HUMANITY CENTERED ROBOTICS INITIATIVE

BROWN

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"Robotics and Assistive Technologies: Their Emerging Role in Healthcare"

Wednesday, December 3, 2014
12:00 – 1:30pm
Barus and Holley Room 190

Healthcare robotics refers to robots that are used to increase, maintain, or improve the functional capabilities of people with (and without) disabilities. We can segment this domain into four primary areas - Rehabilitation Robotics, Robotics for Surgery, Biorobotics, and Assistive Robotics@Home, Work, Play. Through interaction, robotics for healthcare applications can increase the quality of life for older adults and/or people who experience disabling circumstances, by, for example, assisting in stroke-therapy, assisting surgeons in the operating room, or becoming therapeutic playmates for children with cerebral palsy. There are numerous challenges though that must be addressed - determining the roles and responsibilities of both human and robot, developing interfaces for humans to interact with robots that does not require extensive training, and developing methods to allow the robot to learn from their human counterparts. Applying such human-interaction methodologies enables a new era of progress in healthcare robotics. In this talk, I will discuss the domain of intelligent robotics for healthcare applications and supporting assistive technologies. I will present our approaches in which these technologies can address real-life needs for both improving quality of life as well as tackling rehabilitation and therapy objectives for children with disabilities.

Ayanna Howard '93 is the Motorola Foundation Professor in the School of Electrical and Computer Engineering at the Georgia Institute of Technology. She received her B.S. in Engineering from Brown University, her M.S.E.E. from the University of Southern California, and her Ph.D. in Electrical Engineering from the University of Southern California in 1999. Her area of research is centered around the concept of humanized intelligence, the process of embedding human cognitive capability into the control path of autonomous systems. This work, which addresses issues of autonomous control as well as aspects of interaction with humans and the surrounding environment, has resulted in over 180 peer-reviewed publications in a number of projects – from scientific rover navigation in glacier environments to assistive robots for the home. To date, her unique accomplishments have been highlighted through a number of awards and articles, including highlights in USA Today, Upscale, and TIME Magazine, as well as being named a MIT Technology Review top young innovator of 2003, recognized as NSBE Educator of the Year in 2009, and receiving the Georgia-Tech Outstanding Interdisciplinary Activities Award in 2013. In 2013, she also founded Zyrobotics, which is currently licensing technology derived from her research lab and has released their first suite of educational technology products. From 1993-2005, Dr. Howard was at NASA's Jet Propulsion Laboratory, California Institute of Technology. Following this, she joined Georgia Tech in July 2005 and founded the Human-Automation Systems Lab. She is currently the Associate Director of Research for the Georgia Tech Institute for Robotics and Intelligent Machines. Prior to that, she served as Chair of the multidisciplinary Robotics Ph.D. program at Georgia Tech for three years from 2010-2013.

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