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Marquard Granted College's 24th NSF CAREER Award

The National Science Foundation (NSF) has notified Dr. Jenna Marquard of the Mechanical and Industrial Engineering Department that she has been awarded a $400,000 NSF Faculty Early Career Development (CAREER) grant for a research project entitled "Computational Approaches to Model Physicians' and Patients' Interactions with Health Information Technology." Specifically, her project will focus on computerized health information technology designed to improve the health, clinical care, and cost of management for diabetics and patients with high blood pressure. Her research will upgrade the technology by modeling how doctors and patients interact with these information systems and then engineering more user-friendly computer interfaces for them.

Dr. Marquard's CAREER grant is the 24th received by College of Engineering faculty members, in addition to seven others who received the CAREER Award's predecessor, the Presidential Young Investigator Award.

According to the NSF, The CAREER Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education, and the integration of education and research within the context of the mission of their organizations. Such activities should build a firm foundation for a lifetime of leadership in integrating education and research.

The abstract of Dr. Marquard's CAREER project follows:

The research objective of this Faculty Early Career Development (CAREER) project is to model physicians' and patients' cognitive and behavioral interactions with health information technology (IT) as these individuals deal with two costly chronic diseases - diabetes and hypertension. The researcher will model these interactions using methods from applied psychology, visualization, and computer science. Using these models, the researcher will assess the quality of physicians' and patients' cognitive and behavioral interactions across existing commercial health IT systems, and will design new computer interfaces that improve how physicians and patients interact with health IT.

By providing guidance for the effective design of health IT, this research will directly support current government initiatives aimed at stimulating the adoption of health IT. There is overwhelming evidence that health IT failures often result from a faulty understanding of how individuals use information while completing tasks and making decisions. This research aims to increase physicians' and patients' adoption of health IT by making it easier for them to find and use the right information at the right time. As chronic disease management poses a significant burden on the healthcare system, the specific design guidance identified via the proposed research has the potential to improve clinical outcomes and reduce the costs of managing these patients. Through this research, PhD students will be able to work closely with healthcare provider mentors and participate in interdisciplinary research teams with physicians, nurses, and

computer scientists. Additionally, the researcher will develop realistic case studies to expose undergraduate and graduate students to the growing field of health systems engineering. (February 2012)