SmartHealth: 7th International Workshop on Technologies for Health and Wellbeing

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ABSTRACT
Research into technology for health and wellbeing can only advance if researchers and designers from a variety of disciplines collaborate to develop strategies for conceptualizing, designing, implementing and evaluating technologies. But how should this interdisciplinary collaboration be structured? This workshop brings together researchers from technology and health to share experiences, discuss ideas and approaches, and address challenging questions which will motivate and guide future research activity. This one-day workshop at OzCHI 2015 will forge connections between researchers, contribute to mutual understanding between disciplines, and ultimately lead to more successful technologies for health.

Author Keywords
Human-Computer Interaction, Human-Centred Design, E-Health; interdisciplinary collaboration;

BACKGROUND
The adoption and adaptation of consumer technologies for the purpose of enhancing human health and wellbeing continues to grow (Röcker et al., 2014). Indeed health projects involving web apps, mobile phones, wearables and other popular technologies are widespread in Human-Computer Interaction (HCI) and health research (Holzinger et al., 2014). But the burgeoning array of consumer health technologies and the ease with which they can be created has led to concerns about quality, primary among which are concerns about (a) the effectiveness of an intervention, and (b) how well it engages its users.

Effectiveness is a key concern. For example, a large number of smartphone apps purported to enhance health have become available to the public, yet it is not always clear that these been properly informed by health research (Boulos et al., 2014). This has resulted in calls for improved regulation of novel health technologies (Vincent et al., 2015) as well as frameworks for their evaluation (Stoyanov et al., 2015).

There is also the risk that a technology, despite being therapeutically valid, may be unusable or unlearnable or may fail to engage end-users sufficiently to achieve benefits (Doherty et al., 2012; Kayser et al., 2015). This suggests that design principles refined within the HCI discipline such as User-Centred Design, Values-Led and Participatory Design, which improve the likelihood of effective use, are as vital in the health domain as they have proven to be elsewhere (McCurdie et al., 2012).

To optimize a health technology’s chance of success, therefore, researchers from both Health and HCI must contribute to its design. What is less certain is how the collaboration should be structured. Thus we perceive a need to bring together researchers from Health and HCI to discuss how these two disciplines, which theorize and conduct research in quite different ways, should work together.

We propose a one-day workshop in which researchers and practitioners can address questions such as: How should the collaboration between HCI and medicine proceed, both at the macro level of interdisciplinary awareness and the micro level of individual research projects? How do the disciplines differ and what do they have in common? Which aspects of health can technology reasonably be expected to impact? Can a technology project incorporate both the prescriptive approach of medicine and the user-led approach of HCI? Is it appropriate for end-users without medical training to strongly influence the design of therapy, as participatory approaches might suggest? Can health projects embrace iterative design? Once a design has been realized, how should it be evaluated? Can the typically small, uncontrolled trials of HCI be integrated with the large, randomized controlled trials required to test the effectiveness of a health intervention? At what timescales do HCI and Health concerns come into play? By what criteria should health technologies be judged?

In the mental health domain, a model for collaboration has been proposed by Coyle and Doherty (2009) in which initial design and prototyping addresses proximal effects such as acceptability, measured through HCI methods such as usability tests and focus groups; then when a design appears to be feasible, acceptable and safe, a larger medical trial is conducted. This approach is compatible with the economics of research in that seed funding can be sought to design a technology which is evaluated using HCI methods, and if results are promising they can be
used to seek the funding for medical trials. It is possible that HCI and Health necessarily work at different timescales and that HCI experts should optimize short term responses to technology while health experts test long-term clinical efficacy, as proposed for example by Klasnja et al. (2011) and Siek et al. (2014). But recently it has been argued that the health and HCI perspectives can be more closely integrated throughout the project lifecycle (Smith et al., 2014).

Possibly the most practical contribution this workshop will make will be at the level of project planning and management. We will ask: What should the overall structure of a health technology project look like? At which points do HCI and health activities come into play? How should project management be shared among the disciplines? Our aim is that through discussion, researchers will reach a better mutual understanding of each other’s goals, constraints and perspectives.

ABOUT THE ORGANIZERS

The organizers are an international group of researchers engaged in designing and evaluating technologies for health, with experience in negotiating the collaboration between health and technology domains.

Carsten Röcker is head of the Research Unit Usability Engineering at the Fraunhofer Application Center Industrial Automation (IOSB-INA) and professor for User Experience and Interaction Design at the Ostwestfalen-Lippe University of Applied Sciences. Prior to these appointments, he held positions at RWTH Aachen University (Germany), University of California, San Diego (USA) as well as Fraunhofer IPSI, Darmstadt (Germany) and was guest researcher at the Nara Institute of Science and Technology, Ikoma (Japan), the Medical University Graz (Austria), and the University of Tokyo, Tokyo (Japan). He has an interdisciplinary background with academic degrees in the fields of Computer Science (PhD), Psychology (PhD), Management (Master) and Electrical Engineering (Master).

Greg Wadley is a Research Fellow in the Department of Computing and Information Systems at the University of Melbourne, focusing on the design and evaluation of technologies for health and wellbeing. He has worked on technology projects to support youth mental health, smoking cessation, social connection for hospitalized children, and adaptation to climate change in the Pacific. He recently co-organized a workshop on Developing Skills for Social and Emotional Wellbeing at CHI 2015.

Sandra Davidson is a NHMRC Early Career Fellowship recipient whose research focuses on reducing the burden of high prevalence mental disorders at both the individual and systems level. She holds appointments as a Research Fellow in the Department of General Practice at the University of Melbourne and as a post-doctoral Research Fellow on a University of Queensland led NHMRC Centre of Research Excellence in Mental Health Systems Improvement (CREMSI). Sandra is the Principle Investigator on an eMental Health study targeting men at risk of depression and a Chief Investigator on a NHMRC funded project trialing the use of a clinical prediction tool to triage patients with depressive symptoms into different levels of care. She has a Masters degree in psychology and PhD in psychiatric epidemiology.

Marianne Webb is a PhD candidate in the Department of General Practice at the University of Melbourne, investigating the design and implementation of a health screening technology for young people and its effect on the patient-doctor relationship. She has worked for over 10 years in the non-profit sector on projects including an online peer-support community forum, an online chat and video crisis counselling service, and an online mental health game.

Bernd Ploderer is a Lecturer at the University of Melbourne and Deputy Director of the Microsoft Research Centre for Social NUI. His research explores technologies for health and wellbeing. He has worked on smoking cessation, sleep tracking, teleconsultation, and arm rehabilitation.

Wally Smith is a Senior Lecturer at the University of Melbourne in the Department of Computing and Information Systems. His work concerns the design of interactive technologies and the social origins and impacts of IT. He has recently completed a large project on the design and evaluation of mobile apps for smoking cessation.

THE WORKSHOP

This is the latest in a series of SmartHealth workshops held at OzCHI conferences in Melbourne (2009 and 2012), Brisbane (2010), Canberra (2011), Adelaide (2013), and Sydney (2014).

For more information please see: http://www.comm.rwth-aachen.de/smarthealth2013/.

Workshop Goal

We will use the OzCHI context and our proximity to the Parkville Biomedical Research Precinct to bring together experienced and prospective researchers from technology and health sector backgrounds to discuss experiences, share viewpoints, and achieve mutual understanding of how best to collaborate on technology projects.

We anticipate that 10 to 15 participants will discuss in a friendly setting the interrelation of medical, environmental, technical, communicative, psychological and social factors and their consequences for the design, use and acceptance of smart healthcare systems.

We aim to reach a consensus on how collaborative research between health and HCI can be theorized and conducted, and disseminate this through publications and further workshops.

Participants are asked to submit a 2-4 page position paper, as described in the CFP below.

Workshop Website

The workshop web site is at http://people.eng.unimelb.edu.au/gwadley/SmarthHealth7/. It contains our Call for Papers and other information and links. We will use EasyChair to manage participant submissions: https://easychair.org/conferences/?conf=smarthealth7
Workshop Structure
This will be a full-day workshop, structured as follows:

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>9:00</td>
<td>Arrive, coffee, welcoming address by organizers. Clarify aims and structure of workshop.</td>
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<tr>
<td>9:30</td>
<td>Participants and organizers introduce themselves and their work, speaking for 5 minutes each.</td>
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<tr>
<td>10:30</td>
<td>Morning tea and informal discussion.</td>
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<tr>
<td>11:00</td>
<td>Breakout: groups of 3 participants discuss each other's position papers for an hour, to identify important themes and common problems and solutions.</td>
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<tr>
<td>12:00</td>
<td>Whole-group discussion to identify key themes emerging from the breakout session.</td>
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<tr>
<td>12:30</td>
<td>Lunch break</td>
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<tr>
<td>14:00</td>
<td>Breakout groups discuss responses to the key themes just identified.</td>
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<tr>
<td>15:00</td>
<td>Afternoon tea and informal discussion.</td>
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<tr>
<td>15:30</td>
<td>Whole-group discussion of responses identified during breakout session.</td>
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<tr>
<td>16:30</td>
<td>Identify next steps. Closing remarks.</td>
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<tr>
<td>17:00</td>
<td>Drinks and/or dinner.</td>
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CALL FOR PARTICIPATION
SmartHealth: the 7th International Workshop on Technologies for Health and Wellbeing.

The workshop is part of OzCHI 2015, Australia's annual conference on Human-Computer Interaction, to be held in Melbourne from 7th to 10th December 2015.

Important Dates:
- Submissions by: August 28th
- Notifications: September 25th
- Workshop: December 7th

Consumer-oriented health technologies abound: for example, it has been estimated that there are 40,000 health apps available to the public. Yet researchers suspect that many of these may be medically ineffective, difficult to learn or use, or insufficiently engaging to maintain use over time. To create more effective health technologies, collaboration between health and technology researchers is essential. But how should this collaboration proceed? This one-day workshop will bring together researchers from diverse backgrounds to share experiences and articulate how this cross-disciplinary collaboration can best proceed.

We invite participants to submit 2-4 page position papers in ACM Extended Abstract Format describing the design, implementation or evaluation of technologies for health and wellbeing. We welcome submissions related (but not limited) to the following topics:

- Frameworks and methods for designing and evaluating health technologies;
- Models for collaboration between researchers across health and technology domains;
- Case studies that illustrate problems and solutions that arise in collaboration.

Papers should be submitted to [https://easychair.org/conferences/?conf=smarthealth7](https://easychair.org/conferences/?conf=smarthealth7).

They will be reviewed by the workshop organizers with respect to relevance, quality of presentation, and potential to stimulate discussion.

At least one author of each accepted submission must register for the workshop and at least one day of the main conference. For more information, please visit [http://people.eng.unimelb.edu.au/gwadley/SmartHealth7](http://people.eng.unimelb.edu.au/gwadley/SmartHealth7).

WORKSHOP TOPICS
Recommended topics for position papers include, but are not limited to, the following:

1. concepts and applications
   - novel e-health concepts
   - tools and design techniques for e-health systems
   - interaction design
   - multidisciplinary design
   - trade-off between technical, health, and user requirements
   - aesthetic vs. functional design aspects
   - emotional and hedonic design

2. methodology
   - usability of health technology
   - user experience design
   - universal access and inclusive design
   - empirical methods (qualitative and qualitative)
   - participatory design
   - evaluation criteria

3. human-computer interaction
   - user- or human-centered design
   - emotion and affective user interface
   - adaptive and tangible user interfaces for e-health

4. social and ethical aspects
   - user diversity
   - ethical and normative requirements
   - gender specific healthcare design
   - economical, legal, and environmental issues
   - social implications of e-health applications
   - privacy, security, and trust in e-health applications
   - cultural aspects of e-health systems

5. technology and systems
   - medical devices and sensor infrastructures
   - collaborative and distributed healthcare systems
   - systems that involve social interaction
   - handheld and mobile computing in e-health systems
   - ubiquitous and pervasive computing in healthcare
ambient assisted living environments
humanoid robots in health settings

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REFERENCES


