

COMPUTER SCIENCE
COLLOQUIUM

*Healthcare Information Technology: Opportunities for
Computer Scientists to Make a Real Difference*

Lucila Ohno-Machado
University of California, San Diego

Abstract: Healthcare has lagged behind other industries in the utilization of information technology. Some reasons for this gap are related to the complex nature of physician-patient interactions, lack of systems that can seamlessly be embedded in clinical workflows, and limited collaboration and communication that cross the boundaries between medicine, computer science, and engineering. Changes in the healthcare landscape in the U.S. provide a unique opportunity to develop new ideas for integrating information technology into healthcare. Reducing costs and providing healthcare for all requires the development of more efficient systems of care, in which not only public health indicators and institutional expenditures are monitored, but also objective quality of care measures and individual patient outcomes. High resolution monitoring cannot be achieved without computer-based systems that are able to integrate data from clinical encounters, billing systems, and research studies for meaningful data analysis, pattern recognition, and high fidelity simulations.

There are a variety of areas in which computer scientists can partner with clinicians and other decision makers, but the development of such partnerships requires a systematic approach. In biomedical informatics training programs, the goal is to provide training in a complementary area for individuals with computer science or health sciences backgrounds, and to train the next generation of researchers. While this covers important ground, more needs to be done. There is currently limited work in the area of training the existing generation of computer scientists and clinician leaders on how to work together to approach current healthcare challenges in a novel way. I will present a model for crossing disciplinary and geographical barriers in order to promote health and alleviate the burden of disease, and present several examples in which this could be done today.

Biography: Lucila Ohno-Machado, MD, PhD, is Professor of Medicine and founding chief of the Division of Biomedical Informatics at the University of California San Diego. She received her medical degree from the University of Sao Paulo and her doctoral degree in Medical Information Sciences and Computer Science from Stanford University. Prior to her current role, she was director of the training program for the Harvard-MIT-Tufts-Boston University consortium in Boston, and director of the Decision Systems Group at Brigham and Womens Hospital, Harvard Medical School. Her research focuses on the development of new evaluation methods for predictive models of disease, with special emphasis on the analysis of model calibration and implications in healthcare.

She is an elected member of the American College of Medical Informatics and the American Institute for Medical and Biological Engineering, and associate editor for the Journal of the American Medical Informatics Association and the Journal for Biomedical Informatics. She has lectured in Asia, Europe, Africa, and South America and is currently director of the Biomedical Research Informatics Global Health program funded by the NIH. At UCSD, she leads a multidisciplinary group of faculty, trainees, and staff whose research ranges from foundations of biomedical informatics to applications in healthcare. The former includes the development of new algorithms to analyze genomic and clinical data and to prevent disclosures that can compromise patient privacy, and the latter includes applications of pattern recognition algorithms to prognosticate disease using large repositories of data.

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