem is how to model the aspects of human player behavior not explained by purely rational and goal-driven decision making. A major piece of this puzzle is constituted by intrinsic motivations, i.e., psychological needs that drive behavior without extrinsic reinforcement such as game score. We first review the common intrinsic motivations discussed in player psychology research and artificial intelligence, and then proceed to systematically review how the various motivations have been implemented in simulated player agents. Our work reveals that although motivations such as competence and curiosity have been studied in AI, work on utilizing them in simulation-based game testing is sparse, and other motivations such as social relatedness, immersion, and domination appear particularly underexplored.



Observations on Typing from 136 Million Keypresses

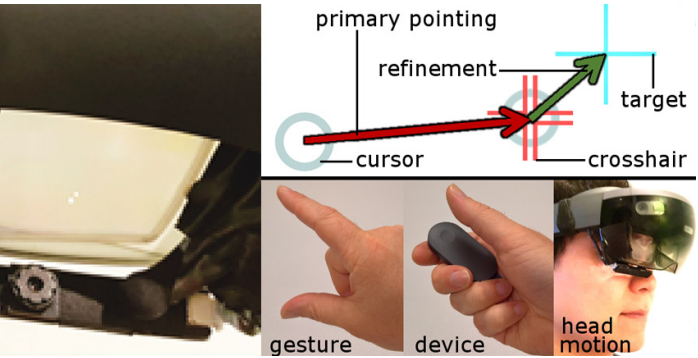
Vivek Dhakal, Anna Maria Feit, Per Ola Kristensson, Antti Oulasvirta

We report on typing behaviour and performance of 168,000 volunteers in an online study. The large dataset allows detailed statistical analyses of keystroking patterns, linking them to typing performance. Besides reporting distributions and confirming some earlier findings, we report two new findings. First, letter pairs typed by different hands or fingers are more predictive of typing speed than, for example, letter repetitions. Second, rollover-typing, wherein the next key is pressed before the previous one is released, is surprisingly prevalent. Notwithstanding considerable variation in typing patterns, unsupervised clustering using normalised inter-key intervals reveals that most users can be divided into eight groups of typists that differ in performance, accuracy, hand and finger usage, and rollover. The code and dataset are released for scientific use.

Pinpointing: Precise Head- and Eye-Based Target Selection for Augmented Reality

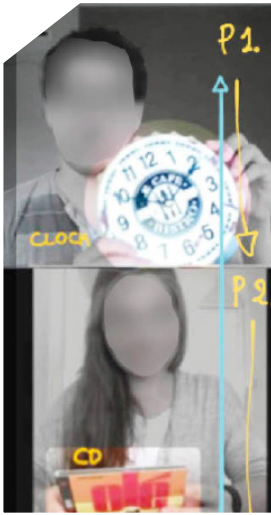
Mikko Kytö1,2, Barrett Ens2, Thammathip Piumsomboon2, Gun A. Lee2, Mark Billinghurst2

Head and eye movement can be leveraged to improve the user's interaction repertoire for wearable displays. Head movements are deliberate and accurate, and provide the current state-of-the-art pointing technique. Eye gaze can potentially be faster and more ergonomic, but suffers from low accuracy due to calibration errors and drift of wearable eye-tracking sensors. This work investigates precise, multimodal selection techniques using head motion and eye gaze. A comparison of speed and pointing accuracy reveals the relative merits of each method, including the achievable target size for robust selection. We demonstrate and discuss example applications for augmented reality, including compact menus with deep structure, and a proof-of-concept method for on-line correction of calibration drift.

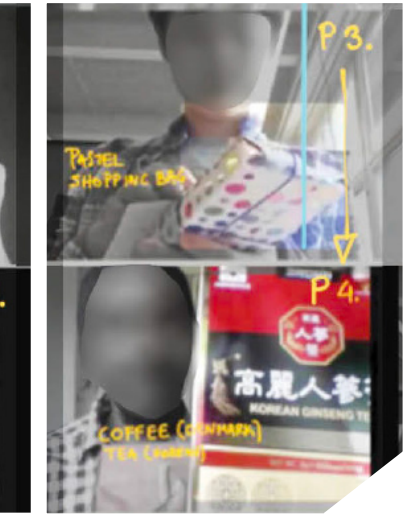


Gifting Interpretations of Personal Data

Maria Karyda, Iyubanit Rodriguez, Andrés Lucero



Research on physical representations of data has often used personal data as its focus. A core aim of making personal data physical is to provoke self-reflections through a felt experience. In this paper, we present a preliminary study which employs the idea of gift-giving as means to explore one's online data. Our main findings report strategies to relate to a stranger's data, as well as a conflict between what people think of their online self and what others are able to find. We discuss how the gifts became platforms for self-reflection, similar to physical data models. We then connect that to the engagement of a third person (gift-giver) in the process, highlighting the potential of such involvement. In the future, we focus on how to link people's meaningful artifacts with their personal data.



CHI **LATE BREAKING WORK**

24 April**.** 10:20 – 11:00: LBW Posters Rotation 1**.** 15:20 – 16:00: LBW Posters Rotation 1

Exploring Tangible Ways to Evaluate User Experience for Elders

Iyubanit Rodriguez, Maria Karyda,, Andrés Lucero, Valeria Herskovic

While user experience assessment enables understanding users' perception about a product, limitations have been encountered when elders use questionnaires to evaluate user experience. In this paper we present the design process of Aestimo, a tangible interface to assist elderly people when evaluating the user experience of interactive prototypes. Our prototype is a simplification of the AttrakDiff questionnaire, which gives a chance to record one's overall opinion (i.e., speech) and emotions. In addition, our design uses playful interaction styles that are familiar to the elderly. In a preliminary evaluation, elderly found Aestimo entertaining and easy to use. As future work, we aim to explore new materials in building Aestimo and to perform a comprehensive evaluation with several elders.

CHI **LATE BREAKING WORK**

25 April**.** 10:20–11:00: LBW Posters Rotation 2**.** 15:20–16:00: LBW Posters Rotation 2

An Initial Study of Multisensory Interaction for Outdoor Heritage Sites

David McGookin, Laura Maye, Ling Chen, Mikko Kytö

Whilst there is increasing work investigating the role of digital augmentation of outdoor cultural heritage sites, such augmentations have largely focused on visual and auditory modalities. We present initial findings from a field study of 29 visitors to a Finnish outdoor recreational island who used an exploratory cultural heritage app, augmented with a set of proximity triggered multimodal boxes, to present multimodal and multisensory content (ranging from smell, audio and physical interactions). We outline how this enhanced visitors' experience, as well as practical issues in the use of the boxes, and future development of our work.

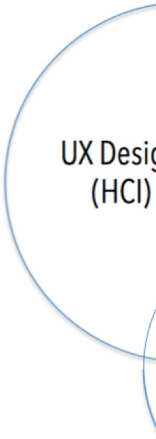
Computational Interaction: Theory and Practice

John Williamson, Per Ola Kristensson, Antti Oulasvirta, Otmar Hilliges

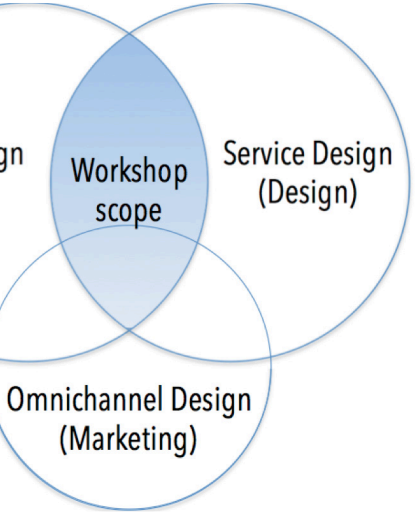
As interfaces become more sophisticated, designing them requires an exponentially expanding set of design decisions. Computational approaches are needed to synthesise elements of interfaces, to learn interaction structure from observations and to infer user intentions in a noisy world. Computational approaches empower HCI researchers to building sophisticated, robust interfaces quickly and reliably.

Experience Design meets Service Design – Method Clash or Marriage?

Virpi Roto, Jung-Joo Lee, John Zimmerman, Tuuli Mattelmäki



User experience (UX) research is moving from product- and user needs-centric design towards more holistic design for services. At the same time, digitalization is driving the Service Design community towards digital services. Despite the similarity of interests, these two communities have been surprisingly apart. This workshop focuses on the intersection of experience and service design, discussing the ideological and methodological similarities and differences between the two. The workshop has four objectives: (1) ideological and methodological similarities and differences in service and experience design, (2) to share experiences of integrating service and experience design, (3) to identify research themes for the future, and (4) to connect people working in this area.



Designing Interactions for the Ageing Populations

Sayan Sarcar, Cosmin Munteanu,
Antti Oulasvirta, Jussi Jokinen,
Neil Charness, Mark Dunlop,
Xiangshi Ren

This workshop focuses on discussing different user interface design methodologies and evaluation strategies, which will help older adults to access current digital technologies. We aim to map the state-of-art of senior-centred interaction research, build a multidisciplinary community of experts, and raise the profile of this research within the HCI communities.

Computational Support for Functionality Selection in Interaction Design

Antti Oulasvirta, Anna Maria Feit, Perttu Lähteenlahti, Andreas Karrenbauer

Designing interactive technology entails several objectives, one of which is identifying and selecting appro- priate functionality. Given candidate functionalities such as "print," "bookmark," and "share," a designer has to choose which functionalities to include and which to leave out. Such choices critically a ect the acceptabil- ity, productivity, usability, and experience of the design. However, designers may overlook reasonable designs because there is an exponential number of functionality sets and multiple factors to consider. This article is the rst to formally de ne this problem and propose an algorithmic method to support designers to explore alternative functionality sets in early stage design. Based on interviews of professional designers, we mathe- matically de ne the task of identifying functionality sets that strike the best balance among four objectives: usefulness, satisfaction, ease of use, and pro tability. We develop an integer linear programming solution that can e ciently solve very large instances (set size over 1,300) on a regular computer. Further, we build on techniques of robust optimization to

search for diverse and surprising functionality designs. Empirical results from a controlled study and eld deployment are encouraging. Most designers rated computationally created sets to be of the comparable or superior quality than their own. Designers reported gaining better understanding of available functionalities and the design space.

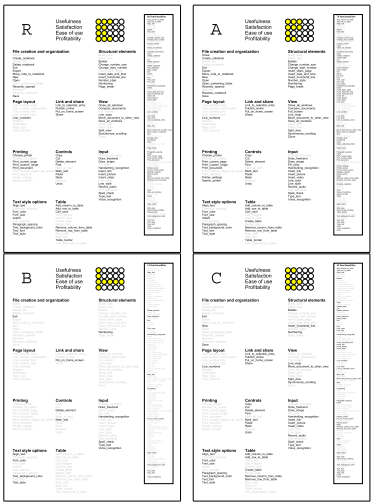


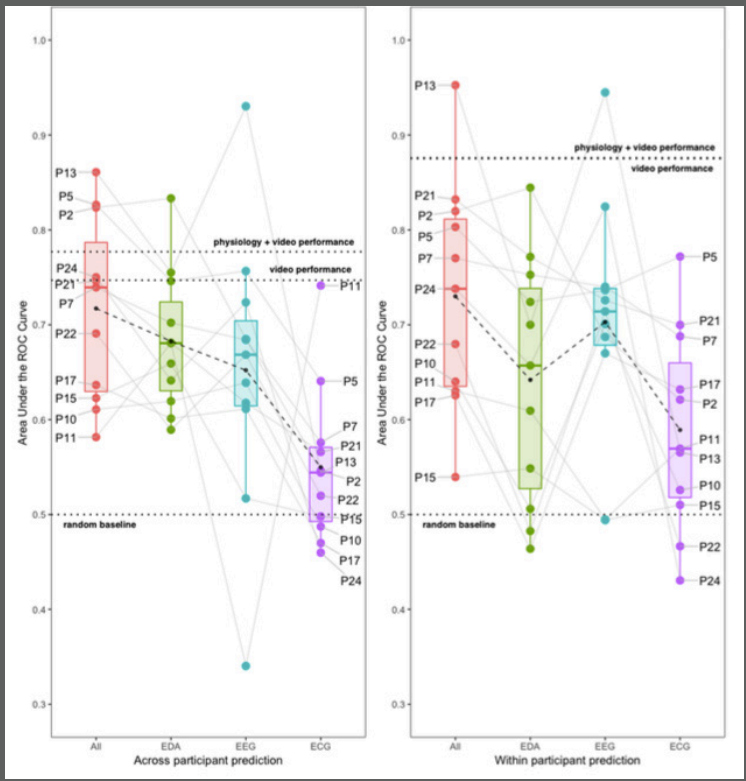
Fig. 2. A set visualization for the outputs of explorative optimization (data from Study 1). This example shows a sampling produced for the note taking application case with 106 functionalities. Top-to-bottom and left-to-right: the robust design (R) and three diverse designs: A, B, C. The diverse designs exhibit distinct trade-offs among objectives. To allow easy comparison, the outputs show normalized objective values (yellow circles), all selected functionality (black font) in alphabetical list and within their dependency-defined categories.

No Need to Laugh Out Loud: Predicting Humor Appraisal of Comic Strips Based on Physiological Signals in a Realistic Environment

Oswald Barral, Ilkka Kosunen, Giulio Jacucci

We explore electroencephalography (EEG), electrodermal activity (EDA), and electrocardiography (ECG) as valid sources to infer humor appraisal in a realistic environment. We report on an experiment in which 25 participants browsed a popular user-generated humorous content website while their physiological responses were recorded. We build predictive models to infer the participants' appraisal of the humorousness of the content and demonstrate that the fusion of several physiological signals can lead to classification performances up to 0.73 in terms of the area under the ROC curve (AUC). We identify that the most discriminative changes in physiological signals happen at the later stages of the information consumption process, reflected in changes on the upper EEG frequency bands, higher levels of EDA, and heart-rate acceleration. Additionally, we present a comprehensive analysis by benchmarking the predictive power of each of the physiological signals separately, and by comparing them to state-of-the-art facial recognition algorithms based on facial video recordings. The classification

performance ranges from 0.88 (in terms of AUC) when combining physiological signals and video recordings, to 0.55 when using ECG signals alone.



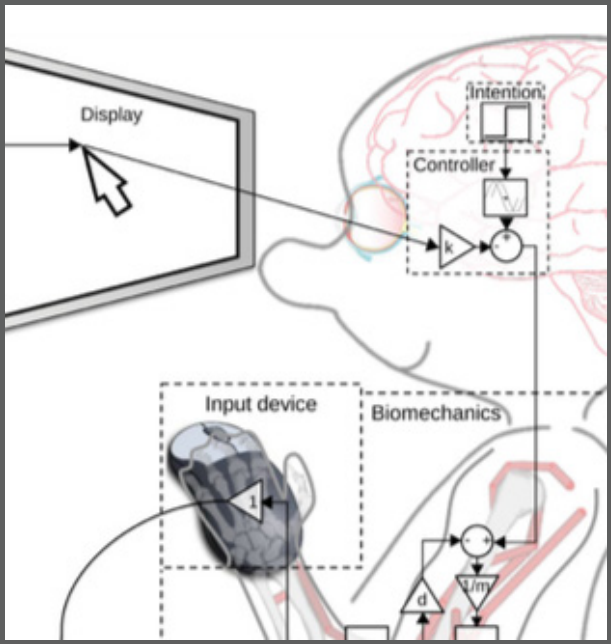
CHI **JOURNAL PAPER**
24 April. 12:00. #ROOM**517B**

Control-Theoretical Models of Pointing

Jörg Müller, Antti Oulasvirta, Roderick Murray-Smith

This article presents an empirical comparison of four models from manual control theory on their ability to model targeting behaviour by human users using a mouse: McRuer's Crossover, Costello's Surge, second- order lag (2OL), and the Bang-bang model. Such dynamic models are generative, estimating not only move- ment time, but also pointer position, velocity, and acceleration on a moment-to-moment basis. We describe an experimental framework for acquiring pointing actions and automatically tting the parameters of math- ematical models to the empirical data. We present the use of time-series, phase space, and Hooke plot visual- isations of the experimental data, to gain insight into human pointing dynamics. We nd that the identi ed control models can generate a range of dynamic behaviours that captures aspects of human pointing be- haviour to varying degrees. Conditions with a low index of di culty (ID) showed poorer t because their unconstrained nature leads naturally to more behavioural variability. We report on characteristics of hu- man surge behaviour (the initial, ballistic sub-movement) in pointing, as well as di erences in a number of controller performance measures, including overshoot, settling time, peak time, and rise time. We describe ***trade-o s among***

the models. We conclude that control theory o ers a promising complement to Fitts' law based approaches in HCI, with models providing representations and predictions of human pointing dynam- ics, which can improve our understanding of pointing and inform design.



CHI **JOURNAL PAPER**
26 April**.** 9:00**.** #ROOM**524C**

Investigating Proactive Search Support in Conversations

Salvatore Andolina, Valeria Orso, Hendrik Schneider, Khalil Klouche, Tuukka Ruotsalo, Luciano Gamberini, Giulio Jacucci

Conversations among people involve solving disputes, building common ground, and resolving mutual beliefs and assumptions. Conversations often require external information that can support these human activities. In this paper, we study how a spoken conversation can be supported by a proactive search agent that listens to the conversation, detects entities mentioned in the conversation, and proactively retrieves and presents information related to the conversation. A total of 24 participants (12 pairs) were involved in informal conversations, using either the proactive search agent or a control condition that did not support conversational analysis or proactive information retrieval. Data comprising transcripts, interaction logs, questionnaires, and interviews indicated that the proactive search agent effectively augmented the conversations, affected the topical structure of the conversations, and reduced the need for explicit search activity. We discuss design implica- tions for proactive search systems that assist humans in natural conversations.

From Hyperlinks to Hypercues: Entity-Based Affordances for Fluid Information Exploration

Khalil Klouche, Tuukka Ruotsalo,
Giulio Jacucci

We introduce the concept of the hypercue, a complement to the hyperlink in the form of an interactive representation of real-world entities, (e.g., persons, places,, and concepts), providing personalized access points to information. As a pendants to the a hyperlink, hypercues create opportunities to flexibly discover, store, and share information,; organize one's thoughts; and gain insights of the oninto data.

We explore the design space of interaction techniques supporting entity-based information exploration by reviewing recent examples of such work. We reflect on these through the lens of eight essential features of exploratory search systems, to devise generalizable design principles. Our main contribution is a design template describing the hypercue,. It which consists of a minimal set of affordances that ensure all important features for supporting exploratory search can be addressed, while leaving enough design space to facilitate integration within a variety of systems. We finallyFinally, we describe the rationale behind the design template and discuss its implications.

Interweaving Visual and Audio-Haptic Augmented Reality for Urban Exploration

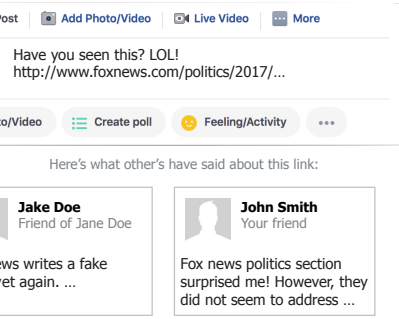
Yi-Ta Hsieh, Valeria Orso, Salvatore Andolina, Manuela Canaveras, Diogo Cabral, Anna Spagnolli, Luciano Gamberini, Giulio Jacucci

While ordinary touchscreen-based interfaces on urban explorer applications draw much of a user's attention onto the screen, visual and audio-haptic augmented reality interfaces have emerged as the two main streams for enabling direct focus on the surroundings. However, neither interface alone satisfies users in the highly dynamic urban environment. This research investigates how the two complementary augmentation can coexist on one system and how people adapt to the situation by selecting the more suitable interface. A prototype was deployed in a field experiment in which participants explored points of interest in an urban environment with both interfaces. The engagement with the surroundings was compared with a touchscreen-based application. Most participants spontaneously switched between the two interfaces, which manifests the value of the availability of both interfaces on one system. The results point at the situated advantages of either interface and reveal the users' preferences when both interfaces are available.

Social Media Is Polarized, Social Media Is Polarized: Towards a New Design Agenda for Mitigating Polarization

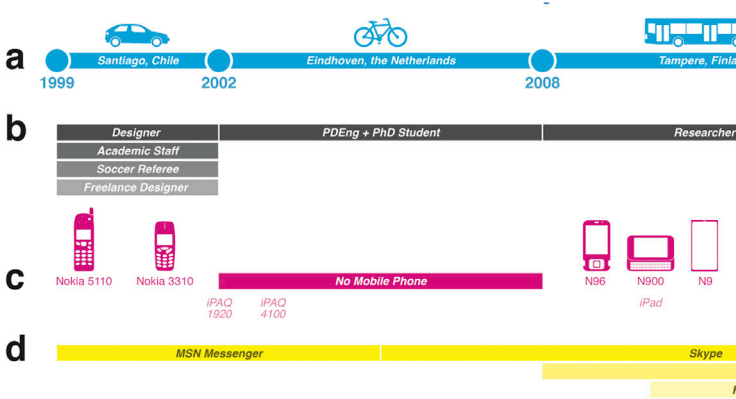
Matti Nelimarkka, Salla-Maaria Laaksonen, Bryan Semaan

Social media platforms have often been described as online spaces supporting political discourse. However, online discussions are often polarized; people tend to commune with those who are ideologically similar to them. The HCI response to this phenomenon has been to purposefully expose people to diverse viewpoints. This common design agenda is supported through analysis of link sharing, yet little attention has been paid to how users discuss these links. Therefore, the common design agenda may not mitigate polarization. We study the emergent discourse in 10 Finnish migration-related Facebook groups and examine how the same links are shared and discussed across anti- and pro-migration camps. Qualitative analysis of the posts and comments revealed that shared media links do not bridge polarized groups with regard to worldviews and opinions. We then demonstrate alternative design opportunities to resolve this issue and begin to develop a new design agenda to mitigate polarization.



Living Without a Mobile Phone: An Autoethnography

Andrés Lucero



This paper presents an autoethnography of my experiences living without a mobile phone. What started as an experiment motivated by a personal need to reduce stress, has resulted in two voluntary mobile phone breaks spread over nine years (i.e., 2002–2008 and 2014–2017). Conducting this autoethnography is the means to assess if the lack of having a phone has had any real impact in my life. Based on formative and summative analyses, four meaningful units or themes were identified (i.e., social relationships, everyday work, research career, and location and security), and judged using seven criteria for successful ethnography from existing literature. Furthermore, I discuss factors that allow me to make the choice of not having a mobile phone, as well as the relevance that the lessons gained from not having a mobile phone have on the lives of people who are involuntarily disconnected from communication infrastructures.

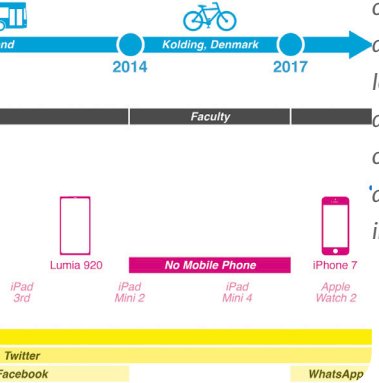



Image: http://www.visitfinland.com/helsinki/
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