WIRELESS HEALTH 2014
CONFERENCE SUMMARY
www.wirelesslifesciences.org
www.wirelesshealth2014.org
The Wireless Health conference series is an annual event that draws attendees from across the wireless and mobile health community. The conference was founded in 2010 by the Wireless-Life Sciences Alliance (WLSA) and a group of engineering researchers who recognized the need to gather the many disciplines involved in wireless health research. Since its inception, the conference organizers have worked to develop the foundation for collaborative, trans-disciplinary relationships among the health and STEM research communities, device manufacturers, pharmaceutical developers, health service providers, and federal policy makers.

The 5th annual event took place October 29-31, 2014, held in partnership for the first time with the National Institutes of Health (NIH) in Bethesda, MD. Conference General Chairs Wendy Nilsen of the NIH and Julien Penders of imec, with the members of the Organizing Committee, worked tirelessly to develop a program that highlighted the best new advances in wireless and mobile health research. The conference featured three days of interactive workshops, keynotes, panel discussions, and peer-reviewed scientific presentations.
The program commenced on Wednesday, October 29th with five pre-conference workshops that covered funding opportunities, critical regulatory issues, and product design and development.

During the Smart and Connected Health: Getting Support for Your Research workshop, program staff from the National Institutes of Health (NIH) and National Science Foundation (NSF) provided information to researchers on funding options at the agencies and discussed collaborative research with other institutions and with industry. Bakul Patel, Senior Policy Advisor to the Center Director at the Food and Drug Administration (FDA), and Bradley Merrill Thompson, Attorney at Epstein Becker & Green PC and the organizer of the mHealth Regulatory Coalition, led a workshop on key medical device regulatory issues pertinent to wireless health. This program included an overview of recent legal and policy developments and the opportunity for attendees to present real regulatory case studies from their companies.

The workshop entitled mHealth Evidence: Evaluating Mobile and Wireless Health, explored different methods for generating evidence in mobile and wireless technologies using the latest methods from the health research (e.g., adaptive trials and single case study designs). Sara Zellner and Lauren Ellis of the Health Data Consortium led a session exploring how the emergence of open health data is shaping wireless health and revolutionizing the U.S. health care system.

Finally, a team of health specialists from IDEO facilitated a design challenge in which participants had an opportunity to advance their ideas for a health-related product while learning IDEO’s unique process for design innovation.
CONFERENCE HIGHLIGHTS

The single track sessions on October 30th and 31st featured addresses from a diverse set of individuals. NIH Director Francis Collins, MD, PhD, provided a warm welcome in which he invoked the attendees to "make new friends, establish powerful collaborations...and make the world better." He also cautioned that the science of wireless health has to keep up with the technology, and that we cannot allow the hype of ineffective products to overshadow the true potential of the field. The conference was held at the height of concerns about the Ebola crisis, and Dr. Collins referenced this emergency as an example of where wireless medical technologies could be used to dramatically improve outcomes.
David Blumenthal, MD, MPP, President of The Commonwealth Fund and former National Coordinator for Health Information Technology, addressed the conference with a discussion about the importance of interoperable digital medical records as a key to lowering the cost and improving the quality of health care services. Dr. Blumenthal observed that while the value of digital records is obvious to patients, the systems represent a financial burden and workflow challenge to clinicians. He explained that the HITECH Act, which was championed by Dr. Blumenthal during his government service, addressed the cost issue. He acknowledged that implementation challenges remain but is optimistic that they will be resolved.

John Lach, PhD, Professor and Chair of the Department of Electrical and Computer Engineering at University of Virginia, also spoke about the challenge of influencing the practice of medicine. He described the ways in which his parents’ health issues had driven and shaped his research. Dr. Lach, who is one of the founders of the Wireless Health conference, articulated the goal of applying engineering to solve critical human problems, and encouraged the audience to think about their own source of empathy that would inform their work.
Pedro Irazoqui, PhD, Associate Professor at Purdue University, presented his fascinating work on nanotechnology and implantable devices which has applications in many treatments, including neural disorders such as epilepsy and spinal cord injuries. He also introduced ZIPH Labs, a charitable organization founded co-founded with several students to create and sell affordable investigational tools and clinical devices. Dr. Irazoqui’s mission for ZIPH is to lower the costs of university research funded by taxpayer dollars while dramatically accelerating the pace of scientific discovery. The organization also intends to make clinical devices, such as prosthetics, available to injured American veterans.

Young Sohn, President and Chief Strategy of Samsung, described his company’s commitment to building a successful platform for development and integration of health sensors with their products. He gave a preview of what would be shown a few weeks later at the Samsung Developers Conference. Mr. Sohn shared an overview of the Samsung Digital Health (SDH) platform, which allows for the tracking of personal fitness, as well as the Simband, an open hardware reference design which can integrate health sensors.

Bonnie Spring, PhD, Professor at Northwestern University, closed the conference on Friday afternoon with a presentation that covered her work in smoking cessation. Dr. Spring added her perspectives, developed over a long and distinguished career, about the ways in which behavioral research has changed over the years with the availability of new technologies.
The conference was built around the presentation of 18 full length and 21 rapid-fire technical presentations, on topics ranging from Motivating Movement with mHealth tools to Safety and Security. A diverse group of engineers, health science researchers, and clinical practitioners presented this year’s truly trans-disciplinary research. Fast-pitch oral presentations of demos and abstracts were made during two hour-long sessions on Thursday afternoon, offering attendees a glimpse of the research that they would see later in the day when the demos and abstracts were presented in interactive poster format during Thursday’s reception. As in past years, these sessions were among the most popular of the conference.

The Best Paper Presentation was awarded to Enamul Hoque for Vocal Diary: A Voice Command Based Ground Truth Collection System for Activity Recognition. The paper describes work done by researchers at University of Virginia on a novel, in-home activity monitoring system. The Best Demo Award went to Jiaqi (Jackey) Gong for Motion Assessment for Robotic Surgery Education using Inertial Body Sensors.

Other highlights of the technical sessions included presentations by researchers at the Scripps Translational Science Institute describing their work to identify and mitigate the challenges of implanting randomized clinical trials involving connected health technologies; research on medication adherence by diabetic users of a novel ingestible micro-sensor; and the implementation of a smartphone-based tool for the measurement of heart rate variability in a pilot study by researchers from the University of Sydney and The International Food Policy Research Institute.

The conference proceedings, which include full-length papers and demonstration papers, are available through the ACM Digital Library. Research abstracts may be viewed and downloaded at the Wireless Health 2014 website.
One of the goals of the conference is to foster personal relationships across disciplines. Wireless Health 2014 attendees enjoyed ample time for networking with their peers. The opening reception for the conference took place on Wednesday evening after the pre-conference workshops and was hosted at the nearby Hyatt Regency hotel. During the main conference sessions on Thursday and Friday, breaks, lunches, and an evening reception were held the Natcher Center Atrium. Attendees were able to view poster presentations, test out interactive demonstrations, and learn about collaboration opportunities with industry exhibitors.
LOOKING FORWARD TO 2015

The conference, and the community of researchers that supports it, crossed a threshold in 2014. Industry participants were enthusiastic about the translational opportunities for a significant number of the papers and posters. Conference co-founder Robert McCray of WLSA noted that, compared with earlier meetings, the scientific presentations were more likely to (1) be developed by truly trans-disciplinary teams and (2) derived from an epistemological approach which started with a health problem and then recruited technological solutions. In earlier years, technology too often seemed to be in search of a health problem to solve. He believes this development suggests that the conference is beginning to achieve its goals.

The Wireless Health Conference Organizing Committee is pleased to announce that 2014 General Chair Wendy Nilsen, Health Scientist Administrator at the National Institutes of Health, Office of Behavioral and Social Sciences Research (OBSSR), will remain in this role for another year. Wendy has driven the participation of NIH and other government agencies to the conference since its inception in 2010. A co-General Chair and other Organizing Committee members will be announced shortly. The conference will be held on the NIH campus again in 2015.

The committee hopes to expand on the success of the past conferences with increased participation from the healthcare research community in 2015, continued expansion of the popular demo and abstract submissions, and new opportunities for cross-collaboration and matchmaking between industry and academia.

The initial Call for Submissions (Papers and Abstracts) will open January 2015 and an additional Call for Late Breaking Research Submissions will be held in late summer 2015.

We hope that you will join us October 14-16, 2015 at the NIH for the Wireless Health 2015 Conference.
CONFERENCE RESOURCES

Proceedings of the Wireless Health 2014 Conference are available at the ACM Digital Library.

Research and Late Breaking Abstracts are available for download from the Wireless Health 2014 website.

Video of the conference is available on the WLSA video gallery.

Slides from many Wireless Health 2014 speakers are available on the WLSA Slideshare Channel.

Photos from the conference can be viewed on Flickr.
WIRELESS HEALTH 2014 COMMITTEES

The Wireless Health Conference is made possible through the efforts of the Organizing Committee and the Technical Program Committee.

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