Symposium: WISH - Workgroup on Interactive Systems in Healthcare

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ABSTRACT

The Workgroup on Interactive Systems in Healthcare (WISH) brings together industry and academic researchers in human-computer interaction, biomedical informatics, health informatics, mobile health, and other disciplines to develop a cross-disciplinary research agenda that will drive future innovations in health care. We propose a Symposium at CHI 2019 to host WISH with the goal of facilitating a common space to share and discuss methods, study designs, and dissemination in a collaborative fashion. The symposium also aims to actively provide mentoring opportunities to junior and new health technology researchers – from undergraduates to mid-career researchers who want to focus on interactive systems in Healthcare. This will be the eighth WISH meeting in a series of successful workshops bringing together different research communities and practitioners around challenges of designing, implementing, and evaluating interactive health technologies.

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INTRODUCTION AND BACKGROUND

Health Information Technology (HIT) and Interactive Systems in Health have the enormous potential to transform healthcare by positively impacting quality, efficiency, and cost-effectiveness of healthcare. New self-monitoring technologies and data science methods open unprecedented opportunities to inform decisions and choices of individuals to manage their personal health and chronic diseases. However, despite ongoing efforts by many government agencies, interactive technologies in health continues to experience low levels of adoption [1]. Moreover, a growing body of research questions its impact on medical care [3], for example by highlighting the unintended consequences of HIT [2], medical errors that result from poorly designed computing systems [5], and the question of actual effectiveness of available consumer tools to promote health outcomes [6]. Researchers have argued that many of these lacking impact and outcomes, result from a mismatch between the reality of conducting clinical work and prevention, and the structure of computing applications that are meant to support it [4], as well as the mismatch between personal interactive healthcare solutions and the actual user needs and context.

To address these limitations and remove barriers to the successful adoption of health technology, new research initiatives are focusing on a better alignment between technology, clinical practices, prevention, and personal health care on one side, and an approach to system design that is informed by best practices in Human Factors and Human-Computer Interaction (HCI) on the other side. However, these efforts currently exist in several disjoint research communities, with limited established pathways for transfer of knowledge and expertise. These communities include but are not limited to Biomedical Informatics, HCI, Computer Science, Social Sciences, Communication, Medical Anthropology, and Nursing. Each of these fields has its own venues for disseminating research results that rarely overlap. Therefore, researchers and practitioners interested in designing patient-centric and clinician-centric health technology have had few opportunities to interact and develop a shared body of knowledge across these communities. As a consequence, there exists a largely untapped potential to create deeper and more profound connections among the biomedical, informatics, human-computer interaction, medical sociology and anthropology, and nursing communities that would lead to the development of new methods, approaches, and techniques for removing barriers to the adoption of health technology.

The overarching goal of the Workshop on Interactive Systems in Healthcare (WISH) at CHI 2019 is to build on the previous years' workshops to continue to establish lasting and meaningful connections between these communities and bring together students and researchers from various disciplines who are working on creating, implementing, and evaluating innovative health technologies.

The first workshop in the series, WISH 2010 was co-hosted with CHI 2010 in Atlanta, GA. The workshop was sponsored by the NSF, ACM, SIGCHI, and Microsoft Research. It attracted close to

150 participants and included both invited panel and peer-reviewed technical program. From 2011-2014, WISH has been co-hosted with the Annual Symposium of the American Medical Informatics Association (AMIA). For 2016, WISH returned to CHI to engage the broader HCI community in addressing these problems and to introduce researchers from the medical informatics community to the HCI community. In 2017, WISH was hosted again at CHI with great success, and attracted 80 participants who contributed original research in the form of oral presentations and posters, as well as research highlights that were presente during the workshop. During the Steering Committee meeting in conjunction with WISH at CHI 2017 it was decided that to further integrate the AMIA and CHI communities, WISH would be hosted, if possible, at both conferences in alternating years. It was successfully hosted at AMIA 2017, and we now aim to continue this trend, build momentum, and engage additional international participants by hosting WISH at CHI 2019.

The specific goals of WISH 2019 are to:

(1) Develop research agendas for interactive systems in healthcare and identify strategies and mechanisms for studying them. In particular, as data science continues to grow, identifying pathways for collaboration between interactive systems in healthcare and emerging data science methods.
(2) Discuss and develop consensus around existing technical and methodological challenges in the design and evaluation of interactive systems in healthcare.
(3) Continue to establish new channels for the dissemination and implementation of research on interactive systems in healthcare from a variety of other publication venues.
(4) Provide a forum for developing new partnerships between researchers and stakeholder organizations. Through these partnerships, we hope to build stakeholders' capacity to participate in collaborative research activities and, ultimately, in developing usable and useful systems in healthcare.
(5) Continue a mentorship program for junior researchers and provide them with the opportunity to meet and exchange with leading researchers from different fields related to interactive systems in healthcare.

We propose to organize WISH as part of pre-conference program for CHI 2019. We plan for WISH to be a 2-day symposium organized around a 1-day open research day and a closed 5-hour meeting of the WISH steering committee. The steering committee meeting will precede the open part of the symposium to discuss the directions for this interdisciplinary research space and the future of WISH (Saturday afternoon). We project the attendance on the main symposium day to be similar to the precious WISH editions at around 80 participants among members of ACM and AMIA, as well as the International Medical Informatics Association (IMIA) and the European Federation for Medical

Informatics (EFMI). Given the conference location in Glasgow, we expect additional participation of researchers from the European Horizon 2020 Program in the area of health and ICT. The steering committee day will be attended by approximately 15-20 participants.

ORGANIZERS

The organizers of the symposium are well-known researchers in the fields of Human-Computer Interaction, Computer Science, and Biomedical Informatics who bring their expertise and interdisciplinary perspective to advance the agenda of the workshop. The organizers are prominent members of HCI and Biomedical Informatics communities, have actively published in the field of HIT, AMIA, ICT, and CHI and have served as members of the program committees for CHI, Pervasive Health, CSCW, AMIA and further related scientific events for multiple years.

Nadir Weibel, PhD, is an Associate Research Professor in the department of Computer Science and Engineering at UC San Diego, a Research Health Science Specialist at the VA San Diego Health System, and he is one of the faculty of the UCSD Design Lab. His work on Human-Centered and Ubiquitous Computing is situated at the intersection of computer science, design and the health sciences. With his students he develops methods, designs and implements prototypes, and evaluates the effectiveness of pervasive sensing and interactive multimodal physical-digital systems such as depth-cameras, eye-tracking, augmented reality, wearable and ubiquitous computing, to introduce them as a support for Health and Healthcare. Dr. Weibel is engaged and actively publishing in the HCI, Ubiquitous Computing and Pervasive Health communities. He is on the Steering Committee for WISH, was the Program Chair of the 2018 Pervasive Health International Conference and the General Chair in 2016. He has been engaged with CHI for many years, as an author, as an Associated Chair, and has been on the CHI organizing committee as Workshop Chair. Finally, Dr. Weibel is also an associated editor of the ACM Journal on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT). He received his Ph.D. in Computer Science in 2009 from ETH Zurich (Switzerland).

Kim Unertl, PhD, is an Assistant Professor of Biomedical Informatics at Vanderbilt University Medical Center. Her research is situated at the intersection of health informatics, sociotechnical systems, and human factors engineering. Her primary research interests are in technology-facilitated collaboration and teamwork across healthcare contexts, including homes, schools, and other community settings. Special areas of emphasis in her work include management of chronic diseases and incorporating design approaches such as community-based participatory design. Dr. Unertl is on the Steering Committee for WIS, is the Chair Elect of the AMIA People and Organizational Issues Working Group, and a member of the AMIA Diana Forsythe Award Committee. She is a member of the editorial board of the Journal of the American Medical Informatics Association (JAMIA) and serves on the AMIA Education Committee and the Women in AMIA Pipeline Subcommittee. In addition to

her research, Dr. Unertl is extensively involved in educational outreach and mentoring in biomedical informatics. She serves as the co-director of the AMIA High School Scholars Program and is director of the Vanderbilt Summer Biomedical Informatics Program, which includes an NSF-funded Research Experience for Undergraduates site.

Susanne Boll, Dr. techn., is full professor of Media Informatics and Multimedia Systems at the Department of Computing Science of the University of Oldenburg, Germany. She is also a member of the executive board of the OFFISâĂŞInstitute for Information Technology in Oldenburg, an associated research institute of the University of Oldenburg. Dr. Boll received her doctorate with distinction from the Technical University of Vienna, Austria in 2001, and her diploma degree with distinction in Computer Science from the Technical University of Darmstadt, Germany, in 1996. She is an active researcher in in the field of interactive systems with a strong application area in the field of health care and personal health. Dr. Boll works in the field of humanâĂŞcomputer interaction (HCI), specifically in pervasive user interfaces, mobile, and wearable interactive systems, and her scientific results have been published in extremely competitive peer-reviewed international conferences such as CHI, and, MobileHCI as well as internationally recognized journals. She has been co-chairing PervasiveHealth in 2014, she was co-organizer of several ACM SIGMM Multimedia Health Workshops in 2016-2018, and the host of the German National Cluster Conference on "Innovation in Care" in 2018.

WORKSHOP FORMAT

Following up on the successes of previous years, WISH 2019 will include invited speakers, panels, peer-reviewed papers, and posters. The written materials associated with all of these presentation types will be made available via the WISH website. The steering committee will support the co-chairs in identifying and recruiting potential invited speakers and in designing specific topic area presentations. A subset of the steering committee will also serve as a program committee to help review and select those works that are submitted from the general audience for presentation as either a talk or a poster.

PRE-WORKSHOP ACTIVITIES

Before the workshop, our activities will fall into several general categories:

Workshop advertisement: we plan to use various channels to broadly advertise the workshop to different communities of researchers and practitioners. This will include posting announcements on such distribution lists as CHI-ANNOUNCEMENTS and relevant AMIA, IMIA, and EFMI mailing lists and working groups, as well as promotion on Twitter and relevant Facebook groups. In addition, we will send targeted email invitations to leading researchers in different academic institutions with a request to distribute the announcement within their organizations.

Workshop website and pre-workshop discussion: We plan to launch the WISH 2019 website soon after the workshop acceptance decisions. The website will include the Call for Proposals, the list of organizers and members of the steering committee, the program schedule, and information on the mentoring program. We will also start open social media groups (i.e. on Facebook, Slack, Whatsapp, etc.) to use as a forum to solicit new ideas for topics to be discussed during the workshop.

WISH 2019 mentorship program: over the last few years, WISH established a tradition of a strong mentorship program in which junior investigators can apply to be paired with mentors selected among distinguished members of the research communities and industry thought leaders. We will continue this tradition and implement the mentorship program throughout the symposium with paired lunches and round table discussions focused on mentoring junior colleagues.

PROPOSED AGENDA FOR THE STEERING COMMITTEE DAY (SATURDAY AFTERNOON)

12:00-1:30:	Arrival and Lunch
1:30-2:30:	Report on last years' WISH activities, and evaluation of CHI/AMIA alternating years
2:30-3.30:	WISH and new trends (i.e. Data Science, AR/VR, etc.)
3:30-4:00:	Break
4:00-5:00:	Global collaboration (beyond US and EU) and overall sustainability of the WISH community
6:00-8:00:	Steering Committee Dinner

PROPOSED AGENDA FOR THE OPEN DAY (SUNDAY)

8:30-9:00:	Breakfast
9:00-9:15:	Introduction
9:15-10:00:	Keynote 1: TBD
10:00-11:00	Ice-breaker Activity: Lightning Chats
11:00-12:30	Technical Program 1 (90 minutes)
	-Panel 1 (30 minutes) – TBD
	-Paper 1-4 (15 minutes each)

12:30-2:00:	Mentoring Lunch
2:00-3:00:	Technical Program 2 (60 minutes)
	-Papers 5-8 (15 minutes each)
3:00-3:30:	Break
3:30-4:45:	Technical Program 3 (75 minutes)
	-Ignite Talks (10 short talks, 5 minutes each)
	-Papers 9-10 (15 minutes each)
4:45-5:00:	Closing Comments
5:00-7:00:	Poster and Demo Reception with around 15 WISH posters and 10 demo

PRE-WORKSHOP PLAN

Previous WISH workshops have created a lasting impact on the research community including a special issue of the Journal of American Medical Informatics Association (JAMIA) as a result of WISH 2014. We plan to continue this tradition and explore a possibility of a special focus issue in a relevant journal in HCI or biomedical informatics. We also plan to disseminate the technical program to a broad audience through the WISH 2019 website.

CALL FOR PARTICIPATION

Addressing the complex interplay between human, organizational, and technological systems in healthcare is a significant research area with the potential to impact quality, safety, efficiency, and effectiveness of health care around the world.

However, biomedical informatics, human-computer interaction, behavioral medicine, and other research disciplines fundamental to the successful design and dissemination of interactive systems in health are often trapped in their disciplinary silos making significant trans-disciplinary progress challenging.

Consequently, the overarching goal of the WISH Symposium is to establish lasting and meaningful connections between these communities and bring together students and researchers from various disciplines who are working on creating, implementing, and evaluating innovative health technologies.

The symposium will include a number of invited panels and keynote presentation, as well as peer-reviewed technical program highlighting the latest research and innovation in interactive technologies

for healthcare. The workshop is open to all interested participants (no position papers are required for participation).

To be considered for inclusion in the technical program, the participants will be asked to submit a manuscript in one of the three categories: original research paper, research highlight paper, and poster. All papers and poster submissions should follow the Extended Abstract Format. Research highlights will consist of a one-page abstract in the CHI 2019 Proceedings format. Submissions in all categories will undergo a peer-review process; the authors of the accepted submissions will be invited to present their work at the symposium. For each accepted submission, at least one author must attend the symposium and at least one day of CHI 2019.

To find more information about the workshop, visit the website at: https://wish-symposium.org.

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