BAETJER Colloquium

Socially Assistive Robotics: Creating Robots That Care

Socially assistive robotics (SAR) is a new field of intelligent robotics that focuses on developing machines capable of assisting users through social rather than physical interaction. The robot's physical embodiment is at the heart of SAR's effectiveness, as it leverages the inherently human tendency to engage with lifelike (but not necessarily human-like or otherwise biomimetic) social behavior. People readily ascribe intention, personality, and emotion to robots; SAR leverages this engagement stemming from non-contact social interaction involving speech, gesture, movement demonstration and imitation, and encouragement, to develop robots capable of monitoring, motivating, and

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sustaining user activities and improving human learning, training, performance and health outcomes. Human-robot interaction (HRI) for SAR is a growing multifaceted research area at the intersection of engineering, health sciences, neuroscience, social, and cognitive sciences.   This talk will describe our research into embodiment, modeling and steering social dynamics, and long-term user adaptation for SAR. The research will be grounded in projects involving analysis of multi-modal activity data, modeling personality and engagement, formalizing social use of space and non-verbal communication, and personalizing the interaction with the user over a period of months, among others. The presented methods and algorithms will be validated on implemented SAR systems evaluated by human subject cohorts from a variety of user populations, including stroke patients, children with autism spectrum disorder, and elderly with Alzheimers and other forms of dementia.

Maja Mataric´ is the Chan Soon-Shiong Professor of Computer Science, Neuroscience, and Pediatrics at the University of Southern California, founding director of the USC Robotics and Autonomous Systems Center (rasc.usc.edu) and her Interaction Lab (robotics.usc.edu/interaction). She received a PhD and MS from MIT and BS from the University of Kansas. She is Fellow of AAAS, IEEE, and AAAI, and recipient of the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring, Anita Borg Institute Women of Vision Award in Innovation, NSF Career, MIT TR35 Innovation, and IEEE RAS Early Career Awards, among others. A founder of the rapidly growing field of socially assistive robotics, her research is focused on enabling robots to help through non physical means: through motivation, companionship and coaching. Her work has been validated in therapy, rehabilitation, training, and education for children with autism, stroke survivors, Alzheimer's patients and other special needs populations.   She is passionate about conveying the importance of engineering research and careers in STEM to K-12 students and teachers, women and other underrepresented groups in engineering, the media, and policy makers.