What is Health Informatics?

Over the last decade, health informatics has developed into one of the hottest fields in business, government, and academia. Initially, it was viewed as the science that applies technology to health information, particularly patient information stored in electronic health records, to improve healthcare. Health informatics has now grown to become the umbrella term for fields such as clinical informatics, nursing informatics, medical informatics, biomedical informatics, and health care informatics. However, health informatics is evolving into a field that reaches beyond healthcare to translational bioinformatics, public health informatics and global health informatics as noted in the following definition from the website of the School of Medicine at the University of Virginia:

“Health informatics is the science that underlies the academic investigation and practical application of computing and communications technology to healthcare, health education and biomedical research. This broad area of inquiry incorporates the design and optimization of information systems that support clinical practice, public health and research; modeling, organizing, standardizing, processing, analyzing, communicating and searching health and biomedical research data; understanding and optimizing the way in which biomedical data and information systems are used for decision-making; and using communications and computing technology to better educate healthcare providers, researchers and consumers. Tools and techniques developed from health informatics research have become and will remain integral components of the best strategies in biomedical research and the best practices in healthcare delivery and public health management.”

Although several countries in Latin America and the Caribbean (LAC) have strong programs in health informatics, it is still a relatively new field of study in the majority of LAC. The Symposium of Health Informatics in Latin America and the Caribbean, an effort to increase knowledge of and collaboration in the field among the countries of LAC, evolved from the need to increase capacity and resources in health informatics for general and scientific purposes.

The Symposium of Health Informatics in Latin America and the Caribbean (SHILAC)

The first Symposium of Health Informatics in Latin America and the Caribbean (SHILAC 2013) occurred in in Cancun, Mexico on August 14, 2013 as a part of the eleventh Latin America and Caribbean Conference for Engineering and Technology (LACCEI 2013). The theme of the event was “Crossing bridges and borders to identify healthcare issues in Latin America and the Caribbean (LAC)...” The three primary objectives of the event were to:

1) Showcase health informatics in Latin America and the Caribbean,
2) Identify the top health issues in LAC that could best be addressed with health informatics, and
3) Brainstorm and prioritize possible health informatics solutions to those issues.

The first objective was addressed by having sessions where authors of peer-reviewed papers would present their research. However, the second and third objectives were embodied in a Big Think event. Typical Big Think events consist of spending time defining problems that could be addressed in a particular domain, brainstorming on possible solutions and then prioritizing these solutions as possible candidates to be created at a hackathon. I will revisit hackathons in detail below but for now I describe a hackathon as an interdisciplinary group of people collaborating to develop innovative solutions using technology.
The second Symposium of Health Informatics in Latin America and the Caribbean (SHILAC 2015) will be held in San Juan, Puerto Rico from November 20-22, 2015 and will continue to uphold the three primary objectives of SHILAC 2013; however, it will have a fourth objective – to begin to implement health informatics solutions to top health issues in LAC. The theme of the event will be “Spurring Innovation in Healthcare in Latin America and the Caribbean.” In this spirit, SHILAC 2015 will add a third component to the symposium in addition to the conventional paper sessions and the Big Think. SHILAC 2015 will also include a hackathon named Hacking Medicine in the Caribbean (http://shilac.org).

What is a hackathon?

The interdisciplinary nature of health informatics makes the field an excellent candidate for the innovative and collaborative solutions that are often developed in hackathons⁵. Good health informatics solutions require the expertise of information technologists, computer scientists, psychologists, medical practitioners, artists, designers, engineers, marketing specialists, business administrators, policy makers, and the list goes on. In the early to mid-2000s, hackathons tended to be associated with techies programming in small teams for 24-48 hours in a competition to build disruptive innovations that bring big change and provide lots of opportunities for venture capitalists. Unfortunately, much anecdotal evidence indicates that these events also tended to lack racial and gender diversity as well as the diversity in expertise to build effective solutions. They tended to serve better as a fertile recruiting ground for software engineering companies.

More recently, hackathons have expanded to include rapid and innovative ways to develop prototypes in industry and demonstrated promise as a tool for software engineering to foment internal collaboration among departments⁶ and addressed more humanitarian and societal issues by focusing on improving community and government by hacking problems such as reducing homelessness and crime.⁷ Other hackathons are addressing one specific issue such as MIT Media Lab’s “Make the Breast Pump Not Suck!” Hackathon, where women served as designers and testers of the innovation.

Hackathons for health began in 2010 and have grown exponentially in number since then. Several organizations have taken the lead in coordinating these diverse and high energy events - Health 2.0, Hacking Health, MIT Hacking Medicine Institute and SANA. Through interdisciplinary collaboration, products were developed such as an insole for curing diabetic feet and a personalized pill packaging system for patients. In an international collaboration where hospitals in a low-resource country needed an innovative solution for determining the effectiveness of a hand held respiratory pump, the solution is now spreading to hospitals in the developed world.⁸

SHILAC’s Hackathon

The four objectives of Hacking Medicine in the Caribbean include:

1) Introducing the concept of an interdisciplinary, problem-solving hackathon to regions in LAC to give participants the opportunity to contribute as well as create such an event in their homeland.

2) Convening North, Central, and South Americans from developed and developing regions in a bilingual environment to create a global network focused on solving healthcare issues in LAC using health informatics.

3) Promoting the field of health and biomedical informatics in Puerto Rico and in LAC through experience.
4) Encouraging more women and Latinos to become involved the fields of computer and information science and engineering and more specifically in establishing in health and biomedical informatics research collaborations that extend beyond the borders of Puerto Rico.

For the hackathon, the Organizing Committee will be working with a group of talented hackers from SANA, a cross-disciplinary organization whose approach is to democratize access to 1) quality healthcare through open source technologies, 2) knowledge through the exchange of learning across partners, and 3) global networks of multidisciplinary experts. They bring together clinicians, engineers, policy, public health, and business experts to collaborate with students, engineers, doctors, nurses, hackers, artists, government officials, and entrepreneurs, basically anyone who wants to solve healthcare problems in LAC from all around the globe at this hackathon. Having the hackathon in conjunction with SHILAC will allow for a greater participation by leading health providers and informatics researchers in LAC.

Women and Health Informatics in Latin America and the Caribbean

Many of the leading researchers in health informatics in Latin America and the Caribbean are women. SHILAC 2015 will be highlighting the accomplishments of these women including Carol Hullin, PhD; Patricia J. Garcia, MD, MPH, PhD; Lucila Ohno-Machado, MD, PhD; and Jessica Kissinger, PhD. All four of these women have made significant contributions to the development of health informatics in Chile, Peru, Brazil, and Brazil, respectively. They have each developed programs in health informatics that are recognized as being on par with leading programs around the globe. Dr. Carol Hullin is from Chile and currently resides as President of the Latin American and the Caribbean chapter of the International Medical Informatics Association (LAC-IMIA). She has been the Leader of Internationalization at UC Douc in Chile and also serves as the leader of the Division of Informatics for the World Bank in Washington, DC. Dr. Patricia Garcia is from Peru and is the Dean of the School of Public Health and Administration at Cayetano Heredia University (UPCH) in Lima, Peru, and former chief of the Peruvian National Institute of Health, the only woman to have ever held this position. Dr. Lucila Ohno-Machado is from Brazil and is a Professor of Medicine, the Founding Chief of the Division of Biomedical Informatics, and the Associate Dean for Informatics and Technology at UC San Diego. She is also Editor in Chief of the Journal of the American Medical Informatics Association and Director of the Biomedical Research Informatics for Global Health Program. Dr. Jessica Kessinger is from the United States and is a Professor of the Department of Genetics and Director of the Institution of Bioinformatics at the University of Georgia. Furthermore, Dr. Carol Hullin and Dr. Jessica Kessinger, coming from non-traditional backgrounds, will serve as inspiration because of the great adversity they have had to overcome in order to succeed. While providing an opportunity for mentoring on a professional and personal level, SHILAC and Hacking Medicine in the Caribbean will also focus on ways to create a global network for health informatics research in LAC.

Why in Puerto Rico?

Puerto Rico serves as the perfect spot for such an event, not only because it is a tropical paradise and is centrally located in the western hemisphere, but also because Puerto Rico is also one of the most bilingual and bicultural countries in the hemisphere creating a welcoming environment for people from all of the Americas. It is a leader biomedical research and engineering producing more Hispanics PhDs from its universities in science and engineering than top universities in the United States\textsuperscript{vi}. As a common wealth, researchers on the island are eligible for funds from top funding agencies in the US that encourage international collaborations such as the National Science Foundation and the National Institutes of Health. For these reasons and many more such as the hospitality of its people and the rich musical tradition of its culture, Puerto Rico is providing the perfect breeding ground for spurring innovation in healthcare.
About the author:

Patricia Ordóñez is an Assistant Professor in the Department of Computer Science at the University of Puerto Rico Río Piedras. She received her BA from Johns Hopkins University and her MS and PhD in Computer Science from the University of Maryland Baltimore County (UMBC). Her research centers on using machine learning, visualization, and data mining to improve the state of medicine in intensive care units. She is the Founder of the Symposium of Health Informatics in Latin America and the Caribbean. With her high school and undergraduate students, she is developing assistive technologies for programming to make computer science more accessible. She is a former National Science Foundation Graduate Research Fellow and she is passionate about diversifying the field of computer science.