MECHANICAL & INDUSTRIAL ENGINEERING
COLLOQUIUM: ME 794 001

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221 MEC
1:00 to 2:25pm

"Wearable Robots and Rehabilitation Robotics"

Abstract:

Recent advancements in robotics and clinical neuroscience have rendered possible the use of robots as therapeutic aids for physical rehabilitation. Implementation of robotics is particularly appealing in motor retraining cases, due to the intensive and repetitive nature of the exercises. The application of robotic technology to rehabilitation also presents new avenues in rehabilitation that were formerly unavailable (e.g. interactive virtual environments, sensing, and data logging). Indeed, rehabilitation robotics is a rapidly developing field that shows great potential for aiding people with movement disabilities in their recovery, and consequently in improving their quality of life and independence.

The control strategies of rehabilitation robots differ significantly from that of conventional industrial manipulators. One major distinction is the environment with which the robot interacts (i.e. a human with varying system dynamics). Another difference arises from the recent trend in patient-centered exercise regimens, where the robot adapts its behavior based on the patient's effort.

This seminar will introduce the current state-of-the-art in rehabilitation robotics, its future, and the challenges it presents.

Biography

Dr. Ozer Unluhisarcikli is a mechatronic systems engineer at ASML (Advanced Semiconductor Materials Lithography). He received his B.Sc. in Mechanical Engineering from Yildiz Technical University, Turkey in 2005; and his M.Sc. from Bogazici University, Turkey in 2008. The same year, he moved to Boston to pursue his doctoral studies at the department of Mechanical and Industrial Engineering at Northeastern University; working as a research assistant at the Biomedical Mechatronics Laboratory. His research during his doctoral studies was focused on human-robot interaction control of neuro-rehabilitation robots.