

EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

Robotics, Sensors, and Systems to Advance Healthcare Delivery

ABSTRACT - Robotics and sensor technologies will impact the lives of people either by automating tasks not possible before or by organizing and extracting useful information from large volumes of data related to humans (activity, communication, mental conditions, rehabilitation, etc.) and their well-being. Our work specifically focuses on robotics and sensor technologies that are current or planned for integration into healthcare delivery systems. Numerous challenges arise when translating new capabilities into practice and innovating such systems. These include rethinking the bounds and operational details of health professionals' jobs, how health systems can best integrate emerging technologies to improve care delivery, and which patients will benefit most from the interventions. We use operations engineering methods including decision and risk analysis, data science, and simulation in order to improve this complex environment. This talk will highlight several results that impact the care for patients with Parkinson's disease as well as how we are building collaborative research teams to integrate robotics and sensor technologies for better healthcare.



Dr. Harriet B. Nembhard
Professor and Department Head
School of Mechanical, Industrial and
Manufacturing Engineering (MIME)
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SPEAKER BIO - Harriet B. Nembhard is the Eric R. Smith Professor and Head of the School of Mechanical, Industrial and Manufacturing Engineering (MIME). Her scholarship in quality engineering and operations research is focused on improving complex systems across manufacturing and healthcare. It has led to several advances including the development of visualization methods for communicating healthcare data, a patented manufacturing process for small-scale medical devices, simulation models for assessing emergency department performance, and modeling patient adherence to treatment. She is co-author of a ground-breaking textbook, *Healthcare Systems Engineering*; the author or co-author of more than 50 peer-reviewed journal publications; and advisor to four post-doctoral, 13 PhDs, and numerous other students and scholars.

As the School Head of MIME, she leads a unit of 60 faculty, 20 staff and associates, 1,700 undergraduates, and 340 masters and doctoral students. The school's mission is to educate students as entrepreneurial, team-oriented, and profession-ready graduates and engage in collaborative, cutting-edge research that helps build a sustainable future. The school offers programs in mechanical, industrial, manufacturing, and energy systems engineering, materials science, and robotics. The highest research priorities have been on health, energy, and manufacturing which has led to many national and international collaborations with research expenditures exceeding \$14M. She has advanced a community of inclusive excellence where diversity, equity, and equal opportunity create a welcoming environment that enables success for everyone.

Her work has been recognized by the American Society for Quality (ASQ) with the Feigenbaum Medal in 2004, with election as an ASQ Fellow in 2009, election to the International Academy for Quality in 2011, and she was recently named as a Drexel University Executive Leadership for Academics in Technology and Engineering (ELATE) Fellow. She has been an actively involved member of the Institute of Industrial and Systems Engineering (IISE) in numerous roles for 30 years and is a member of the American Society of Mechanical Engineering (ASME) Executive Committee.

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TUESDAY, FEBRUARY 5, 2019

3:30PM – 4:50PM

USC ANDRUS GERONTOLOGY CENTER (GER), Room 206