SEMINAR - סמינר

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 1.04.2019
(כ"ה באדר ב' תשע"ט), בניין דן קאהן, אודיטוריום 1, 14:30.

מרצה:

Dr. Arielle Fischer

Stanford University

על הנושא:

Exploiting the Somatosensory System with Smart Wearable Devices for the Treatment of Musculoskeletal Joint Pathology

The seminar will be given in English

להלן תקציר ההרצאה:

Advances in sensor technology and wearable devices have paved the way for innovative joint rehabilitation modalities. Dr. Fischer has been applying wearable sensor technology to human motion analysis as a post-doctoral fellow at Stanford University. She led the design and development of a wearable Smart Knee Brace that applies vibrational intermittent stimulation on the mechanoreceptors of the somatosensory system. Mechanical stimulation of the quadriceps interferes with pain stimuli that impede rehabilitation and motion. This brace records activity, tracks motion, and is triggered based on subject specific gait parameters, thus has broad applications for the treatment of soft tissue injury and joint pathology.

In the upcoming seminar, Dr. Fischer will discuss design and manufacturing of the smart knee brace in addition to the analysis, results and clinical applicability of a longitudinal placebo-controlled clinical trial designed to examine the efficacy of this brace after a 10-week follow up period. She will discuss the study results which indicate a significant reduction in pain, increase in joint moment, motion and muscle activation and the underlying scientific mechanism of enhancing quadriceps activity. This intervention can help patients progressively regain muscle function during daily activities and expedite recovery post-op in conjunction with physical therapy and exercise rehabilitation.

Future work will focus on creating personalized smart wearable devices that capitalize on the somatosensory system while tracking biomotion data and thereby generate a unique database collected outside a laboratory setting. This proposed database will allow a more refined study of predisposing factors to joint injury by compiling motion and muscular measures on which machine learning algorithms can be applied to predict the precursors of degenerative joint disease and soft tissue injury. Future research will also expand our knowledge of the dynamic interactions of the mechanical, structural and biological system components in musculoskeletal disorders.

Bio: Arielle Fischer is a post-doctoral scholar in the BioMotion Laboratory at Stanford University. Her research interests include musculoskeletal biomechanics and implementing sensor technologies and smart wearable personalized devices. She earned her BSc in Biomedical Engineering from the Technion, as well as an MSc and PhD in Mechanical Engineering from the Technion (Biorobotics and Biomechanics Laboratory, Prof. Alon Wolf). She has conducted clinical trials, authored several first author papers on novel biomechanical interventions, kinematics, kinetics and electromyography of human motion and presented at international conferences.

מארח: פרופ' אולג גנדלמן

בברכה,

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