

Conference Handbook

25 – 29 November
Flinders University
Adelaide Australia



OzCHI 2013

Augmentation
Application
Innovation
Collaboration

Cover image: Courtesy of Andrew Clayphan, based on line diagrams adapted from a screen image from an app built with GestureWorks.

25th Australian Computer-Human Interaction Conference (OzCHI 2013)

Flinders University, Adelaide, Australia

25 - 29 November 2013

in cooperation with ACM SIGCHI

*OzCHI is the annual conference of the Computer-Human Interaction
Special Interest Group (CHISIG) of the Human Factors & Ergonomics
Society of Australia.*

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Welcome from the Conference Chair

Welcome to OzCHI 2013, the annual non-profit conference of CHISIG, the Computer-Human Interaction Special Interest Group of the Human Factors and Ergonomics Society of Australia. OzCHI is Australia's leading forum for work in all areas of Human-Computer Interaction.

This year – the 25th time that OzCHI has been held – the conference is being hosted by Flinders University in the great city of Adelaide, which was recently voted by Lonely Planet as one of its top ten cities for 2014.

As usual, we have a varied program comprising workshops, a Doctoral Consortium, technical papers, flash talks, interactive posters, and panels, headlined by keynote speakers from both the local and international arenas, and capped off by presentations from the finalists of the ever-popular Student Design Challenge. Something, we hope, for everyone!

This year, we have several new treats for you:

Follow us on Twitter: We've asked several of our student volunteers to post conference news and highlights to our Twitter feed: @OzCHI_CHISIG. Follow us for updates during the conference, and post your own tweets to keep the conversation flowing.

Exploring OzCHI: Jon Pearce and a team of four visiting students from Denmark have built an exciting and novel Web app to help you interactively explore the conference to discover papers that align with your interests, as well as give you quick and easy access to abstracts, papers and scheduling information. Visit <http://tiny.cc/ozchi13> on your mobile device, notebook or desktop. This is the first run of this app, so please look for the feedback link and tell us what you think!

As chair of the Organising Committee, it is my privilege to thank the team for the countless hours of work they have put in over the course of the past 12 months. I would like to particularly acknowledge the outstanding contribution made by Program Co-Chairs Haifeng Shen and Jeni Paay.

Now our job is nearly done, and it's over to you. Let's make sure OzCHI 2013 is a resounding success!

Paul Calder

Welcome from the Technical Program Chairs

The technical program committee was comprised of 142 researchers, among whom 77 were from Australia and 65 were from overseas. All long and short papers were subject to double-blind peer review with each long paper reviewed by at least three committee members and each short paper reviewed by at least two committee members. Student design challenge, flash talk, and interactive poster submission were reviewed by their respective track chairs and committee members. This year we received 71 long papers, 83 short papers, and 38 student design challenge submissions from 30 countries, including Asia-Pacific, Europe, North Europe, North America, and South America. After the rigorous peer review process, we accepted 34 long and 45 short papers, and 9 student design challenge finalists, overall 46% of submissions. The OzCHI proceedings are a publication of CHISIG, and also appear in the ACM (the Association for Computing Machinery) Digital Library (dl.acm.org).

The theme of this year's conference is Augmentation, Application, Innovation, and Collaboration, which reflects a variety of technical and social challenges in designing and deploying human-centred computer applications through augmenting our daily lives with innovative interaction and collaboration technologies. The programme covers a wide range of topics around this theme, including "Ubiquitous Computing", "Interface, Interaction, and Visualisation", "Health and Welfare", "Learning Environments", "Gaming", "Mobile and Touch Interaction", and "Social and Collaboration Technologies". We have organised 79 paper presentations in 18 sessions as well as a number of flash talks and an exhibition of interactive posters.

It is our pleasure and honour to have as our invited keynote speakers Kenton O'Hara from Microsoft Research Cambridge, UK, Bruce Thomas from UniSA, Australia, and Ben Kilsby from Holopoint Interactive, Adelaide, Australia. They will each give a talk addressing aspects of the conference theme.

Haifeng Shen, Jeni Paay, & Ross Smith

Welcome from the CHISIG Chair

CHISIG is a Special Interest Group of the Ergonomics and Human Factors Society of Australia (HFESA). Its focus is on Computer Human Interaction. CHISIG is the Professional body for practitioners, academics and students in Computer Human Interaction in Australia, and the Australian reference point for people interested in designing interactions between people and devices.

CHISIG's main event every year is its annual conference, OZCHI. We are very pleased to see the number and variety of papers which were submitted to OZCHI this year. It promises to be a great programme, and we are looking forward to seeing you all in Adelaide.

If you are not yet a CHISIG member, please join and help us make this organisation the Australian network for you and your colleagues. CHISIG can help you be on the edge of the next generation technologies that are changing our world, improve computers for effective human use and increase your knowledge of the latest tools and techniques used to shape computer interfaces. Being a CHISIG member is being part of the growing HCI community in Australia.

On behalf of the CHISIG Exec committee, I would like to thank the OZCHI 2013 organising committee, all the reviewers and all the authors.

Cécile Paris

Organising Committee

| | |
|--------------------------|---|
| Conference Chair | Paul Calder, <i>Flinders University</i> |
| Technical Program | Haifeng Shen, <i>Flinders University</i> Jeni Paay, <i>Aalborg University Denmark</i> Ross Smith, <i>University of South Australia</i> |
| Tutorials and Workshops | Duncan Stevenson, <i>Australian National University</i> Dana McKay, <i>Swinburne University of Technology</i> Brett Wilkinson, <i>Flinders University</i> |
| Doctoral Consortium | Lian Loke, <i>Sydney University</i> Tuck Leong, <i>University of Technology Sydney</i> Peta Wyeth, <i>Queensland University of Technology</i> Kung-Keat Teoh, <i>Flinders University</i> |
| Student Design Challenge | Martin Tomitsch, <i>University of Sydney</i> Matthew D'Orazio, <i>University of Tasmania</i> Theodor Wyeld, <i>Flinders University</i> |
| Web Site | Romana Challans, <i>Flinders University</i> Irith Williams, <i>Monash University</i> Johanne Trippas, <i>RMIT University</i> |
| Sponsorship | Carmela Sergi, <i>Flinders University</i> Kelly Burton, <i>Flinders University</i> |
| Student Volunteers | Brett Wilkinson, <i>Flinders University</i> |
| PCO | Annabel Holliss, <i>SAPRO</i> |
| Treasurer | Steve Roberts |
| CHISIG Liaison | Kenneth Treharne |

Sponsors

We thank the following sponsors for their generous support for OzCHI 2013:

Silver Sponsors

CSIRO ICT Centre
HFESA

Student Volunteers
Student Design Challenge

Bronze Sponsor

LOGEMAS

In-Kind Sponsors

Flinders University
Flinders University Medical Device Research Institute
CHISIG

In-Support Sponsors

ACM SIGCHI
Interaction Design Foundation

Conference at a Glance

Tuesday 26 November

| | | |
|-------|---|----------------------------|
| 8:30 | Workshop W2 2.2 Fifth International Workshop on Smart Healthcare and Social Therapy (SmartHealth'13) | Doctoral Consortium 2.3 |
| 10:30 | Tea and coffee break | Level 1, Room 2 |
| 11:00 | W2 continues | DC continues |
| 13:00 | Lunch break | Level 1, Room 2 |
| 14:00 | Workshop W1 Social Technologies for Health and Wellbeing | DC continues |
| 15:30 | Tea and coffee break | Level 1, Room 2 |
| 16:00 | W1 continues | DC continues |
| 17:00 | Free time | |
| 17:30 | Welcome Reception | Level 2 |
| 19:00 | Tuesday program concludes | |

Wednesday 27 November

8:00 Registration Level 2 foyer

9:00 Opening and Welcome Level 2

9:20 Keynote Level 2

Interaction Proxemics: technology, spatial relationships and social meaning

Kenton O'Hara, Microsoft Research Cambridge

10:20 Tea and coffee break & Poster Exhibition Level 1, Room 2

| | | | | | | |
|-------|--|-----|--------------------------------------|-----|---|-----|
| 11:00 | Session 1A Mobility and Security | 2.1 | Session 1B User Experience | 2.2 | Session 1C Interface and Interaction Technologies | 2.3 |
|-------|--|-----|--------------------------------------|-----|---|-----|

13:00 Lunch break Level 1, Room 2

| | | | | | | |
|-------|--|-----|---|-----|--|-----|
| 14:00 | Session 2A Human Factors and Programming | 2.1 | Session 2B Interaction Design | 2.2 | Session 2C Learning Environments | 2.3 |
|-------|--|-----|---|-----|--|-----|

15:30 Tea and coffee break Level 1, Room 2

| | | | | | | |
|-------|--|-----|-------------------------------------|-----|--|-----|
| 16:00 | Session 3A Gaming and Motivational Aspects | 2.1 | Session 3B Sustainability | 2.2 | Session 3C Interaction and Visualisation | 2.3 |
|-------|--|-----|-------------------------------------|-----|--|-----|

17:30 Wednesday program concludes

Thursday 28 November

| | | | | | | | | | | | | | | |
|--|--|------------------------------|-----|----------------------------|-----|------------|-----|--|--|------------------------------|--|----------------------------|--|--|
| 8:00 | Registration | Level 2 foyer | | | | | | | | | | | | |
| 9:30 | Keynote Designing the Future with Augmented Reality Bruce Thomas, Wearable Computer Lab, UniSA | Level 2 | | | | | | | | | | | | |
| 10:30 | Tea and coffee break | Level 1, Room 2 | | | | | | | | | | | | |
| 11:00 | <table border="0"> <tr> <td>Session 4A</td> <td>2.1</td> <td>Session 4B</td> <td>2.2</td> <td>Session 4C</td> <td>2.3</td> </tr> <tr> <td>Evaluation and Usability</td> <td></td> <td>Ubiquitous Computing</td> <td></td> <td>Touch Interaction</td> <td></td> </tr> </table> | Session 4A | 2.1 | Session 4B | 2.2 | Session 4C | 2.3 | Evaluation and Usability | | Ubiquitous Computing | | Touch Interaction | | |
| Session 4A | 2.1 | Session 4B | 2.2 | Session 4C | 2.3 | | | | | | | | | |
| Evaluation and Usability | | Ubiquitous Computing | | Touch Interaction | | | | | | | | | | |
| 13:00 | Lunch break | Level 1, Room 2 | | | | | | | | | | | | |
| 14:00 | Student Design Challenge & Flash Talks | Level 2 | | | | | | | | | | | | |
| 15:30 | Tea and coffee break | Level 1, Room 2 | | | | | | | | | | | | |
| 16:00 | <table border="0"> <tr> <td>Session 6A</td> <td>2.1</td> <td>Session 6B</td> <td>2.2</td> <td>Session 6C</td> <td>2.3</td> </tr> <tr> <td>Social and Collaboration Technologies</td> <td></td> <td>Resilience and Ageing</td> <td></td> <td>Information Seeking</td> <td></td> </tr> </table> | Session 6A | 2.1 | Session 6B | 2.2 | Session 6C | 2.3 | Social and Collaboration Technologies | | Resilience and Ageing | | Information Seeking | | |
| Session 6A | 2.1 | Session 6B | 2.2 | Session 6C | 2.3 | | | | | | | | | |
| Social and Collaboration Technologies | | Resilience and Ageing | | Information Seeking | | | | | | | | | | |
| 17:30 | Free time | | | | | | | | | | | | | |
| 18:00 | Conference Dinner Adelaide Town Hall | | | | | | | | | | | | | |
| 22:00 | Thursday program concludes | | | | | | | | | | | | | |

Friday 29 November

| | | | | | | | | | | |
|---------------------------|---|-------------------------|-----|------------|-----|---------------------------|--|-------------------------|--|--|
| 8:00 | Registration | Level 2 foyer | | | | | | | | |
| 9:30 | Keynote Being Game Ben Kilsby, CEO Holopoint Interactive | Level 2 | | | | | | | | |
| 10:30 | Tea and coffee break | Level 1, Room 2 | | | | | | | | |
| 11:00 | Panel What's on the horizon for CHI in Oz? | Level 2 | | | | | | | | |
| 12:00 | Lunch break CHISIG AGM | Level 1, Room 2 2.1 | | | | | | | | |
| 13:00 | <table border="0"> <tr> <td>Session 8A</td> <td>2.1</td> <td>Session 8B</td> <td>2.2</td> </tr> <tr> <td>Health and Welfare</td> <td></td> <td>Audio and Speech</td> <td></td> </tr> </table> | Session 8A | 2.1 | Session 8B | 2.2 | Health and Welfare | | Audio and Speech | | |
| Session 8A | 2.1 | Session 8B | 2.2 | | | | | | | |
| Health and Welfare | | Audio and Speech | | | | | | | | |
| 14:30 | Awards and Closing Ceremony | Level 2 | | | | | | | | |
| 15:00 | Conference concludes | | | | | | | | | |

Doctoral Consortium

The OzCHI Doctoral Consortium offers PhD students a special full-day forum where they can explore and develop their research plans in an interdisciplinary forum. Selected candidates have the opportunity to present and discuss their research plans and progress to date with their peers, and receive guidance from senior researchers in a supportive and constructive environment.

The following presentations were accepted into the consortium in 2013:

Understanding the experience of spaces in mixed reality games

Alexander Kan, Department of Computing and Information Systems, University of Melbourne

Chaski: An opportunistic ubicomp platform to support spontaneous interactions using smartphones

Amro Al-Akkad, Fraunhofer Institute for Applied Information Technology, Sankt Augustin, Germany

Enhancing motivation by engaging application with tablet technology for slow learner.

Azizzeana Hassan, Kulliyah of Information, Communication and Technology, International Islamic University, Malaysia

Understanding the typographic emphasis of headings to best assist with visual search of text

Claire Timpany, University of Waikato

Externalising memories: Designing for digital mnemonic cue embodiment

Doménique A.P. van Gennip, School of Design, Architecture & Building, University of Technology, Sydney

Analysis and computational modelling of reading

Leana Copeland, Research School of Computer Science, Australian National University

Natural computing for complex structured data

Martin Henschke, Australian National University, Canberra, Australia

Sustainable HCI for grassroots urban food-growing communities

Sara Heitlinger, Electronic Engineering and Computer Science, Queen Mary University of London,

Mapping ideas transfer as complex networks in games

Xavier Ho, The University of Sydney

This year Prof Bruce Thomas, one of the conference keynote speakers, will join the panel to contribute his expertise.

Lian Loke, Tuck Wah Leong, Peta Wyeth



HFESA Human Factors & Ergonomics Society of Australia Inc.

Why should you join?

HFESA OzCHI Student Design Challenge

OzCHI24 is an annual 24-hour international student design competition run as part of OzCHI. Since its inception in 2009 the competition has grown to attract up to 226 participants, forming 62 teams from 10 different countries. Students participating in the competition come from a diverse range of fields, including interaction design, human-computer interaction, computer science, architecture and humanities.

The 2013 challenge was to design the future of email. Teams were asked to design an email 'replacement'. They had to look at how email is used—what tasks do people perform using email? Does email need a wholesale replacement, or would it be better to leave tasks such as correspondence to email, while creating supplementary services for tasks best suited to a new system? Then they had to consider how these systems will interoperate, how people will use them, and how and when they will need to access them.



HFESA is the association for Human Factors Specialists and Ergonomists and those interested in the area. We invite you to join our Society.

Why Join?

- Network with other people with a common interest & hear about jobs
- Professional Development training opportunities and conferences - at a discount or free
- Mentoring by HFESA professionals
- Special interest groups in Occupational Health and Safety, Transport, Design, Minerals, Healthcare, Human Computer Interaction and Anthropometry

See more at www.ergonomics.org.au

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The contest started on 21 September at 10am (AEST) and concluded on 22 September at 10am (AEST). 4 finalist teams were selected from 44 competing teams comprising 184 students from 5 different countries:

Fast Five, Indian Institute of Technology, Guwahati

Mannu Amrit, Minal Jain, Abhinav Krishna, Himanshu Bansal, Mehul Agarwal

Potluck, Institute of Design, Umeå University

Siuyan Fang, Taís Mauk, Marcel Penz, Kallirroï Pouliadou, Yedan Qian

Sachertorte, University of Sydney

Darrell Rivero, Liz Gilleran, Nick Woods, Rowan Lucas, Matthew Ritchie

Technophiliacs, University of Melbourne

Sarah Webber, Behnaz Rostami, Kayla Heffernan, Fernando Estrada, Daina Augstkalns

The finalists received OzCHI registration and travel support, thanks to sponsor HFESA, and will present their submissions at OzCHI, where the overall winner will be determined. The first prize team will receive book prizes from Rosenfeld Media.

Martin Tomitsch, Matthew D'Orazio, and Theodor Wyeld



Workshops

Workshop 1: Social Technologies for Health and Wellbeing

Greg Wadley, Bernd Ploderer, Frank Vetere (University of Melbourne) and Margot Brereton (Queensland University of Technology)

This workshop aims to bring together people working on technologies for health that allow interaction among users: we call these “social therapies” for brevity. Participants will experiences and discuss concepts, common problems and possible solutions. Our goals are to advance the field by identifying challenges and possible solutions, defining problem areas for future work, and building community among researchers and practitioners working on these issues.

Technologies discussed might include systems that support sufferers of specific conditions, or promote health-related behaviour change, or support social inclusion for patients undergoing treatment.

Workshop 2: Fifth International Workshop on Smart Healthcare and Wellness Applications (SmartHealth'13)

Carsten Rucker, Martina Ziefle, Andreas Holzinger, Kevin McGee, Susan Hansen, Jochen Meyer

Research in the area of smart healthcare and wellness systems has reached a point where significant improvements are only possible if academics and practitioners from various disciplines collaborate in order to develop new strategies for conceptualizing, designing, and implementing new applications. Therefore, this workshop aims to bring together researchers and industry practitioners from different fields to share their research positions and practical experiences and discuss new ideas, innovative approaches and challenging research questions, which have the potential to motivate future research activities within the field of smart healthcare systems.

Keynote Speakers

Wednesday 27 November (9:20 – 10:20)

Interaction Proxemics: technology, spatial relationships and social meaning

Kenton O'Hara, Microsoft Research Cambridge

In recent years there has been a growing interest in HCI with the concept of proxemics. The notion of proxemics refers to our spatial relations with each other and with artefacts in the environment with such relations being key components in the unfolding organisation of social action and interpersonal relations. Within HCI, a predominant concern in proxemics research is with inter-entity distances and orientation with a view to operationalizing such spatial relations to trigger particular system responses, which have come to be called proxemic interactions. In contrast to this I want to discuss the notion of interaction proxemics, namely the ways that certain interaction characteristics of a technology demand particular spatial relations between object and actor in their use. This has implications for how we organise action in relation to interactive objects and assemblages of other co-present objects and actors. In order to illustrate and develop these ideas, I will discuss them in relation to a number of key technologies and domains such as gesture and voice control in the operating theatre, interactive table centerpieces for family mealtime experiences and situated displays in home and public spaces.

Kenton is currently working at Microsoft Research Cambridge and is also a Visiting Professor in the Computer Science Department at the University of Bristol. His research explores everyday social and collaborative practices with technology with a view to informing design and innovation. His most recent research has focused on user experiences and practices with “touchless” gestural interaction technology in a variety of



areas such as surgery, urban displays and everyday desktop computing. Over the years, his research has investigated new technologies in a variety of domains including the home, mobile environments, urban settings and the workplace. Kenton has authored over 90 publications and two books on public displays and music consumption. He has previously worked as a Principal Scientist at CSIRO and as Director of the HxI Initiative in Australia, as well as being a Senior Researcher at Xerox EuroPARC, HP Labs and the Appliance Studio. He has worked on numerous award winning projects including the BAFTA-award-winning “Coast” location-based experience and IDSA-award winning RoomWizard appliance.

Thursday 28 November (9:30 – 10:30)

Designing the Future with Augmented Reality

Bruce Thomas, Wearable Computer Lab, University of South Australia

Augmented Reality (AR) is the registration of computer-generated graphical information over a user's view of the physical world. AR supplies a new form of human computer interaction that fuses virtual and physical worlds to increase a user's understanding of their current task at hand. While this augmentation may be supplied visually, auditorily, olfactorily, or haptically, this talk will focus on visual augmented reality. AR has been applied to a wide array of the application domains, such as entertainment, manufacturing, and defence. This talk will explore the use of augmented reality to aid in the design process. In particular how AR can enhance the rapid prototyping process of large design artefacts. That is to say artefacts from the size of a toaster to an operating theatre. These design artefacts increase stakeholder (designers and clients) understanding of design concepts through physical embodiments of these ideas. Current prototyping techniques have a long cycle time, but the use of augmented reality holds the promise of reducing the cycle time. Critical to improving these design processes with augmented reality is the development of new AR interaction techniques for the stakeholders. This talk will highlight the current research projects in the Wearable Computer Lab at the University of South Australia supporting the use of augmented reality in the design process.

Professor Thomas is the current Deputy Director of the Advanced Computing Research Centre, Director of the Mawson Institute SAR Visualisation Lab, and Director of the Wearable Computer Laboratory at the University of South Australia. He is currently a NICTA Fellow, Senior Member of the ACM, and visiting Scholar with the Human Interaction Technology Laboratory, University of Washington. His current research interests include: wearable computers, user interfaces, augmented reality, virtual reality, CSCW, and tabletop display interfaces.



His experience includes working at the School of Computer and Information Science, University of South Australia since 1990. He has run his own computer consultancy company. He was a Computer Scientist at the National Institute of Standards and Technology (a major US government laboratory for the Department of Commerce.), and a software engineer for the Computer Sciences Corporation and the General Electric Company.

Friday 29 November (9:30 – 10:30)

Being Game

Ben Kilsby, Holopoint Interactive

The video games industry is often recognised as innovators in computer-human interface and rightly so. There has been a vast array of innovative hardware and software developments that have come from the entertainment industry, especially in the last 30 years. By many accounts the future of computer-human interface seems to be wrapped up in game. But there's only one problem: *not everyone plays video games.*

In this talk I will address the challenges and opportunities of using game techniques and hardware for computer-human interface in a commercial, project based context. Based on my many years of experience in the simulation and serious game space (along with far too many years playing video games), I will provide real world examples and practical insights into the design considerations used by Holopoint to achieve client, project and end user objectives.

Ben Kilsby is the co-founder and CEO of Holopoint Interactive, and the founder of The Indie Games Room. After leaving school far too early, Ben spent the better part of ten years working in and around the music industry as an artist manager, tour manager, sound engineer, lighting designer and event manager.



In 2006 Ben successfully completed the Advanced Diploma of Computer Game Art at TafeSA, co-founded Holopoint in 2007, and fulfilled every boy's dream of (co)owning his own games studio. Holopoint Interactive helps organisations to achieve their learning and communication objectives using video game technology, with the team delivering over 80 commercial projects to date. Serviced industries include Defence, Mining, Manufacturing, Healthcare, R&D, Education, Training, Building and Construction - just to name a few. Somewhere in between all of that, Ben found time to found The Indie Games Room, an annual showcase event for independent game developers to show off their latest and greatest games to a real world audience. Ben lives and works in Adelaide Australia, has a passion for interactive storytelling, riding his skateboard on big ramps, and can usually be convinced to play a game of paintball.

Wednesday Program

Session 1 (11:00 – 13:00)

Stream A: Mobility and Security

Room 2.1

A Recommendation for Designing Mobile Pedestrian Navigation System in University Campuses

Tony Shu-Hsien Wang, Dian Tjondronegoro, Michael Docherty, Wei Song and Joshua Fuglsang

11:00 – 11:30

University campuses have thousands of new students, staff and visitors every year. For those who are unfamiliar with the campus environment, an effective pedestrian navigation system is essential to orientate and guide them around the campus. Compared to traditional navigation systems, such as physical signposts and digital map kiosks, a mobile pedestrian navigation system provides advantages in terms of mobility, sensing capabilities, weather-awareness when the user is on the go. However, how best to design a mobile pedestrian navigation system for university campuses is still vague due to limited research in understanding how pedestrians interact with the system, and what information is required for traveling in a complex environment such as university campus.

In this paper, we present a mobile pedestrian navigation system called QUT Nav. A field study with eight participants was run in a university campus context, aiming to identify key information required in a mobile pedestrian navigation system for user traveling in university campuses. It also investigated user's interactions and behaviours while they were navigating in the campus environment. Based on the results from the field study, a recommendation for designing mobile pedestrian navigation systems for university campuses is stated. [Long]

Classifying Users of Mobile Pedestrian Navigation Tools

James Wen, William Helton and Mark Billingham

11:30 – 11:45

Providing the most appropriate navigation information on mobile devices for pedestrians requires an understanding of pedestrians as users. While large-scale studies have identified types of

pedestrian as navigators, far less data exists for classifying navigators as technology users. We report on a study that presented pedestrian users with multiple navigation interfaces in order to gain insight on usage preferences. We create a classification of users based on observed usage behavior that would be helpful for designing pedestrian navigation aids.

[Short]

Realistic Books for Small-screen Devices

Annika Hinze, Doris Jung and Lakshmi Muthaiah

11:45 – 12:15

Realistic Books is a digital book reading software using the presentation of a physical book, while offering the advantages of digital books access. This paper describes our experience with transferring the Realistic Books concept onto small screen devices, i.e., tablets. We compared and contrasted two interface approaches: adapted and tailor-made. We conducted a study of Realistic Books with the original software ported to small screens, in which a number of usability issues were identified. This paper then describes our tailor-made interface for Realistic Books, and the outcomes of our second user study. [Long]

Who decides?: Security and Privacy in the Wild

Kenneth Radke, Colin Boyd, Juan Gonzalez Nieto and Laurie Buys

12:15 – 12:45

Even though web security protocols are designed to make computer communication secure, it is widely known that there is potential for security breakdowns at the human-machine interface. This paper examines findings from a qualitative study investigating the identification of security decisions used on the web. The study was designed to uncover how security is perceived in an individual user's context. Study participants were tertiary qualified individuals, with a focus on HCI designers, security professionals and the general population. The study identifies that security frameworks for the web are inadequate from an interaction perspective, with even tertiary qualified users having a poor or partial understanding of security, of which they themselves are acutely aware. The result is that individuals feel they must protect themselves on the web. The findings contribute a significant mapping of the ways in which individuals reason and act to protect themselves on the web. We use these findings to highlight the need to design for trust at three levels, and

the need to ensure that HCI design does not impact on the users' main identified protection mechanism: separation. [Long]

Trust and Cooperation in Text-Based Computer-Mediated Communication

12:45 – 13:00

Ahmad Khawaji, Fang Chen, Nadine Marcus and Jianlong Zhou

This study examines how different behaviours can affect trust in the text-chat environment. We designed two automated chat systems: one behaves cooperatively and the other behaves competitively. Thirty subjects participated in this study and the results revealed that the trust of subjects who chatted with a cooperative partner was significantly higher than the trust of subjects who chatted with a competitive partner. This study also examines the chat contents and the results show that subjects behave differently when they trust their partner, using more assent and positive emotion words. [Short]

Stream B: User Experience

Room 2.2

Understanding 'Tingle' in Opera Performances

11:00 – 11:30

Tuck Wah Leong and Peter Wright

With HCI venturing more into designing for the cultural and entertainment domain, researchers are engaging with experimental designs, and technical interventions to understand how to best consider new technologies for this domain. This paper focuses on audience experience. It presents approaches as to how the HCI community can better support audiences' encounters with deeply engaging peak experiences that are intense, memorable and personally engaging experiences in live performances. We do this by studying tingle experiences encountered during opera performances. Besides contributing to advancing experience design, this work adds to current understanding of liveness, offers ideas about the role of digital technologies to support live performances, and general insights towards designing for audience experiences. [Long]

Understanding 'Cool' in Human-Computer Interaction Research and Design

11:30 – 12:00

Dimitrios Raptis, Jesper Kjeldskov and Mikael Skov

Recently a discussion has been initiated on what is cool and how HCI can use the concept in practice and design for it. This paper aims to provide a better understanding on cool as a concept from a theoretical and a practical perspective. From the theoretical perspective, we selected the HCI papers that focus on cool and we present their core findings. Then we performed a literature review on the concept of cool and we have identified its fundamental characteristics, through cool personalities and cool styles. From a practical perspective, we have studied how other domains have managed to successfully produce cool objects and we provide four suggestions on how to design cool digital artifacts. Finally, in this paper we also identify possible research directions in relation to cool, which if we manage to address we can increase our understanding on what is user experience and this can lead to the creation of better digital artifacts. Overall, this paper is a contribution towards researching and designing for cool, a research topic, which we believe it will initiate fruitful discussions in the HCI field. [Long]

"It's alive, it's magic, it's in love with you": Opportunities, Challenges and Open Questions for Actuated Interfaces

12:00 – 12:30

Majken Kirkegaard Rasmussen, Erik Grönvall, Sofie Kinch and Marianne Graves Petersen

Actuated Interfaces are receiving a great deal of interest from the research community. The field can now present a range of point designs, illustrating the potential design space of Actuated Interfaces. However, despite the increasing interest in Actuated Interfaces, the research carried out is nevertheless primarily preoccupied with the technical challenges and potential application areas, rather than how users actually approach, experience, interpret and understand Actuated Interfaces. Based on three case studies, investigating how people experience Actuated Interfaces, we point to; magic, movement and ambiguity as fruitful perspectives for understanding users' experiences with Actuated Interfaces. The three perspectives are employed to reflect upon opportunities and challenges, as well as point to open questions and relevant areas for future research for Actuated Interfaces. [Long]

The Effect of Language in Answering Qualitative Questions in User Experience Evaluation Web-Surveys

12:30 – 13:00

Tanja Walsh, Piia Nurkka, Helen Petrie and Jaana Olsson

We investigated the effect of language in answering qualitative questions in user experience (UX) evaluation web-surveys. Two cross-cultural case studies of high tech sports watches with altogether 176 participants were carried out. Comparisons in answers were made among 72 native English speakers and 104 non-native English speakers. In the first study native Italian and native English speaking users were compared. Half of the Italians answered in Italian and half of them in English. We found that the response rate for participating to the survey among Italians answering in their native language was 64 % compared to only 38% among Italians answering in English. The results of our case studies indicate that translating a UX web-survey into participants' native language would motivate users to participate in the study, especially if the user sample needs to include more varied users. It is easier to describe more in details and give examples of experiences, express emotions, feelings and ideas in one's own native language. The results suggest that if more descriptive qualitative data is needed from users, they are able to answer better in their own native language. [Long]

Stream C: Interface and Interaction Techniques

Room 2.3

Harnessing Multi-User Design and Computation to Devise Archetypal Whole-of-Body Gestures: A Novel Framework


11:00 – 11:30

Suranjith De Silva, Michael Barlow and Adam Easton

A novel framework is proposed to capture the variability in end user designed gestures and extract archetypal patterns from a pool of gestures sourced from multiple participants. The primary objective is to identify a gesture library that is preferred by the end user population so as to control a human avatar in a 3D virtual environment using whole-of-body gestures. By adapting a group based user centric study, different gesture designs from 36 participants were elicited. Analysis shows that the existing techniques are incapable of extracting archetypal patterns in

gestures from such an unconstrained gesture space. As such a formal notation, followed by hierarchical clustering, is used to provide an abstract representation of gesture designs and then to distil the archetypal gesture patterns from the pool of highly variable gestures. User acceptance of the extracted gestures was performed for validation and common motion patterns were identified from the provided user ratings. The gesture library selected by the framework is compared against the gesture library extracted based on the user ranking and the similarities and differences between two gesture libraries are presented. [Long]

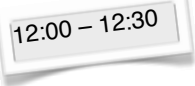
Four-dimensional Viewing Direction Control by Principal Vanishing Points Operation and Its Application to Four-dimensional Fly-through Experience

11:30 – 12:00

Takanobu Miwa, Yukihito Sakai and Shuji Hashimoto

This paper presents a novel interactive method that handles the 4-D viewing direction via the pick and move operation of principal vanishing points displayed in 3-D space. The principal vanishing points are represented by projecting the points at infinity in the directions of the 4-D principal coordinate axes onto 3-D space. Since the principal vanishing points are associated with the 4-D visual axis, they act as a landmark when users move in 4-D space. We utilize them as an interface of the 4-D viewing direction control to achieve intuitive 4-D interaction. Using the proposed method, we construct an interactive system that enables users to observe 3-D perspective drawings of 4-D data from an arbitrary 4-D viewing direction at an arbitrary 4-D position. Moreover, translating the 4-D eye-point along the 4-D viewing direction, the proposed system provides the 4-D first-person fly-through. The results of the user experiments show that the proposed system has a sufficient usability and an efficiency for 4-D interaction. [Long]

Investigating Mobile Stereoscopic 3D Touchscreen Interaction

12:00 – 12:30

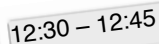
Ashley Colley, Jonna Häkkinä, Johannes Schöning and Maaret Posti

3D output is no longer limited to large screens in cinemas or living rooms. Nowadays more and more mobile devices are equipped with autostereoscopic 3D (S3D) touchscreens. As a consequence interaction

with 3D content now also happens whilst users are on the move. In this paper we carried out a user study with 27 participants to assess how mobile interaction, i.e. whilst walking, with mobile S3D devices, differs from interaction with 2D mobile touchscreens. We investigate the difference in touch accuracy between 2D touchscreens and mobile S3D touchscreens and evaluate the minimum touch target size for mobile S3D touchscreens. The contributions of this paper are twofold: Firstly, we found the increase in minimum touch target size caused by walking was larger for a mobile S3D UI than for a 2D UI. Secondly, we present touch target sizes and aspect ratios required for reliable user interaction in each case. Additionally we examined differences in the angle at which users held the mobile S3D device compared to a 2D mobile device. We found that mobile S3D caused users to hold the device at a different angle when walking, compared to the 2D case. This first study of its kind provides valuable information to developers of the next generation of UIs and applications for mobile S3D displays and devices. [Long]

Analysing Mouse activity for Cognitive Load detection

Syed Arshad, Yang Wang and Fang Chen



User interaction and multimodal behavior have been argued as viable indicators of cognitive load. We extend this idea to explore interactive mouse behavior for the same. Though mouse dynamics is generally being explored as a biometric technology, we intend to adapt and enhance this usage for detecting pattern changes in user behavior as cognitive load is varied. The scope of this paper is limited to analyzing mouse interaction data generated during a larger multi-tier experiment (aimed at investigating effects of cognitive load on organizational trust). Mouse events data is from 88 subjects, each of which completed two different tasks (labelled T1 & T3) twice (under randomized order of high and low cognitive load levels). High cognitive load was induced using standard dual-task design. This paper brings forth core issues in mouse activity analysis and focuses on pause/break activity as possible indicator of cognitive load (in the context of performed experiment). Significant differences were found in extracted features from contemplation and hesitation type pause categories and future course of study charted. [Short]

Comparison of gestural, touch, and mouse interaction with Fitts' Law

12:45 – 13:00

Lawrence Sambrooks and Brett Wilkinson

We present preliminary results of an experiment to compare gestural, touch, and mouse interaction using Fitts' law. A total of 15 participants were asked to select 100 targets as quickly and accurately as possible using each technique. Selection of targets was split into rounds of 20 (separated by a short break) in order to evaluate whether fatigue affected performance or whether performance improved/declined over time. The results found that gestural interaction performed much worse than touch and mouse interaction and recorded 3 times as many miss-selections. The poor results for gestural interaction were attributed to participant unfamiliarity and inaccuracies of the gesture-sensing device (Microsoft Kinect). Touch interaction performed comparably with mouse interaction although suffered with smaller targets due to occlusion and the impreciseness of a finger compared to a mouse cursor. Overall, performance remained fairly consistent over subsequent rounds. Fatigue did not have any effect. [Short]

Session 2 (14:00 – 15:30)

Stream A: Human Factors and Programming

Room 2.1

Foundations for Infrastructure and Interfaces to Support User Control in Long-term User Modelling.

14:00 – 14:30

Debjanee Barua, Judy Kay and Cecile Paris

Personal sensors track data about many aspects of our lives. This data can be used to form a long-term user model to help people self reflect on their long-term goals. Yet, there is a dearth of work on designing the infrastructure and associated interfaces so that people can control the data stored in their user models, enabling them to use and manipulate their own data as they wish. We have conducted a survey with over 100 participants to gain an understanding of people's attitudes towards controlling their data. This paper presents the design of the survey and reports on its results. We explored control issues in terms of three sensors

for weight, activity and inactivity. Our results paint a nuanced picture of user preferences. We conclude with implications for designing long-term user modelling systems for user control of personal sensor data. [Long]

Towards a Cognition-based Assessment Protocol for User-Centered Design

14:30 – 14:45

Jemma Harris, Mark Wiggins, Ben Morrison and Natalie Morrison

In usability testing there is often an emphasis on accurate and timely task performance without a systematic consideration of the appropriateness or otherwise of the cognitive skills and processes that lead to that behaviour. Consequently, this paper details how the constructs of cognitive complexity and cognitive load can explain the extent to which an end-user's interaction with the system is aligned with the expectations of the designer. We explain how these cognitive-based concepts can be integrated into usability assessment protocols, allowing for targeted remedial strategies and minimum standards of competency to be identified.

[Short]

Interfaces for Discourse Summarisation: A Human Factors Analysis

14:45 – 15:00

Agata McCormac, Kathryn Parsons, Marcus Butavicius, Aaron Ceglar, Derek Weber, Tim Pattison, Richard Leibbrandt, Kenneth Treharne and David Powers

Empirical studies assessing the effectiveness of novel document interfaces are becoming more prevalent, however relatively little attention has been paid to how such tools work with less structured documents featuring multiple contributors. Participants in this study used different interfaces to answer questions requiring the exploration of collaborative discourse. User performance was influenced by an interaction of interface, transcript, and question type. Individual differences also impacted on performance with higher education levels and higher general knowledge scores being associated with better task performance. The results also revealed that unnecessary interface functionality can hinder performance.

[Short]

Towards a Creativity Support Tool in Processing: Understanding the Needs of Creative Coders

15:00 – 15:15

Mark C. Mitchell and Oliver Bown

Creative coding as a paradigm has seen increased interest in recent years. However, detailed studies of the processes and needs of these creative coders are currently lacking. This paper reports on the preliminary findings of a study into the practices of both novice and expert creative coders by analysing their approach to a creative design task in an observational, qualitative study. The findings have been placed into a taxonomy of needs, beneficial for tools that aim to assist creative coders. The paper concludes by discussing the implications the taxonomy of needs has on defining requirements for a creativity support tool in the Processing environment.

[Short]

A sense of working there: the user experience of Agile software developers

15:15 – 15:30

Julia Prior

This paper emphasises the importance to the Human-Computer Interaction community of understanding the landscape in which Agile software developers practice. A longitudinal ethnographic study of professional Agile software developers in Australia is drawn on to present an account of their everyday work. A deeper understanding of the user experience of software developers should inspire and inform the design of innovative technologies that more effectively enable and enhance their work of producing technology for end-users.

[Short]

Stream B: Interaction Design

Room 2.2

Proxemic Interaction in a Multi-Room Music System

14:00 – 14:30

Henrik Sørensen, Mathies Grøndahl Kristensen, Jesper Kjeldskov and Mikael B. Skov

In recent years we have seen a growing interest in proxemic interaction within HCI. In order to explore proxemic interaction that spans across separate locations, we have developed a functional prototype of a multi-room music system, called AirPlayer, and performed a field evaluation. The system implements proxemic interactions on top of an existing Apple

AirPlay based platform. The added features allow music to follow the user around the house and provide a smartphone app which can adapt to the current location of the user. The prototype was deployed in two households over a three week period, where data was collected through logging, user-written diaries and interviews. What the field evaluation has revealed is a number of interesting findings specifically regarding the importance of a simple interaction, the power of discrete zones to provide a local interaction, the importance and challenge of understanding background interactions and challenges in designing interaction with music in discrete zones. [Long]

Evaluating organic 3D sculpting using Natural User Interfaces with the Kinect

Bradley Wesson and Brett Wilkinson

14:30 – 14:45

This project investigates the use of full body gestures to facilitate artistic expression. Skeletal data tracked with a Kinect sensor is used to drive a natural user interface providing users with the ability to sculpt a virtual clay-like substance into different forms. Various gestures allow interaction with the scene to adjust brush size, augment the virtual form and orient user's view of the scene. Several verbal commands offer the ability to invoke system-wide commands to return the scene to its initial state, reset the camera position, and undo interactions.

Users use these interactions to transform a spherical “blob” into a teapot by extruding the spout and handle and flattening the top. A survey completed by the participants has indicated that this action is enjoyable and immersive. [Short]

Mobile Ambient Presence

Greg Wadley, Frank Vetere, Lars Kulik, Liza Hopkins and Julie Green

14:45 – 15:00

We are exploring 'mobile ambient presence' as an approach to sustaining unobtrusive social connection. Prior research has shown that ambient technology can support connectedness by conveying social presence. Since mobile devices are typically always-on and in peripheral vision, they are candidate ambient displays that might convey presence. We tested a MAP app for tablet computers, finding that it sustained connection in two settings where high-fidelity communication media were considered

intrusive. In this paper we discuss the advantages and challenges of mobile ambient presence and the contexts in which it could be put to use.
[Short]

Favoured Attributes of In-Air Gestures in the Home Environment

Karen Ho and Hanley Weng

15:00 – 15:15

The home is an environment filled with an increasing number of fixtures and appliances, from doors and windows to kettles and chargers. Devices for in-air gestural recognition are also increasing in commercial availability. Appropriate attributes that make up natural in-air gestures have yet to be uniformly established, especially in relation to their use in the comfort of the home environment. Three studies were conducted, each informing the focus and construction of a gesture- recognition prototype for the following study. The preferred attributes of in-air gestures were examined; their use in conjunction with other modalities, the motion of in-air gestures, and feedback delay and transition time of an action as instigated by an in-air gesture. Our findings indicate natural actions that precede in-air gestures, topographical correlations between gesture and system response, and a desire for minimal effort. These results can be used as guidelines for the design of in-air gestures and systems for their recognition in environments within and beyond the home.
[Short]

The Leap Motion controller: A view on sign language

Leigh Ellen Potter, Jake Araullo and Lewis Carter

15:15 – 15:30

This paper presents an early exploration of the suitability of the Leap Motion controller for Australian Sign Language (Auslan) recognition. Testing showed that the controller is able to provide accurate tracking of hands and fingers, and to track movement. This detection loses accuracy when the hand moves into a position that obstructs the controller's ability to view, such as when the hand rotates and is perpendicular to the controller. The detection also fails when individual elements of the hands are brought together, such as finger to finger. In both of these circumstances, the controller is unable to read or track the hand. There is potential for the use of this technology for recognising Auslan, however further development of the Leap Motion API is required.
[Short]

Assessing the Usability of Students Object-oriented Language with First-year IT Students: A Case Study

14:00 – 14:30

Eugene McArdle, Jason Holdsworth and Ickjai Lee

This paper describes our 'objects-first' programming environment from the perspective of HCI in education. We argue why a graphically uncluttered programming environment and domain-specific programming language allows first-year IT students to focus on core programming skills such as code reading, writing, and debugging. We present a case study of first-year IT students at our regional university. The results indicate that uncluttered design helps a student develop transferable skills and conceptual knowledge when compared with traditional approaches.

[Long]

Integrating orchestration of ubiquitous and pervasive learning environments

14:30 – 14:45

Roberto Martinez-Maldonado, Yannis Dimitriadis, Andrew Clayphan, Juan Alberto Muñoz-Cristóbal, Luis Pablo Prieto, María Jesús Rodríguez-Triana and Judy Kay

Ubiquitous and pervasive computing devices, such as interactive tabletops, whiteboards, tablets and phones, have the potential to enhance the management and awareness of learning activities in important ways. They provide students with natural ways to interact with collaborators, and can help teachers create and manage learning tasks that can be carried out both in the classroom and at a distance. But how can these emerging technologies be successfully integrated into current teaching practice? This paper proposes an approach to integrate, from the technological perspective, collaborative learning activities using these kinds of devices. Our approach is based on the concept of orchestration, which tackles the critical task for teachers to coordinate student's learning activities within the constraints of authentic educational settings. Our studies within authentic learning settings enabled us to identify three main elements that are important for ubiquitous and pervasive learning settings. These are i) regulation mechanisms, ii) interconnection with existing web-based learning environments, and iii) awareness tools.

[Short]

Understanding the Effects of Discreet Real-time Social Interaction on Student Engagement in Lectures

14:45 – 15:00

Mark Reilly, Haifeng Shen, Paul Calder and Henry Been-Lirn Duh

Student disengagement in lectures is a common issue experienced by higher education globally. Our approach is to use the application of known human behaviour in groups to influence educationally meaningful behaviour by students during and external to lectures through the use of available technology that is both affordable and desirable to those students. We have developed a proof-of-concept application GroupNotes that we believe meets those aims. This paper outlines the principles behind the application design and some preliminary test results. [Short]

MolyPoly: Immersive Gesture Controlled Chemistry Teaching System

15:00 – 15:15

Soojeong Yoo, Callum Parker, Winyu Chinthammit and Susan Turland

Currently, first-year chemistry students at the University of Tasmania learn about three-dimensional molecular structures using a combination of lectures, tutorials, and practical hands-on experience with molecular chemistry kits. We have developed a basic 3D molecule construction simulation, called MolyPoly, to help students grasp the concepts of chemistry easily through immersion and natural interaction with 3D molecules. It was designed to augment the teaching of organic chemistry with enhanced natural interaction and 3D visualization techniques. This paper presents the results of a pilot study conducted with the aforementioned chemistry class. Participating students were split into two groups; MolyPoly and traditional. The results demonstrated that the two groups have achieved similar learning outcomes at the end of the four (4) class sessions. [Short]

Engaging Stakeholders through Facebook for Teacher Professional Development in Indonesia

15:15 – 15:30

Eunice Sari and Adi Tedjasaputra

In this paper, we will discuss the design of stakeholder participation in professional learning and development using social media. This paper is a

part of a research project to design and develop an online learning community named OLC4TPD (Online Learning Community for Teacher Professional Development) for Indonesian educators. In the study, Facebook as the most popular social media in Indonesia was implemented during the third design intervention to see how it could support ongoing professional learning and development of the education stakeholders. Having observed the stakeholder participation in Facebook for fourteen months, several findings related to online membership, online interaction, social learning and gender will be discussed. [Short]


Session 3 (16:00 – 17:30)

Stream A: Gaming and Motivational Aspects

Room 2.1

Being Chased by Zombies! Understanding the Experience of Mixed Reality Quests

Alexander Kan, Martin Gibbs and Bernd Ploderer



16:00 – 16:30

Both researchers and practitioners show increasing interest in exploring mixed reality games: games, where physical environments blend together with digital technologies. In this paper we have extended earlier work by bringing attention to the role of narrative in mixed reality games. For our case study we chose a mobile phone application *Zombies Run!*, which is designed to support actual running. This application contains a fictional story about a zombie apocalypse and provides runners with various quests (in the form of missions) to complete during their run. We investigated different aspects of participants' experience with the application and how it changed their running. Our findings show how the app changed running in three major ways. Firstly, it changed the way runs were organised. Secondly, it shook up established running routines. And lastly, it shaped the meanings associated with running. [Long]

Measuring Audience Experience in Social Videogaming

John Downs, Frank Vetere, Steve Howard and Steve Loughnan

16:30 – 16:45

Social videogaming sessions present a variety of opportunities for interaction and engagement. While active play is the most obvious way that participants can interact during the gaming session, these sessions can also have audience members who are not actively playing. However, there is little understanding about the experience of audience members within a gaming context. We argue that in order to understand audience experience it is necessary to identify and measure its components. In this paper we present the development of an instrument specifically designed for studying the experience of audience members within social videogaming sessions. The instrument consists of a scale based on measures of game player experience, but designed to be more relevant to the game experience of non-players. [Short]

How are Gamers better at Drawing Teapots than non-Gamers?

Theodor Wyeld, Benedict Williams and Zak Barbuto

16:45 – 17:00

This paper reports on a study of gamers (defined as those who play 2D or 3D games for more than 1hr a week) and non-gamers (defined as those who play 2D or 3D games for less than 1hr a week) and their ability to draw what they see. A series of spatial cognition tests were conducted as well as a drawing task. Gamers tended to perform better than non-gamers in both the spatial ability tests and the drawing task. Statistical analyses showed common processes were involved in both types of tasks. Gamers tended to be better at both tasks. Similar faculties seem to be invoked by gamers' approach to the tasks when compared to non-gamers. [Short]

Exploring Internet CO₂ Emissions as an Auditory Display

Stuart Mcfarlane, Frank Feltham and Darrin Verhagen

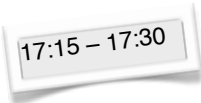
17:00 – 17:15

This research project explores the effectiveness of an auditory display (AD) prototype for the sonification of perceived internet e-waste of CO₂ emissions to a small user group within their office context.

To date, methods do not exist for the reporting of e-waste to users of personal computing while they perform simple internet enquiries. Underpinning the theoretical development of this project is a focus on AD guided by a soundscape theory, and on approaches to sonification to convey subtle, unobtrusive, and useful information. Evaluation of the prototype takes place as a field study in an office context. The following paper gives an account of the design and development of the AD prototype and its respective sonification, the design methodology employed and the research findings, and concludes with recommendations for further exploration of the balance between ambient and salient information. [Short]

Awesome! Conveying Satisfaction on the App Store

*Leonard Hoon, Rajesh Vasa, Gloria Yoanita Martino,
Jean-Guy Schneider and Kon Mouzakis*



17:15 – 17:30

In a competitive market like the App Store, high user perceived quality is paramount, especially due to the public review system offered. These reviews give developers feedback on their own apps, as well as help provide data for competitor analysis. However, given the size of the data set, manual analysis of reviews is unrealistic, especially given the need for a rapid response to changing market dynamics. Current research into mobile app reviews has provided an insight into the statistical distributions, but there is minimal knowledge about the content in these reviews. In particular, we do not know if the aggregated numerical rating is a reliable indicator of the information within the textual review. This work reports on an analysis of reviews to determine how closely aligned the numerical ratings are to the textual description. We observed that when users leave short reviews, they tend to be made up of a small set of words, and the corresponding numerical rating matches the underlying sentiment. [Short]

Promoting Pro-environmental Behaviour: a tale of two systems

Jeni Paay, Jesper Kjeldskov, Mikael Skov, Rahuvaran Pathmanathan and Jon Pearce

16:00 – 16:30

Sustainability is becoming increasingly important in our everyday lives. We no longer see it as solely the responsibility of governments or large corporations, but we are asking ourselves how we as individuals can contribute to the well-being and maintenance of the world we live in. This paper explores the use of mobile persuasive technology to promote pro-environmental behaviour in the home. We have designed, implemented, deployed and evaluated two mobile systems in two different domains, in two different countries. The novelty in this research is that the theoretical outcomes from two different but related studies are analysed together. From this we have discovered eight overarching persuaders to sustainable domestic resource consumption. The fact that these concepts are common to both studies strengthens the generalisability of our findings. The contribution of this paper to HCI is a set of eight key concepts to consider when designing mobile persuasive technology to promote pro-environmental behaviour.

[Long]

Curiosity to cupboard- self reported disengagement with energy use feedback over time

Stephen Snow, Laurie Buys, Paul Roe and Margot Brereton

16:30 – 17:00

This paper discusses findings made during a study of energy use feedback in the home (eco-feedback), well after the novelty has worn off. Contributing towards four important knowledge gaps in the research, we explore eco-feedback over longer time scales, focusing on instances where the feedback was not of lasting benefit rather than when it was. Drawing from 23 semi-structured interviews with Australian householders, we found that an initially high level of engagement gave way over time to disinterest, neglect and in certain cases, technical malfunction. Additionally, preconceptions concerned with the “purpose” of the feedback were found to affect use. We propose expanding the scope of enquiry for eco-feedback in several ways, and describe how eco-

feedback that better supports decision-making in the “maintenance phase”, i.e. once the initial novelty has worn off, may be key to longer term engagement. [Long]

Sustainable HCI for Grassroots Urban Food-Growing Communities

17:00 – 17:30

Sara Heitlinger, Nick Bryan-Kinns and Janis Jefferies

Mainstream food growing practices around the world call in to question our future food security, and in particular the sustainability of food consumption in urban centres. At the same time there has been a dramatic recent increase in grassroots urban food-growing communities in the UK and beyond. This paper looks at how research in sustainable human-computer interaction (HCI) can support better social and environmental practices through a focus on urban food-growing communities. In this paper we respond to recent work within sustainable HCI. We report on a field study at an urban city farm in inner London which took a participatory research approach with staff and volunteers. We discuss the values, needs and practices of the farm community which have emerged from the fieldwork. We conclude with a discussion of the implications and opportunities for designing with computational technology to help inform the conceptualisation of sustainable HCI and to serve as a resource for designers engaging with urban food-growing communities. [Long]

Stream C: Interaction and Visualisation

Room 2.3

Enhancing Spatial Perception and User Experience in Video Games with Volumetric Shadows

16:00 – 16:30

Tuukka M. Takala, Perttu Hämäläinen, Mikael Matveinen, Taru Simonen and Jari Takatalo

In this paper, we investigate the use of volumetric shadows for enhancing three-dimensional perception and action in third-person motion games. They offer an alternative to previously studied cues and visual guides. Our preliminary survey revealed that from the games that require Kinect, 37% rely primarily on a third-person view and 9% on a first-person view. We conducted a user study where 30 participants performed object reaching,

interception, and aiming tasks in six different graphical modes of a video game that was controlled using a Kinect sensor and PlayStation Move controllers. The study results indicate that different volumetric shadow cues can affect both the user experience and the gameplay performance positively or negatively, depending on the lighting setup. Qualitative user experience analysis shows that playing was found to be most easy and fluent in a typical virtual reality setting with stereo rendering and flat surface shadows.

[Long]

How Screen Size Influences Chinese Readability

You Wang, Zhihao Zhao, Danni Wang, Guihuan Feng and Bin Luo

16:30 – 16:45

Mobile devices are becoming more and more important in our daily lives, and their screens are becoming larger and larger. There seems to be no doubt, that the larger the screen is, the better readability we can achieve. However, there seems to be no sufficient research about how the screen size will do with readability. We aim at doing such a thorough study. This paper conducted an experiment with twenty-four participants to investigate the relationships between screen sizes and the reading effectiveness, efficiency and satisfaction. The results indicate that, although reading seems to be easier on larger screen, screen size has no definitely influences on reading effectiveness and efficiency. Moreover, mobility, price and usability of the mobile devices are the key issues that customers treasure most. Therefore, according to our experimental devices, we conclude that screen sizes smaller than 7 inch for mobile phones and more or less 10.1 inches for Tabs are preferable for mobile users.

[Short]

A Leap-supported, hybrid AR interface approach

Holger Regenbrecht, Jonny Collins and Simon Hoermann

16:45 – 17:00

We present a novel interface approach which combines 2D video-based AR with a partial voxel model allowing for more convincing interactions with 3D objects and worlds. It enables users in a hand-controlled interface (a) to interact with a virtual environment (VE) and at the same time (b) to allow for correct mutual occlusions between interacting fingers and the VE. A Leap motion controller is used to track the users' fingers and a webcam overlay allows for an augmented view.

Our 'VoxelAR' concept can be applied in modified ways to any video-see through AR system - we demonstrate our approach in a physical rehabilitation application scenario. Our prototype implementation and our work-in-progress findings are presented. [Short]

The Effect of Subject Familiarity on Comprehension and Eye Movements during Reading

17:00 – 17:15

Leana Copeland and Tom Gedeon

We investigate factors affecting reading and overall comprehension of the underlying meaning and concepts within a piece of text using eye movements. Our objective is to identify eye gaze measures which will predict reading comprehension, and intend to apply them in eLearning to create dynamic learning environments that can use eye movement to detect reader comprehension. We found that the self-reported familiarity of readers with the subject of documents affects their reading behaviour but not their total comprehension score, and found that we could identify answer-seeking behaviour and a measure of actual familiarity with the text content using eye gaze. [Short]

One-line GUI: Minimized graphic user interface for interactive TV

17:15 – 17:30

Hyungkun Park, Yeseul Kim, Jeeyong Chung, Sangyoung Cho, Eunji Woo and Woohun Lee

In this research, we have developed an interactive television (ITV) interface, which has different context than a conventional television. We assumed that people do not want to be disturbed of their watching experience by a large graphic user interface (GUI), which occludes TV contents. In this paper, we propose a new concept of interface called One-line GUI, a compressed GUI placed at the bottom of the TV screen, and which is manipulated with optimized physical user interface (PUI). Minimized GUI will not occlude the TV contents and support necessary task of ITV simultaneously with integrated manipulation system. To evaluate usability, we conducted user study to compare interface between the conventional ITV and One-line GUI. The result shows that the participants could perform the task better without difficulty with One-line GUI. [Short]

Thursday Program

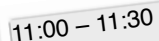
Session 4 (11:00 – 13:00)

Stream A: Evaluation and Usability

Room 2.1

An Evaluation of Advanced User Interface Customization

Clemens Zeidler, Christof Lutteroth and Gerald Weber

 11:00 – 11:30

Many of today's graphical user interfaces (GUIs) allow the user to customize the interface to their needs. While many approaches exist to do user interface customization, most of them are fairly simplistic, e.g., they only allow to customize menus and toolbars. However, one can think of more advanced customization approaches that allow more complex customizations, such as GUI layout and functional customization. Layout customization allows the user to modify the layout of a GUI while functional customization goes deeper into the application logic and makes it possible to change the behavior of an application. In this paper we target two open questions: 1) Are users able to use such advanced customization approaches? 2) Would users use such approaches in practice?

In this paper, we introduce prototypical systems for layout and functional customization of GUIs. In a user study, these systems were evaluated to address the above research questions. 18 participants were given customization tasks for three layout and two functional customization scenarios. The participants were observed during the tasks and given questionnaires.

The results indicate that users are able to use the proposed customization systems, and would also use them in practice. This suggests that it would be beneficial to include such customization facilities into current and future applications. [Long]

Quantitative Evaluation of Media Space Configuration in a Task-Oriented Remote Conference System

Kyle Koh and Jinwook Seo

11:30 – 12:00

While remote conference systems have been extensively studied and developed in the past with various user scenarios, many people still rely on simple tools like messengers or video chats that deliver only visual and auditory information of each remote participant as their primary methods of real time remote communication on their computers and tablets. With the simple tools, people still perform variety of tasks. This paper analyzes the tasks performed in remote conference tools running on general purpose PCs or tablets, and categorizes them into different types based on their characteristics. We performed a controlled user experiment to discover behavioral differences observed from each type of the tasks using eye trackers. The study revealed that users showed different behavioral patterns for different task types in both subjective reporting and the eye gaze data. Based on the results, we also provide a general guideline for the screen configuration of a remote conference tool. [Long]

Physicality Quantitative Evaluation Method

Mahmood Ashraf and Masitah Ghazali

12:00 – 12:30

The physical interaction aspects of embedded systems have been neglected in comparison to internal software issues in the software engineering field. Physical interfaces suffer from interaction complexities leading to usage difficulty and poor acceptance by the end-users. Usability techniques focus on the overall usability issues while overlooking the in-depth physicality aspects of the interface and interaction. This study proposes a physicality-focused quantitative evaluation method to assist embedded system developers in managing the interaction complexities of their products. The proposed method was evaluated by embedded system developers and the results verified their strong acceptance. The aim is to re-emphasise the natural physical aspects of embedded system interfaces leading to intuitive interaction. [Long]

Trial by Tablet: User Evaluation of the Digital Courtroom

Graham Farrell, Robert Tipping, Viv Farrell and Clinton Woodward

12:30 – 12:45

Increasing volumes of paper based evidence documentation and its preparation is creating a growing need for an IT solution in Australian courtrooms. This paper discusses the findings of a study where members of the Australian judiciary, including judges, barristers, lawyers, court administrators, law academics and members of the general public, were introduced to an electronic evidence presentation system in a formal court environment. The purpose of the study was to initially identify the particular needs of the users in order to produce a series of design recommendations for future development in the area.

[Short]

Measuring Interactivity at an Interactive Public Information Display

Christopher Ackad, Rainer Wasinger, Richard Gluga, Judy Kay and Martin Tomitsch

12:45 – 13:00

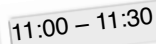
Public Information Displays (PIDs) have only recently begun to support user interaction. Traditionally, such displays have been static and non-interactive, and past research has shown that users of such displays (both non-interactive and interactive) are often oblivious to them; a term commonly known as 'display blindness'.

In this paper, we describe the results from a field study that was conducted on a gesture-based PID, to observe interactivity with the display over a number of different experiment conditions. Over a period of 120 days, a total of 2,468 people approached the display. Results show that 71% proceeded to face the display, and from this, 62% of these people proceeded to interact with the display, with average interaction sessions lasting 28 seconds. Results from this study provide valuable insight into interaction sessions with interactive PIDs, as well as an essential baseline for future studies into PID interactivity.

[Short]

Internet of Things: a review of literature and products

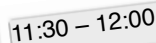
Treffyn Lynch Koreshoff, Toni Robertson and Tuck Wah Leong

11:00 – 11:30

This paper offers an HCI perspective on the emergent agenda of the Internet of Things (IoT). The purpose is to provide insights and resources for how HCI could engage productively with the IoT agenda while it is still evolving and being realised. We examined and reviewed HCI-related literature and commercial products of the IoT, categorising a final collection of 89 research papers and 93 commercial products into two tables. Through this, we are able to provide a snapshot of the types, extent and foci of both research and commercial efforts. It has also revealed trends, opportunities, as well as gaps for how HCI could proceed when engaging more deeply with the IoT. Finally, this review provides insights for HCI, suggesting tools, methods and potential approaches that can help ensure a human-centred IoT. [Long]

Understanding Spatial Contexts of the Real World under Explicit or Tacit Roles of Location

Masaya Okada and Masahiro Tada

11:30 – 12:00

To realize context-aware services in a ubiquitous computing environment, it is essential to extract the spatial structure of non-linguistic context information that involves a person at a certain location in the real world. With the techniques of multimodal behavior observation and knowledge science, we propose a method of location-based activity analysis to extract the explicit or tacit roles of location in human activities and to express the spatial contexts of the world. Our multi-agent simulation confirmed that location-based estimation of real-world spatial contexts enables a close approximation of the contexts of real-world people. Our data analysis also showed that spatial contexts of the world can be multidirectionally understood by comparing and integrating the results of activities of people with different viewpoints. The estimated spatial contexts can be used to realize onsite and offsite support services that consider the inherent characteristics of each location and potential human needs arising at each location. [Long]

Working In the Clouds: A Study of Contemporary Practices

12:00 – 12:15

Anita Gisch and Toni Robertson

This paper presents findings from a scoping study conducted with 12 participants who use cloud productivity tools in a range of small business contexts and work arrangements. There are two key areas discussed in this paper; access and equity issues within different Australian geographic regions and polarized views of cloud technology that resonate with teleworking utopian/dystopian discourses. The findings suggest that reliable and fast internet access beyond urban contexts should not be taken for granted and challenge the assumption that a current lack of access can be correlated with perceptions of technology and attitudes towards innovation. These findings have implications for designers looking to create productivity tools that can be used outside major metropolitan areas.

[Short]

SmartFinger: Connecting Devices, Objects and People seamlessly

12:15 – 12:30

Shanaka Ransiri, Roshan Lalintha Peiris, Kian Peen Yeo and Suranga Nanayakkara

In this paper, we demonstrated a method to create a seamless information media 'channel' between the physical and digital world. Our prototype, SmartFinger, aims to achieve this goal with a finger-worn camera, which continuously captures images for the extraction of information from our surroundings. With this metaphorical channel, we have created a software architecture that allows users to capture and interact with various entities in our surrounding. The interaction design space of SmartFinger is discussed in terms of smart-connection, smart-sharing and smart-extraction of information. We believe this work would create numerous possibilities for future explorations.

[Short]

Approaching a human-centred Internet of Things

12:30 – 12:45

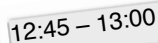
Treffyn Lynch Koreshoff, Tuck Wah Leong and Toni Robertson

This paper surveys recent Internet of Things (IoT) related HCI literature, and examines it in light of a comprehensive framework by Atzori et al

(2010). Mapping HCI literature to this framework helped us understand the extent and the focus of IoT related HCI efforts. It also revealed HCI considerations for the IoT which we added to the framework. This changed the framework into a tool for an HCI audience that can be used for 'thinking through' the design of IoT technologies. However, it also shows a lack of HCI engagement with deeper human-centred perspectives of the IoT. We close the paper by demonstrating how this tool has been found useful in an IoT research project and at the same time illustrating our approach to engaging more deeply with human-centred concerns. [Short]

The Irony and Re-interpretation of Our Quantified Self

Rafael A. Calvo and Dorian Peters



The new possibilities afforded by cloud computing infrastructure, with respect to the large amounts of data that can now be collected and processed unobtrusively, have triggered a growing interest in systems that record personal life events. We go on the notion that this information can be used as a kind of extended memory to support insights into our past and our present lives. However, as we argue in this paper, the psychological processes and consequences underlying the interpretation of this data can be significantly more complex and less predictable than has generally been acknowledged.

Specifically we look at two phenomena: first, that of re-interpretation (that events are reinterpreted every time we recall them) and second, that humans participate in ironic processes such that even self-control goals can become obstacles to behavior change. In this paper we put forward that as we design life-logging systems, personal informatics or quantified-self technologies in future, will need to better find ways to take into account this psychological complexity in order to be effective and avoid inadvertent harm. We also briefly review theoretical frameworks and psychological evidence that may inform the way we design such systems going forward. [Short]

An approach for designing and evaluating a plug-in vision-based tabletop touch identification system

11:00 – 11:30

*Andrew Clayphan, Roberto Martinez Maldonado,
Christopher Ackad and Judy Kay*

Key functionality for interactive tabletops to provide effective collaboration affordances requires touch identification, where each touch is matched to the right user. This can be valuable to provide adaptive functions, personalisation of content, collaborative gestures and capture of differentiated interaction for real-time or further analysis. While there is increased attention on touch-identification mechanisms, currently there is no developed solution to readily enhance available tabletop hardware to include such functionality. This paper proposes a plug-in system that adds touch identification to a conventional tabletop. It also presents an analysis tool and the design of an evaluation suite to inform application designers of the effectiveness of the system to differentiate users. We illustrate its use by evaluating the solution under a number of conditions of: scalability (number of users); activity density; and multi-touch gestures. Our contributions are: (1) an off-the-shelf system to add user differentiation and tracking to currently available interactive tabletop hardware; and (2) the foundations for systematic assessment of touch identification accuracy for vision-based systems. [Long]

Pseudo-Pressure Detection and Its Use in Predictive Text Entry on Touchscreens

11:30 – 12:00

Ahmed Arif and Wolfgang Stuerzlinger

In this article we first present a new hybrid technique that combines existing time- and touch-point-based approaches to simulate pressure detection on standard touchscreens. Results of two user studies show that the new hybrid technique can distinguish (at least) two pressure levels, where the first requires on average 1.19 N and the second 3.96 N force on the surface. Then, we present a novel pressure-based predictive text entry technique that utilizes our hybrid pressure detection to enable users to bypass incorrect predictions by applying extra pressure on the next key. For inputting short English phrases with 10% non-dictionary words a comparison with conventional text entry in a study showed that the new

technique increases entry speed by 9% and decreases error rates by 25%. Also, most users (83%) favour the new technique. [Long]

FingerInk: Turn your Glass into a Digital Board

Alaa Halawani and Haibo Li

12:00 – 12:15

We present a robust vision-based technology for hand and finger detection and tracking that can be used in many CHI scenarios. The method can be used in real-life setups and does not assume any predefined conditions. Moreover, it does not require any additional expensive hardware. It fits well into user's environment without major changes and hence can be used in ambient intelligence paradigm. Another contribution is the interaction using glass which is a natural, yet challenging environment to interact with. We introduce the concept of 'invisible information layer' embedded into normal window glass that is used as an interaction medium thereafter. [Short]

Evaluation of a New Error Prevention Technique for Mobile Touchscreen Text Entry

Ahmed Arif and Wolfgang Stuerzlinger

12:15 – 12:30

This paper presents a new pressure-based error prevention technique for mobile touchscreen text entry. Two user studies were conducted to compare the new technique with a conventional virtual keyboard, one with novice and another with expert users. Results of the first user study showed that with practice the new technique significantly improves accuracy. Yet no such indication was observed during the second study. [Short]

Designing Rich Touch Interaction through Proximity and 2.5D Force Sensing Touchpad

Seongkook Heo, Jaehyun Han and Geehyuk Lee

12:30 – 12:45

The touchpad is the de facto standard input device for controlling the GUI on portable computers. Most touchpads detect only finger contact and ignores other physical actions, such as applying force or hovering over the device. In this paper, we introduce a novel touchpad capable of tracking finger hover and measuring normal and shear forces. We also present two design strategies for the hover- and force-enhanced touchpad: multi-level

user interaction and mimicry of physical manipulation. We illustrate the two design strategies using two applications that we developed based on the design strategies. [Short]

Session 5 (14:00 – 15:30)

Student Design Challenge Finalists

Room 2

Family Room: Reducing Email Overload

Sarah Ellen Webber, Kayla J. Heffernan, Behnaz Rostami Yeganeh, Fernando Estrada and Daina Augstkains

TorteMail: Solving Email Information Overload

Matthew Ritchie, Elizabeth Gilleran, Rowan Lucas, Nick Woods and Darrell Rivero

Vision of the Future of Email Featuring Upcoming Technology to Enhance the User Experience

Marcel Penz, Kallirroï Poulidou, Ta´

Threading Centric Approach Towards Email Client

Mehul Agrawal, Mannu Amrit, Minal Jain, Himanshu Bansal and Abhinav Krishna

Flash Talks

Room 2

PaperIO: Paper-based 3D I/O Interface Using Selective Inductive Power Transmission

Kening Zhu

Engagement and Reciprocity and Practical Ethics: New Foundations for CHI Research

Margot Brereton, Paul Roe, and Anita Lee Hong

Incorporating Positive Speaker Profiles in Affective Human Computer Interaction

Kim Hartmann and Christoph Steup

Session 6 (16:00 – 17:30)

Stream A: Social and Collaboration Technologies

Room 2.1

Gelatine: Making Coworking Places Gel for Better Collaboration and Social Learning

Mark Bilandzic, Ronald Schroeter and Marcus Foth

16:00 – 16:30

Public libraries and coworking spaces seek for means to facilitate peer collaboration, peer inspiration and cross-pollination of skills and creativity. However, social learning, inspiration and collaboration between coworkers do not come naturally. In particular in (semi-) public spaces, the behavioural norm among unacquainted coworkers is to work in individual silos without taking advantage of social learning or collaboration opportunities. This paper presents results from a pilot study of ‘Gelatine’ – a system that facilitates shared encounters between coworkers by allowing them to digitally ‘check in’ at a work space. Gelatine displays skills, areas of interest, and needs of currently present coworkers on a public screen. The results indicate that the system amplifies users’ sense of place and awareness of other coworkers, and serves as an interface for social learning through exploratory, opportunistic and serendipitous inspirations, as well as through helping users identify like-minded peers for follow-up face-to-face encounters. We discuss how Gelatine is perceived by users with different pre-entry motivations, and discuss users’ challenges as well as non-use of the system. [Long]

Integrating Collaborative Context Information with Social Media – A Study of User Perceptions

Ari-Heikki Sarjanoja, Minna Isomursu, Pekka Isomursu and Jonna Häkkinen

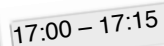
16:30 – 17:00

This paper explores the collaborative context, i.e.

consolidated data summarizing context information for groups of people, in social media. The results are based on a user study combining an analysis of actual personal social media content, in-depth interviews and a triggered ESM (experience sampling method) inspired diary study. The results indicate that collaborative context data has the potential to increase the interest level of status updates. It offers possibility for summary representations of groups, and can be used as a possible source of motivation and inspiration arising from activities or behavior of a predefined group of peers. [Long]

Interaction Patterns for Assessment of Learners in Tabletop Based Collaborative Learning Environment

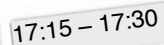
Ammar Al-Qaraghuli, Halimah Badioze Zaman, Azlina Ahmad and Jihan Raouf

17:00 – 17:15

Most of the emerging digital tabletop prototypes lack the capability to identify users and hence cannot attribute actions to users. Identity attribution is essential for logging user interactions and activity analysis. This research uses a prototype of a multi-pen digital tabletop that supports user identification. A collaborative learning application called the Digital Mysteries was built, aiming mainly to examine the benefits of digital tabletops to collaborative learning. The application logged interaction of students collaborating to solve an ill-defined problem. Teachers analysed recorded videos of the application trials to inform the next pattern detection step. The automated interaction logs were then analysed to discover the hidden patterns of interaction that are suitable to evaluate the achievement of each student. The analysis also looked for patterns to detect students need for inter-activity feedback, besides patterns to identify leaders and free riders. [Short]

Understanding the Fabric of Social Interactions for Ridesharing through Mining Social Networking Sites

Seyed Hadi Mirisaei, Margot Brereton, Paul Roe and Fiona Redhead

17:15 – 17:30

The design of applications for dynamic ridesharing or carpooling is often formulated as a matching problem of connecting people with an aligned set of transport needs within a reasonable interval of time and space. This problem formulation relegates

social connections to being secondary factors. Technology assisted ridesharing applications that put the matching problem first have revealed that they suffer from being unable to address the factor of social comfort, even after adding friend features or piggybacking on social networking sites. This research aims to understand the fabric of social interactions through which ridesharing happens. We take an online observation approach in order to understand the fabric of social interactions for ridesharing that is happening in highly subscribed online groups of local residents. This understanding will help researchers to identify design challenges and opportunities to support ridesharing in local communities. This paper contributes a fundamental understanding of how social interactions and social comfort precede rideshare requests in local communities. [Short]

Stream B: Resilience and Ageing

Room 2.2

Reconstructing normality: The use of infrastructure leftovers in crisis situations as inspiration for the design of resilient technology

16:00 – 16:30

Amro Al-Akkad, Leonardo Ramirez, Sebastian Deneff, Alexander Boden, Lisa Wood, Monika Buescher and Andreas Zimmermann

In this paper, we examine challenges people face in situations of disrupted infrastructures and how people use surviving portions of technology to cope with these challenges. We show how an important aspect in crises is the disturbance of services caused by disruptions in underlying technological structures. In such situations, people resort to all possible means to create a new normality. Mechanisms arise where people use the remains of the technological landscape. Building on the analysis of interviews with crises witnesses and first responders, external reports and scientific literature, we propose and describe three categories of mechanisms involving the creative use of surviving technology in crisis situations. We argue that studying these mechanisms can provide a key source of inspiration to define qualities of resilient architectures, and use these mechanisms as creative input to propose architectural qualities that can potentially make communication infrastructures more resilient in the face of crises. [Long]

Dispelling Ageing Myths in Technology Design

*Jeannette Durick, Toni Robertson, Margot Brereton,
Frank Vetere and Bjorn Nansen*

16:30 – 17:00

We present a review of literature from the fields of gerontology, gerontechnology, HCI and government policy that deals with social and technical solutions for the ageing population. We highlight common assumptions about ageing people, which we argue are still embedded in much of the research related to the domain of ageing. This paper challenges six common assumptions across four broad themes that we identified in the literature. It aims to provide a reminder and resource for designers to eschew assumptions during designing technology for 'older' users. [Long]

Engaging Older Adults in Activity Group Settings Playing Games on Touch Tablets

Sonja Pedell, Jeanie Beh, Ken Mozuna and Susan Duong

17:00 – 17:15

This research develops, trials and evaluates three innovative game apps on mobile touch screen technology that addresses the needs of older adults during activity groups. The research was conducted with a group of older adults participating in the ageing-well activity program of a local council. The project assists older adults to discover and to increase their technology use in a familiar group setting. Building on established interests such as family history, cooking and movies, the study investigates how mobile technology can further these activity groups. The project aims to explore different group settings and how mobile technology can be integrated (1) and to develop games based on their interests and their suitability for these different settings (2). The paper makes recommendations for activity group settings. [Short]

Touch Screen Ensemble Music: Collaborative Interaction for Older People with Dementia

Stuart Favilla and Sonja Pedell

17:15 – 17:30

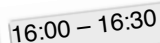
This paper presents new touch-screen collaborative interaction models for people with dementia. The authors argue that dementia technology has yet to focus on group musical interactions. The project aims to contribute

to dementia care while addressing a significant gap in current literature. Research includes observations and two system trials exploring contrasting musical scenarios: the performance of abstract electronic music and the distributed performance of J.S. Bach's Goldberg Variations. Findings presented in this paper suggest that dementia people can successfully perform and engage in collaborative music performance activities with little or no scaffolded instruction. [Short]

Stream C: Information Seeking

Room 2.3

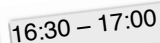
Statistical Analysis and Implications of SNS Search in Under-Developed Countries



Saif Ahmed, Md. Tanvir Alam Anik, Mashrura Tasnim and Hasan Shahid Ferdous

Using Social Network Sites (SNS) as an information source has drawn the attention of the researchers for a while now. There has been many works that analyzed the types and topics of questions people ask in these networks and why. Topics like what motivate people to answer such queries, how to integrate the traditional search engines and SNS together are also well investigated. In this paper, we focus on a relevant but different issue - how SNS search varies in developed and developing regions of the world and why. Analyzing 880 status messages collected from a widely used SNS, we have observed that, unavailability and inadequacy of information on web in developing countries play a significant role to motivate users using SNS for information retrieval. With established statistics of Internet usage, e-Governance, and our experimental data analysis, we have tried to emphasize the differences between social search and traditional web-search and provided insight that one might require to consider while developing any application for SNS based searching. [Long]

Boxing clever: how searchers use and adapt to a one-box library search



Dana McKay and George Buchanan

One of the major problems users experience searching for information in libraries is the number of places they have to search. It has long been

posited that a single search box (like Google) that searched a range of library resources would solve these problems. In this paper we use transaction log analysis to determine how well users cope with the single search box, and whether it does, in fact benefit users. [Long]

Interactive Interface for Query Formulation

Lu Chen and Caslon Chua

17:00 – 17:15

Query formulation interface remained unchanged over the years. It is still mainly an input box for the user to enter the search query and a search button to initiate the search process. This paper explores and implements an interface design that incorporates dynamic and interactive properties during query formulation. It attempts to match user's search strategies rather than force users to accommodate to the current search interface. It proposes interaction elements to support functionalities that assist user during query formulation. These functionalities include domain filter suggestion, query suggestion, and spelling correction functions. [Short]

HCI Knowledge – Missing in Practice?

Murni Mahmud, Idyawati Hussein, Abu Osman Md Tap and Nor Laila Md Noor

17:15 – 17:30

HCI is taught as a core course in most computing programmes in universities worldwide as it is critical to the successful use of technology. The success of undergraduate HCI education can be gauged from their final year project (FYP) through their ability to reflect, integrate and apply their HCI knowledge. However, the extent of use of HCI knowledge in application development amongst students is unknown. This paper intends to fill in the gaps of HCI education and its application in practice as it attempts to uncover students' ability to apply their HCI knowledge in their FYP as an immediate outcome to evaluate the success of HCI education. The study was conducted in the context of Malaysian ICT tertiary education using IIUM as a case study. A content analysis of FYP reports was conducted to identify the use of HCI techniques in the application development including HCI evaluation. The result of the analysis indicates that most students conducted User Acceptance Testing but not HCI evaluation. The findings have implications for the need to review the teaching and learning of HCI, while attempting to strengthen

the symbiotic collaboration among HCI academics, industrial partners and government agencies in the wake of increasing market demand for usability and user experience (UX) experts. [Short]

Friday Program

Session 7 (11:00 – 12:00)

Panel

Room 2

What's on the horizon for CHI in Oz?

Panellists to be advised.


Session 8 (13:00 – 14:30)

Stream A: Health and Welfare

Room 2.1

Participatory Design of an Online Therapy for Youth Mental Health

Greg Wadley, Reeva Lederman, John Gleeson and Mario Alvarez-Jimenez



13:00 – 13:30

Online therapy has the potential to extend existing therapies for mental health, but designers face challenges such as lack of user engagement. Participatory design could improve outcomes but is difficult to pursue in the mental health context. By working with a research-focused clinic we have been able to employ participatory design methods over a period of three years. We have developed and tested an online therapy for young people with psychosis. This paper discusses our process and results in the light of existing design frameworks for youth mental health, and reports experiences which will be useful for other researchers in this field. We found that participatory approaches are indeed challenging in the mental health context, but can result in technology that is efficacious and acceptable to young people.

[Long]

Exploratory development and evaluation of user interfaces for exposure therapy treatment

Natalie Eustace, James Head-Mears and Andreas Dünser

13:30 – 13:45

Virtual Reality Exposure Therapy (VRET) and Augmented Reality Exposure Therapy (ARET) techniques have been gaining considerable attention in recent years. Although extensive research has been done in these fields there has been very little research into User Interface (UI) design specifically for these types of applications. This paper follows the design process of developing an ARET UI for therapists, focusing on arachnophobia treatment. Furthermore, this paper highlights the importance of low-fidelity feedback prototypes to assist with evaluation. [Short]

Using critical-cue inventories to advance virtual patient technologies in psychological assessment

Ben Morrison, Natalie Morrison, Julia Morton and Jemma Harris

13:45 – 14:00

A shortage in clientele at university-based psychology clinics represents a significant challenge to patient-based practical skills training. Although alternative methods of skill development (e.g., role-plays) are embraced within these programs, it may be argued that these methods offer a relatively diluted simulation of the psychological assessment process. Recently, virtual patients have been proposed as an attractive avenue for simulating experience in psychological assessment. The current paper explores the potential benefits of using critical-cue inventories in the advancement of virtual patient technologies. The piece briefly details a study which aimed to elicit cue-based information from experienced mental health practitioners, which may be embedded in simulations of the initial stages of psychological assessment. Preliminary findings are presented, and future directions discussed. [Short]

Hangout at the computer lab: How an innovative Australian program is helping young 'Aspies'

Greg Wadley and Stefan Schutt

Technology-based interventions for young people diagnosed with autism have focused largely on individual use. Yet research into technology use 'in the wild' has emphasised the value of computer-mediated social interaction. In this paper we use HCI theory to understand the success of a program premised on the social use of technology in a safe offline space. Participants typically go through stages of object-centred and computer-mediated communication before engaging in true face-to-face interaction. We use the concepts of social distance and ticket-to-talk to explain how this hybrid space helps 'Aspies' engage comfortably in social interaction.

[Short]

14:00 – 14:15

Supporting Tele-Assistance and Tele-Monitoring in Safety-Critical Environments

Weidong Huang, Leila Alem, Surya Nepal and Danan Thilakanathan

Underground mines are hazardous environments. With more and more high-tech machines being introduced in mines, mine operators are under pressure of keeping machinery running smoothly as well as maintaining safety. To address this issue we have developed a remote guiding system ReMoTe to allow an offsite expert to guide and monitor real time an onsite mining operator. This system brings offsite expertise to operators when and where it is needed (and in doing so supporting on-the-job training) and in the same time providing operators with the ability to monitor their level of stress (self monitoring) as well as allowing shift supervisor to remotely monitor their staff stress level. In our view the combination of these two services is key to increasing the productivity of the mines while supporting operators' safety. This paper presents ReMoTe and discusses how safety concerns are addressed in the design and evaluation of it.

[Short]

14:15 – 14:30

Audio Stickies: Visually-guided Spatial Audio Annotations on a Mobile Augmented Reality Platform

13:00 – 13:30

Tobias Langlotz, Holger Regenbrecht, Stefanie Zollmann and Dieter Schmalstieg

This paper describes spatially aligned user-generated audio annotations and the integration with visual augmentations into a single mobile AR system. Details of our prototype system are presented, along with an explorative usability study and technical evaluation of the design. Mobile Augmented Reality applications allow for visual augmentations as well as tagging and annotation of the surrounding environment. Texts and graphics are currently the media of choice for these applications with GPS coordinates used to determine spatial location. Our research demonstrates that the use of visually guided audio annotations that are positioned and orientated in augmented outdoor space successfully provides for additional, novel, and enhanced mobile user experience.

[Long]

Treemaps to Visualise and Navigate Speech Audio

13:30 – 14:00

Fahmi Abdulhamid and Stuart Marshall

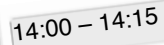
Audio recordings are usually treated as one unbreakable and sequential document. Most interfaces only support basic audio navigation controls such as play, pause, forward, and rewind. However, by extracting meaningful information from audio, such as the spoken words and acoustic noise, we have created a Treemap-based interface which makes the task of finding the important information in audio simple. When applied to lecture audio, our interface allows students to easily consume lecture recordings by only listening to the parts they are interested in. A user study shows that our interface can successfully help users to find content in lecture recordings.

[Long]

SpeechPlay: Composing and Sharing Expressive Speech Through Visually Augmented Text

Kian Peen Yeo and Suranga Nanayakkara

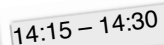
SpeechPlay allows users to create and share expressive synthetic voices in a fun and interactive manner. It promotes a new level of self-expression and public communication by adding expressiveness to a plain text. Control of prosody information in synthesized speech output is based on the visual appearance of the text, which can be manipulated with touch gestures. Users could create/modify contents using their mobile phone (SpeechPlay Mobile application) and publish/share their work on a large screen (SpeechPlay Surface). Initial user reactions suggest that the correlation between the visual appearance of a text phrase and the resulting audio was intuitive. While it is possible to make the speech output more expressive, users could easily distort the naturalness of the voice in a fun manner. This could also be a useful tool for music composers and for training new musicians. [Short]

14:00 – 14:15

Evaluating the Effectiveness of Audio-Visual Cues in Immersive User Interfaces

Luke Hespanhol, Oliver Bown, Jingwen Cao and Martin Tomitsch

Pervasive and ubiquitous technologies have taken digital interfaces out of their traditional realms of computing devices and into the built environment. Increasingly, a combination of architectural installations, artistic interventions and software development characterises the design of new engaging experiences for people in augmented public spaces. The design of immersive interfaces represents a new chapter in HCI, challenged with the utilisation of the human body as active design element, with implications on interaction, cognition and psychological experience. This paper represents an initial step in the evaluation of audio-visual aesthetic elements for the design of cuing mechanisms for events about to happen in an immersive interface, and points to initial findings regarding the utilisation of visual and sound effects as design elements in responsive environments. [Short]

14:15 – 14:30

Housekeeping

Internet access

Wireless internet access is available through the Eduroam network, or using the Flinders network (username and password available on request). For help, see the red-shirt volunteers at the registration desk.

Dining and Shopping

The Conference Venue is located centrally in the Adelaide CBD, within easy walking distance of many dining and shopping outlets. Adelaide Central Markets is a few minutes walk, as is Rundle Mall.

Public Transport

Trams to Glenelg leave from outside the venue at regular intervals, and several major bus routes have stops nearby. The Adelaide Railway Station is a 10-minute walk, and the Adelaide Airport is a 15-minute taxi ride.

Welcome Reception

The Welcome Reception will be held on Tuesday 26 November from 5:30pm to 7:00pm on Level 2 of the Conference Venue.

Conference Dinner

The Conference Dinner will be held on Thursday 28 November from 6:00 for 6:30 in the Banqueting Room of the Adelaide Town Hall, which is a 3-minute walk from the Conference Venue.

CHISIG Annual General Meeting

The CHISIG Annual General Meeting will be held during the lunch break on Friday November 29, starting at 12:00. All CHISIG members are encouraged to attend.

Student Volunteers

Student volunteers play an important part in making the conference run smoothly. If you need help, look for a person in a bright red T-shirt!

Thanks to these HCI researchers-in-training, and to CSIRO who sponsors them:

- Umachanger Brinthaparan, University of Melbourne
- Jeannette Durick, University of Technology, Sydney
- Martin Henschke, Australian National University
- Lawrence Sambrooks, Flinders University
- Stephen Snow, Queensland University of Technology
- Nirojan Srikandarajah, University of Melbourne
- Fabius Steinberger, Urban Informatics, QUT Brisbane
- Jess Tsimeris, Australian National University
- James Wen, University of Canterbury
- Bradley Wesson, Flinders University



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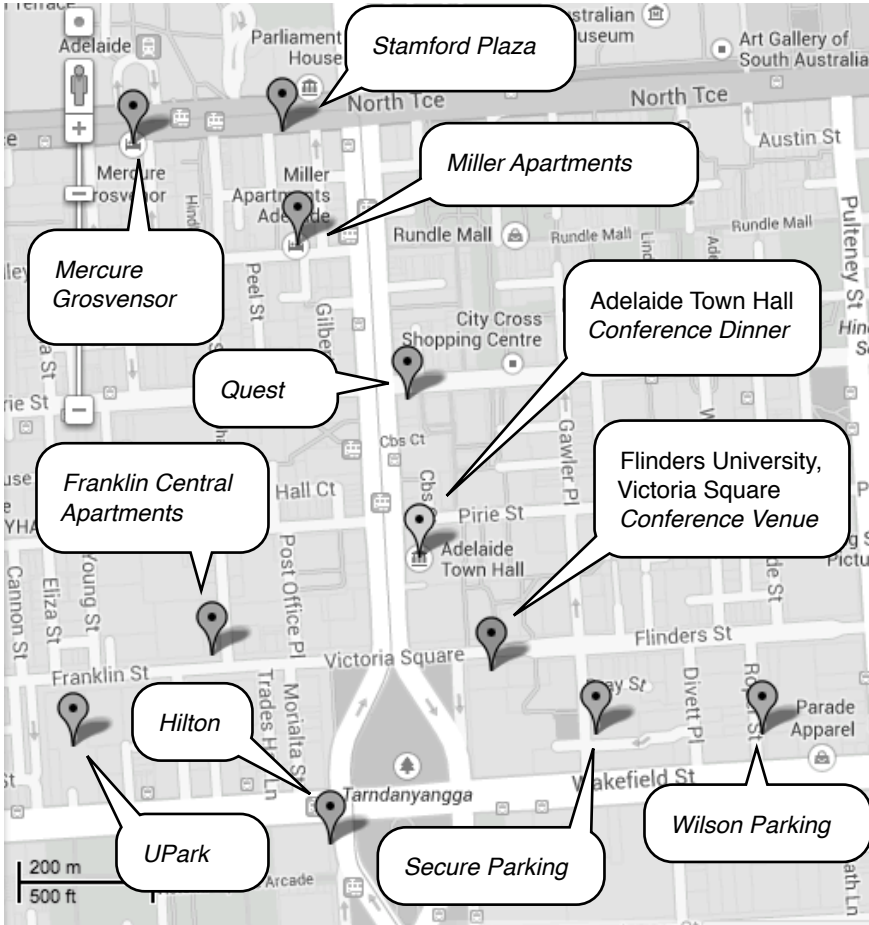
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Venue Map



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